CHAPTER-6

SUMMARY, FINDINGS, CONCLUSIONS
RECOMMENDATIONS AND SUGGESTIONS
CHAPTER – VI

SUMMARY, FINDINGS, CONCLUSIONS, RECOMMENDATIONS AND SUGGESTIONS

This chapter deals with the summary, major findings, conclusions, recommendations and suggestions for further research.

6.1 Summary

Science education is to a nation what protein is to a young organism. Former president of India A.P.J. Abdul Kalam called upon the Universities to turn out a global cadre of skilled professionals in Science and Technology to make India to realize its dreams of a developed nation by 2020. Education strengthens the powers of body and mind. It fits a man to perform justly, skillfully and magnanimously all the offices – private and public of peace and war. Physical sciences play a very important role in the life of all human beings. In the modern scientific world physical sciences occupies important place in the school curriculum.

Every body needs the knowledge of physical sciences in one way or other. Importance of Physical sciences is very clear, from its wide applications ranging from daily uses of even a common man, to its applications for the development of science, Engineering and Technology and even social sciences including languages. Physical sciences play a key role for the development of Science and Technology. National education commission observed “proper foundation in the knowledge of the subject should be laid down at the school level itself”.

The scholastic achievement in physical sciences is related to various factors. The present investigation is to find out the relationship between achievement in physical sciences of IX class students and various Socio-Demographic and Psychological variables.

6.1.1 Introduction

Education is one of the potent instrument in the development process. It is properly geared for that purpose. A man without education is like a flower without
fragrance. Education strengthens the powers of body and mind. It is a life long process. It is the most powerful and effective instrument for inducing radical changes in the behavior of students. It plays a significant role in the development of human resources. In a democratic country, Education can be used for giving training in a good citizenship.

Education is found to be an effective tool to bring the required changes in the society. The National Education Commission (1964-66) has emphasized that education is the one and only instrument that can be used to bring about a change towards the social and economic betterment of India. Further the commission quoted “India is now being shaped in her class rooms”. It is not only a saying but also a reality. In the world, based on Science and Technology, it is the education that determines the level of prosperity, welfare and security of the people.

Science education has developed at an ever increasing pace, since the beginning of the 20th century so that the gap between the advanced and backward countries has reduced more and more. Modern science was introduced in India with the coming up of the British rule and it should in some opposition to the earlier traditions because the new system was to be learnt in foreign languages i.e. English.

Napoleon said, “The progress and improvement of Physical sciences are linked to the prosperity of the state”. In view of the important role that physical sciences plays in the modern world, it had been imperative for any nation or world to promote physical sciences education in their respective countries.

In the daily life of the person, from the womb to the tomb, science education plays a vital role in all aspects such as food, clothing, shelter, social movability etc., Hence there is a need for each and every person to have a scientific knowledge which can be attained only through science education.

In view of the important role that physical sciences plays in the modern world, it has been imperative for any nation or the world to promote physical sciences education, in their respective countries. It is not possible for us to expect improved physical sciences education, in the higher education, unless, we succeed in providing a sound physical sciences education at the school level.
Secondary education has been considered as the weakest link between lower and higher education levels, in view of the low standards and more failures and dropouts after the secondary level of education. In this aspect, an achievement of the students in all the subjects is the most significant factor, in educational system. Among the different areas of research in education, scholastic achievement, is one of the most extensively investigated phenomena. The standards of education at schools and colleges would be refluxed by the performance of pupils in their academic subjects.

Scholastic achievement is the main concern of our educationists and the government. Achievement of the students depends upon several sociological, psychological and environmental aspects. This fact was established by several investigations in our country and aboard. The present study is aimed at establishing a meaningful relationship between achievement in physical sciences and various psychological and socio-demographic variables.

6.1.2 Statement of the Problem

The present study is concerned with the scholastic achievement of IX class students in physical sciences. It examines the main effects of educational divisions, sex, caste and their interaction effect on the scholastic achievement. It also examines the main effects of age, religion, nativity and their interaction effect on the scholastic achievement. It establishes the relationship between the scholastic achievement and other variables namely, study habits, self-concepts and personality factors. It also predicts the scholastic achievement with the help of different sets of psycho-sociological variables.

6.1.3 Title of the Problem

The title of the problem is “Scholastic Achievement of IX class pupils in Physical sciences in relation to Certain Psycho-Sociological Variables”.

6.1.4 Scope of the study

The main intention of the study is to find the relation of scholastic achievement of IX class students with socio-demographic variables, study habits, self-concepts and personality factors. The marks obtained in an objective test, in physical sciences are taken as scholastic achievement in physical sciences which is
regarded as dependent variable in the present study. The objective achievement test is developed and standardized by the investigator. The socio-demographic variables, study habits, self-concepts and personality factors are measured by using the relevant instruments. The study is confined to only 36 schools of Chittoor District, belonging to the different educational divisions i.e. the four divisions of Chittoor District.

As already described in the earlier chapters, only a few variables have been included in this study. A number of factors will have their impact on the achievement, in physical sciences. Each and every variable having its influence on the achievement could not be included in this study.

The study also attempts to predict the scholastic achievement with the help of different sets of psycho-sociological variables.

6.1.5 Need for the study

In one's life, the intellectual capacities and capabilities are assessed by his/her achievements in various subjects. In the present educational system, the various programmes are not confined, only to the text books. Using of libraries and laboratories for additional information, making arrangements for workshops, seminars, various competitions, have come into school life. The unprecedented expansion of educational system, the enormous financial investments, made in educating the children, by individuals and governments, and the need to point out the priorities of educational expenditure, necessitate the identification of various factors, contributing most, for student learning and achievement levels. The achievement in various subjects, of learners, is the result of combined efforts of teachers, parents, managements of schools and students. Again there is an effect of various Psycho-sociological factors, on the achievement of students.

There is an urgent educational and social need to study and identify the influence of various factors, on the achievement of high school pupils, to draw up the conclusions for high/low achievements.

Scholastic achievement continues to be one of the most important variables held in high esteem in all cultures, countries and times. Hence the research related to the area of academic achievement is ever growing concern of the researchers, educationists and educational administrators.
In the present day, education is viewed seriously that there is every need to raise the standards of the pupils at all levels. A concerted effort is to be made to identify some of the significant socio-psychological factors that influence the academic achievement of the student and to explain the contribution of these factors.

An interesting feature observed is that majority of the studies in the area of scholastic achievement were confined to the simple correlation analysis between predictors and criterion variables. Individual and cumulative effects of several independent variables on the scholastic achievement could be assessed more accurately by employing regression analysis. Therefore the main aim of the present study is to identify, the influence of independent factors and to predict the multiple effect of independent factors on the achievement of IX class students, in physical sciences, with the help of various socio-psychological factors and further to suggest suitable regression equations, in the prediction of scholastic achievement. The study also aims at making some recommendations for further study in the field and some suggestions for teachers.

The above crucial conditions lead the investigator to make an attempt in this area of scholastic achievement of IX class pupils in physical sciences in relation to certain psycho-sociological factors.

6.1.6 Objectives of the study

The present study has the following objectives:

1. To understand the present status of IX class students with regard to their achievement in Physical sciences.

2. To study the influence of the variables Educational Divisions, Sex, Caste and their interaction on scholastic achievement in physical sciences.

3. To study the influence of the variables Age, Religion, Nativity and their interaction on the scholastic achievement in Physical sciences.

4. To establish a relationship of scholastic achievement with Socio-demographic variables like, Income of the family, Father’s Education, Father’s Occupation, Mother’s Education, Mother’s Occupation, Number of children, Birth order, Number of members in the family, Economic position, Separate room for studies, Study hours at Home and works at Home.
5. To study the impact of Study habits on the scholastic achievement of IX class students in physical sciences.

6. To study the impact of self-concepts on the scholastic achievement of IX class students in Physical sciences.

7. To study the impact of personality factors on the scholastic achievement of IX class students in Physical sciences.

8. To predict the scholastic achievement of IX class students in Physical sciences with the help of different sets of variables namely socio-demographic variables, study - habits, self - concepts and personality factors.

9. To predict the scholastic achievement of IX class students in Physical Sciences with the help of all the 51 independent variables in the investigation.

10. To develop mathematical equations for predicting the scholastic achievement of IX class students in Physical sciences.

11. To summarize the findings of present investigation

12. To make appropriate recommendations on the basis of findings of the present investigation.

13. To provide suggestions for further investigation.

6.1.7 Hypotheses to be tested

On the basis of the above objectives the following hypotheses were formulated for testing.

1. All the IX class students would not have the same scholastic achievement abilities in physical sciences.

2. Educational Divisions, Sex, Caste, and their interactions would not have any significant influence on the scholastic achievement of IX class students in physical sciences.

3. Age, Religion, Nativity, and their interactions would not have any significant influence on the scholastic achievement of IX class students in physical sciences.
4. Socio – Demographic variables would not have any significant influence on the scholastic achievement of IX class students in physical sciences.

5. Study habits would not have any significant impact on the scholastic achievement of IX class students in physical sciences.

6. Self-concepts would not have any significant impact on the scholastic achievement of IX class students in physical sciences.

7. Personality factors would not have significant influence on the scholastic achievement of IX class students in physical sciences.

8. It would not be possible to predict the scholastic achievement with the help of different sets of variables namely socio-demographic variables, study habits, self-concepts and personality factors.

9. It would not be possible to predict the scholastic achievement with the help of all the 51 independent variables.

10. It would not be possible to develop mathematical equations for predicting scholastic achievement in physical sciences with the help of different sets of independent variables.

11. None of the independent variables in this investigation turns out to be a significant predictor of scholastic achievement of IX class students in physical sciences.

6.1.8 Variables Included in the study

On the basis of study of literature, it has been found that the achievement of students in all classes in physical sciences in general and IX class in particular depends on several factors. The investigator has selected the following Psycho – Sociological variables for the present study. Out of total variables, 51 are independent variables and one is dependent variable. Eighteen were personal and socio-Demographic variables for which information was gathered through a personal data sheet.
A. Dependent Variable

The scores obtained by all the subjects (all the students of the sample) in the achievement test, in Physical sciences, constructed and standardized by the investigator has been taken as dependent variable.

B. Independent Variables

The independent variables studied in this investigation are given below.

I. Socio-Demographic variables (1-18)

The socio-demographic variables included in the present investigation are:

1. Educational Divisions
2. Age
3. Income of the Family
4. Father's Education
5. Father's Occupation
6. Mother's Education
7. Mother's Occupation
8. Number of Children
9. Birth Order
10. Number of members in the family
11. Sex
12. Religion
13. Caste
14. Nativity/Locality
15. Economic position
16. Separate room for study
17. Study Hours at Home
18. Works at Home
II. Study Habits (19-26)

Study Habits questionnaire consisting of seven areas,

19. Home environment
20. Reading and note taking
21. Planning for reading subjects
22. Habits of concentration
23. Preparations for examinations
24. General Habits and attitudes
25. School Environment
26. Study Habits total score

III. Self-Concepts (27-37)

Self-Concept questionnaire consisting of 10 areas.

27. Health and sex Appropriateness
28. Abilities
29. Self-confidence
30. Self-acceptance
31. Worthiness
32. Present, Past, future
33. Beliefs and convictions
34. Feelings of shame and guilt.
35. Sociability
36. Emotional Maturity
37. Self-concepts total score

IV. Personality Factors HSPQ (38-51)

In the present investigation High School Students Personality Questionnaire (HSPQ) consisting of 14 personality factors is used. The 14 personality factors are:
38. Factor-A
39. Factor-B
40. Factor-C
41. Factor-D
42. Factor-E
43. Factor-F
44. Factor-G
45. Factor-H
46. Factor-I
47. Factor-J
48. Factor-O
49. Factor-Q₂
50. Factor-Q₃
51. Factor-Q₄

6.1.9 Research Tools

1. The investigator has developed Objective Achievement Test (OAT) and standardized to measure the achievement in Physical sciences of IX class students.

2. Study-Habits inventory developed and standardized by Dr.B.V.Patel (1975), is adopted to study the influence of study habits of the pupils on the dependent variable, (Achievement in physical sciences).

3. (Miss) Mukta Rani Rastogi's (1974) self-concept scale is adopted to measure the self-concepts of the students.

4. Cattell's 14 personality factors, Form-A (HSPQ) is adopted to measure the personality traits of the students.

5. Personal Data Questionnaire is developed by the investigator with the help of experts in the field of education, to measure the socio demographic variables.
6.1.10 Sample Selected

After the construction, standardization and adoption of all the test tools, the investigator has planned for the selection of the sample for the final study. The Chittoor district is divided into four educational divisions namely, Madanapalle, Puttur, Chittoor and Tirupati. The investigator selected 36 (Thirty six) schools, in the four educational divisions, following the stratified random sampling procedure. The sample for pilot study is 370 and the sample for the final study is 1800 students of IX class studying in the academic year 2008-2009.

6.1.11 Collection of Data

The investigator personally visited all the schools selected for the study and explained the heads of the institutions the purpose of collecting the data. The students were given necessary instructions and motivated to respond genuinely. Advance intimation about the visit of the investigator was provided to the Head Master and the students. The students, who attended the schools, on the days of collecting data are considered for the purpose of investigation. All the necessary data was collected with the help of the data gathering instruments and teachers of the concerned schools.

6.1.12 Scoring and Analysis

1. The objective achievement test consists of one hundred multiple choice questions and each correct response is awarded with one mark.

2. The study habits inventory is scored on a five point scale by giving weight-ages 5,4,3,2 and 1 for positive items and 1, 2, 3, 4, and 5 for negative items to the five alternatives namely; always, often, some times, rarely and never respectively. The self concept scale is scored in a similar manner to the five alternatives namely strongly agree, agree, undecided, disagree and strongly disagree.

3. For the 14.PF personality questionnaire, the scoring key prepared by the author is employed.
The total scores for each area of respective inventories are entered and grand total is obtained by adding all the weightages, on all the statements and marked them on the top right corner of the inventory.

4. The information furnished by the students on socio-demographic variables is numerically coded in order to suit for the computer analysis.

The total scores obtained by each of 1800 students on all the variables were computed. The analysis is carried out on the basis of objectives of the study and hypotheses formulated, by employing appropriate statistical techniques.

To understand the nature of the distribution, descriptive statistics such as Mean, Median, Mode, Range, Quartile Deviation, Standard Deviation, skewness, kurtosis, coefficient of variation and standard error of mean were computed wherever necessary. Frequency distribution tables are prepared for the total sample, for educational divisions, for boys and girls and for different castes.

The inferential Statistical Techniques ‘t’ test and ‘F’ test are employed to test the different hypotheses. Multiple ‘R’ is computed for carrying out stepwise regression analysis, for predicting the scholastic achievement with the help of different sets of independent variables. Necessary graphs were also used for presenting the data.

The levels of significance employed with respective symbols are given below.

** Indicates significant at 0.01 level

* indicates significant at 0.05 level

@ indicates not significant at 0.05 level

6.2 Major findings of the study

The statistical analysis of the data reveals the following broad findings of the investigation.
A. Distribution characteristics of scholastic achievements scores.

1. The mean scholastic achievement score of IX class students in physical sciences for the whole group is 35.55. Hence the performance of the students is poor. Median is 33.00 and mode is 27.90. Hence the distribution is not normal. It is more peaked than the normal distribution.

2. The values of skewness and Kurtosis are 0.81 and 3.53 respectively. Hence the distribution of the scholastic achievement scores for the total sample is positively skewed and leptokurtic.

3. It is found that the mean scholastic achievement scores for the pupils of Puttur educational division schools is the highest (43.52) among all the groups viz (i) whole group (ii) Madanapalle division schools (iii) Puttur division Schools (iv) Chittoor division Schools (v) Tirupati division schools (vi) Girls (vii) Boys (viii) schedule caste/tribes (ix) Backward castes and (x) other castes. The mean scholastic achievement score for the students of Madanapalle division schools is the least (31.80), as compared with other groups. The performance of Girls (36.43) is better than that of Boys (34.80). It is also noticed that the performance of B.C. students (36.09) is better than O.C Students (35.58) and S.C/ST (34.46) students. For all the distributions, the value of skewness is positive. Hence all the distributions are positively skewed. The values of kurtosis for the students of puttur division schools (2.06), Chittoor division schools (2.99) and girls(2.65) are less than the normal value (3.00) and hence the distributions are platykurtic. The value of kurtosis for the remaining groups is more than 3.00 and hence the distributions are leptokurtic. The value of kurtosis for the students of Tirupati division schools (5.76) is the highest among all the groups and the distribution is highly leptokurtic. For the remaining groups, the values of kurtosis are slightly greater than the normal value (3.00) and hence the distributions are slightly leftokurtic.
B. Factorial Designs

4. There is a significant influence of main effects namely, Educational divisions, Sex and Caste on the scholastic achievement of IX class students in physical sciences at 0.01 level of significance.

5. There is a significant interaction effect of Education Divisions x Caste at 0.01 level on the scholastic achievement of IX class students in Physical sciences.

6. There is no significant interaction effects of Educational Divisions x Sex x Caste at 0.05 level on the scholastic achievement of IX class students in Physical sciences.

7. There is no significant main and interaction effects of Age, Religion and Nativity on the Scholastic Achievement of IX class students in Physical sciences.

C. Influence of Socio-Demographic and Personal variables

8. Educational Divisions, Annual income and Sex have significant influence at 0.01 level on the Scholastic Achievement of IX class students in Physical sciences.

9. Birth order and Caste have significant influence at 0.05 level on the Scholastic Achievement of IX class students in Physical sciences.

10. Father's Education, Father's Occupation, Mother's Education, Mother's Occupation, Number of children, Total members in the family, Religion, Nativity, Economic position, Separate room for study, Study hours at home and works at home do not have significant influence at 0.05 level on the Scholastic Achievement of IX class students in Physical sciences.
D. Influence of Study Habits

11. All the seven areas of study habits and total score on study habits have significant influence at 0.01 level on the scholastic achievement of IX class students in Physical sciences. It is observed that the students with better study habits achieved significantly better in physical sciences.

E. Influence of Self-Concepts

12. It is found that the computed values of ‘F’ for the self-concepts namely (i) Health and sex appropriateness(SC1) (ii) Abilities (SC2), (iii) Worthiness (SC3), (iv) present-past-future (SC6), (v) Beliefs and convictions (SC7), (vi) Emotional Maturity (SC10) and (vii) Self-concepts total score (SC7), are far greater than the critical value of ‘F’ (4.60) for 2 and 1797 df at 0.01 level of significance. It is clear from the mean values that who are better in Health and Sex appropriateness, Abilities, Worthiness, Present-Past-Feature, Believes and convictions and total self-concepts are also significantly better in scholastic achievement of IX class students in physical sciences.

13. It is found that the computed values of ‘F’ for the Self-Concepts namely (i) Self confidence (SC3) and (ii) Sociability (SC9) are greater than the critical value of ‘F’ (2.99) for 2 and 1797 df at 0.05 level of significance.

14. The areas of self-concepts namely (i) Self acceptance (SC4) and (ii) Shame and Guilt (SC8), do not have significant influence at 0.05 level on the scholastic achievement of IX class students in physical sciences.
F. **Influence of Personality Factors (HSPQ)**

15. It is found that the computed values of 'F' for the Personality Factors namely (i) Factor (B): Less Intelligent vs. More Intelligent; (ii) Factor, (D): Phlegmatic vs. Excitable; (iii) Factor (E): Obedient, Mild, Conforming, submissive vs. Assertive, Independent, Aggressive, Stubborn, Dominant; (iv) Factor (H): Shy VS. Venturesome (v) Factor (I): Though Minded VS. Tense Minded and (vi) Factor (Q3): Undisciplined Vs controlled are far greater than the critical value of 'F' (4.60) for 2 and 1797 df at 0.01 level of significance. Hence the above personality factors have significant influence on the scholastic achievement of IX class students in physical sciences.

16. It is found that the computed values of 'F' for the Personality Factors namely; (i) Factor(A): Reserved vs. outgoing and (ii) Factor (F): Sober Vs. Happy - Go-Lucky, Gay Enthusiastic, Impulsively lively are greater than critical value of 'F'(2.99) for 2 and 1797df at 0.05 level of significance. Hence the above personality factors have significant influence on the scholastic achievement of IX class students in physical sciences.

17. It is found that the computed values of 'F' for the Personality Factors namely;(i) Factor (C ): Emotionally Less Stable vs. Emotionally Stable (ii) Factor (G): Moral standards Vs. super ego-strength (iii) Factor (J): Vigorous Vs Doubting (iv) Factor (O): Placid Vs Apprehensive (v) Factor (Q2 ): Group dependent Vs self-sufficient and (vi) Factor (Q4): Relaxed Vs Tensed are less than the critical value of “F” (2.99) for 2 and 1797 df at 0.05 level of significance. It is concluded that the above personality factors do not have significant influence on the scholastic achievement of IX class students in physical sciences.
G. Step-Wise Multiple Regression Analysis

18. It is found that the best regression equations for predicting the scholastic achievement in Physical sciences of IX class students are:

i) With the help of 18 socio-demographic variables

\[
ATS = 42.588 - 2.82 (I) - 0.97 (ED) - 1.35 (S) - 1.05 (FOP) + 0.65 (BO) - 1.46 (SR) + 0.64 (C) + 1.28 (FE)
\]

The variance explained with the help of the above 8 variables is 2.90 per cent of variance in the dependent variable ATS. Hence it is concluded that ATS test in physical sciences could best be predicted with the help of the above 8 variables among the eighteen (1-18) socio-demographic variables.

(ii) With the help of 7 areas of study habits.

\[
ATS = 16.630 + 0.17 (SHT) - 0.54 (SH_2) + 0.27 (SH_3) + 0.19 (SH_7) + 0.16 (SH_4)
\]

The variance explained with the help of the above 5 variables is 7.29 per cent in the dependent variable i.e. scholastic achievement in physical sciences.

(iii) With the help of 10 areas of self-concepts.

\[
ATS = 14.010 + 0.40 (SC_2) + 0.24 (SC_1) - 0.30 (SC_{10}) + 0.20 (SC_5) + 0.16 (SC_3) + 0.20 (SC_7)
\]

The variance explained with the help of the above 6 variables is 6.15 percent in the dependent variable i.e. scholastic achievement in physical sciences.

(iv) With the help of 14 personality factors.

\[
ATS = 18.377 + 1.118 (FB) + 0.400 (FQ3) + 0.145 (FH) + 0.338 (FD) - 0.189 (FE) + 0.145 (FF) + 0.127 (FI)
\]

The variance explained with the help of the above 7 variables is 9.90 percent in the dependent variable.

(V) With the help of all independent variables in the study
ATS = 1.714 + 0.99 (FB) + 0.33 (SC2) + 0.36 (FQ3) + 0.36 (FD) + 0.31 (FH) + 0.21 (SHT) – 0.50 (SH2) – 2.75 (I) – 1.03 (ED)

With the help of the above nine variables, it is possible to explain 17.64 percent of variance in the dependent variable namely scholastic achievement in physical sciences.

It is concluded that the achievement in Physical sciences could be best predicted with the help of (i) Personality Factor-B (FB) (ii) Abilities (SC2) (iii) Factor Q3 (FQ3) (iv) Factor D (FD) (v) Factor H (FH) (vi) Study Habits Total score(SHT) (vii) Reading and note taking(SH2) (viii) Income of the family (I) (ix) Educational division(ED).

19. A model of relationship between independent variables and dependent variables is shown in Fig.9.

![Fig. 9: Model of Relationship between Independent and dependent variable](image)

6.3 CONCLUSIONS

On the basis of the findings in the preceding pages, the following conclusions are drawn:
1. The frequency distributions of the scholastic achievement of IX class students for the whole group is not normal. It is more peaked than the normal distributions.

2. All the IX students do not have the same scholastic achievement abilities.

3. There is a significant influence of Educational divisions, Sex and Caste on the scholastic achievement of IX class students in Physical sciences. Puttur division students, girls and back ward caste students performed significantly better than their respective counterparts.

4. It is concluded that there is significant interaction effect of Educational divisions x Caste, on the scholastic achievement of IX class students in Physical sciences.

5. There is no significant main and interaction effects of Age, Religion and Nativity on the scholastic achievement of IX class students in Physical sciences.

6. Annual income of the family and Birth order have significant influence on the scholastic achievement of IX class students in physical sciences. The annual income group Rs.25,000 to Rs.50,000 performed significantly better than the other two groups namely below Rs.25,000 and above Rs.50,000 groups of students. Birth order 1 students performed significantly better than the other two groups of students namely birth order 2 and 3 and above.

7. Father's education, Father's occupation, Mother's education Mother's occupation, Number of children, Total members in the family, Economic position, Separate Room for study, study hours at home and works at home do not have significant influence on the scholastic achievement of IX class students in Physical sciences.

8. All the seven areas of Study Habits Inventory (SHI) and the total score of SHI have significant influence on the scholastic achievement of IX class students in Physical sciences. Better study habits is associated with better scholastic achievement of IX class students in Physical sciences.
9. It is found that the self-concepts namely; i) Health and sex appropriateness (SC₁), ii) Abilities(SC₂), iii) Self-confidence(SC₃), iv) Worthiness (SC₄), v) Present-past-future (SC₅), vi) Beliefs and convictions (SC₆), vii) Sociability (SC₇), viii) Emotional Maturity (SC₈) and ix) Self-Concepts total scores, have significant influence on the scholastic achievement of IX class students in Physical sciences. Better Self-concepts are associated with better scholastic achievement in Physical sciences.

10. The personality Factors namely, A, B, D, E, F, H, I, and Q₃ have significant influence on the scholastic achievement of IX class students in Physical sciences. It is concluded that students with personality characteristics namely, (i) Out going (ii) More intelligent (iii) Excitable (iv) Obedient, Mild, Conforming, Submissive,(v) Happy go lucky, Enthusiastic, Lively, (vi) Venturesome, (vii) Tense minded and (viii) Controlled have performed significantly better than the students with personality characteristics namely (i) Reserved, (ii) Less intelligent, (iii) Phlegmatic, (iv) Assertive, Independent, Aggressive, Stubborn, Dominant, (v) Sober, (vi) Shy,(vii) Though minded and (viii) Undisciplined.

11. It is possible to predict the scholastic achievement of IX class students in Physical sciences, with different sets of socio-demographic and psychological variables.

12. It is also possible to predict scholastic achievement of IX class students in Physical sciences with the help of all the 51 independent socio-demographic and psychological variables.

6.4 EDUCATIONAL IMPLICATIONS AND RECOMMENDATIONS

After analyzing the results of the study carefully, the following implications can be drawn. It is seen from the study that the general performance in Physical sciences of IX class pupils is poor viz below fifty percent. Physical sciences plays a crucial role in the life of students. To improve the achievement in Physical sciences at IX class level, efficient, dedicated, honest and committed teachers of Physical sciences are to be recruited. Plans are to be made to design more physical sciences activities, as curricular inputs, to eliminate the fear of Physical sciences in children. The knowledge of Physical sciences at secondary level forms the basis for Physical sciences at higher education and hence combined efforts by Physical sciences
teachers, parents, educational administrators, inspecting authorities and government, may be made for ensuring the quality of education is Physical sciences for all the children. Special programmes such as providing additional information, encouragement to participate in competitive tests and providing suitable study material, participation in science fairs, quiz programmes, visiting science museum, scientific laboratories, field trips, etc may be taken to safeguard the interests of those students, who want to specialize, in the area of Physical sciences and related branches. The teachers in general should posses the knowledge of results of research findings. They must know which of the psycho-sociological factors that influence the achievement in Physical sciences and act accordingly to improve the achievement in Physical sciences.

On the basis of the results of this investigation, the following recommendations are made.

1. The achievement in Physical sciences of IX class students is very poor in Madanapalle Division, especially in boys that too in SC/ST students, special attention should be paid to improve the achievement in Physical sciences by parents, teachers, managements, administrators and Government.

2. Proper positive attitude towards the subject must be laid down by the concerned teachers. Without positive attitude, it is rather difficult to raise the standards.

3. Fear of the subject, test-anxiety and tension should be removed by proper counseling and guidance by the teachers.

4. Pupils must be made aware of the importance of the subject, uses of the subject in daily life, its correlation with other subjects and thereby interest in the subject must be aroused by the teachers.

5. More importance is to be given for making the concepts in the subject clear, understanding of the formulae and applying the formulae.

6. Sufficient number of oral questions on the subject are to be put and answers may be elicited from the pupils, while teaching.

7. More number of tests, with objective questions namely multiple choice, filling up the blanks, matching type and true or false, are to be conducted.
8. Special training must be given to the students to face different competitive examinations and the students must properly be encouraged to face such examinations.

9. It is observed that the performance of the students belonging to the Madanapalle Division schools is very less. This may be due to the vacant posts of Physical sciences teachers, lack of proper supervision, lack of commitment on the part of the teachers and lack of proper infrastructural facilities in the schools. Parents, teachers, administrators and government have to put up a combined effort to raise the standards in Madanapalle Division schools, thereby creating confidence among the parents. More competitive, highly qualified and dedicated teachers are to be recruited for the posts of Physical sciences teachers in this Division.

10. It is also observed from this study that the achievement of SC/ST and OC Students is less, when compared with BC Students. Therefore special attention should be paid towards SC/ST and OC students. Extra classes and suitable remedial measures for SC/ST and OC students are to be taken by all the concerned teachers, to raise their achievement levels.

11. It is observed that performance of girls is significantly better than Boys. Healthy and proper competitive spirit may be developed among boys in their academic activities.

12. Middle annual income group performed significantly better than low and high income groups of students, parents and teachers should be taken special care about low and high income groups of students. The parents are advised to supervise the studies of their wards at home.

13. Students may suitably be provided with proper study facilities at home and at school, by the concerned.

14. It is found that all the seven areas of study habits are positively related with the scholastic achievement of pupils. Hence proper study habits may be developed in the pupils for better achievement both at home and at school.

16. The following personality characteristics may be developed among the IX class pupils, through counseling and guidance for better scholastic achievement in Physical sciences. i) Out going, ii) More-intelligent, iii) Excitable, iv) Obedient, Mild, Controlled, Submissive v) Happy go lucky, Enthusiastic, Lively, vi) Venture some, vii) Tense Minded and viii) Controlled.

17. The investigator, with the present scientific investigation, combined with his vast experience feels that proper commitment on the part of the teacher, handling of the subject, his potentialities and humor, his efforts in developing positive attitude towards the subject, his motivational efforts, his efforts in making the students to realize the importance of the Physical sciences and its usefulness, its relation with other subjects and its practical values in the daily life of human-beings; lowest or highest class of the society and narrating often and often some interesting and important events from the life history of famous physical sciences scientists would help create interest in the subject and thereby improvement in achievement of Physical sciences can be made possible.

18. The combined efforts of teachers and parents in developing good study habits at the early stage of a child, would be fruitful.

19. Further majority of the students have test-anxiety in Physical sciences and hence this anxiety is to be removed by proper guidance and counseling and also by involving scientific activities.

20. Parents must constantly encourage the children towards their education, know their interests and aptitudes and safe guard their interests.
6.5 DELIMITATIONS OF THE STUDY AND SUGGESTIONS FOR FURTHER RESEARCH

The following delimitations and suggestions are considered for further investigation.

1. The present study is confined only to 1800 students. Future researchers may undertake studies with large samples.

2. This study is confined only to Chittoor District. It may be extended for other districts of Andhra Pradesh and other states of the country.

3. This study is confined only to IX class students. It may be extended to other classes, lower or higher viz 6th, 7th, 8th and 10th classes, Intermediate course and Degree levels.

4. This investigation is limited to Physical sciences subject only. This kind of research in different school subjects can be planned to plug the weak areas in the respective subjects.

5. The tool used for measuring the achievement in Physical sciences is developed and standardized by the investigator. Therefore, it is suggested that standardized tools, for measuring the achievements in different subjects should be developed for repeated use, by different researchers, keeping in view, the existing syllabus in school subjects.

6. Only very few socio-demographic variables and psycho-sociological variables are used in the present study. Some other variables like attitude of teachers towards the subject, attitude of students towards Physical sciences, facilities in the school, parental involvement in the education of their children, teachers qualifications and merits, regularity of students etc may help to know their impact on achievement in Physical sciences.

7. Studies to estimate the influence of course content, books available, availability of guide material for teachers, laboratory facilities for Physical sciences, may be undertaken.
8. A longitudinal study may be conducted in order to prove that good scholastic achievement, in secondary level, will lead to the corresponding success in higher levels.

9. Studies to estimate the influence of medium of instruction may be undertaken.

10. Studies related to the 'Commitment of Physical sciences Teachers' may be undertaken, keeping in view their teaching style, completion of syllabus on time, taking special classes for backward students, conducting of periodical tests and evaluating them, maintaining cordial relations with students and parents etc.

11. Studies related to the teacher – pupil ratio may be undertaken to know the impact of this ratio on the achievement in Physical sciences at IX class and higher levels.

12. The government is spending huge amounts of money on in-service training programmes of Physical sciences teachers and other subject teachers. Hence studies may be undertaken to know the impact of these in-service training programmes on the achievement of students in Physical sciences at IX class level or other levels.

13. Studies may be conducted to know the impact of higher qualifications of Physical sciences teachers on the achievement in Physical sciences of IX class students.

14. Studies may be conducted to know the various causes for under-achievement in Physical sciences at IX class level, so as to enable school administration to take suitable remedial measures.