Chapter VI

Summary, Findings and Conclusions
CHAPTER VI

SUMMARY, FINDINGS AND CONCLUSIONS

6.1. SUMMARY:

Education is found to be an effective tool to bring the required changes in the society. The Education Commission (1964-66) has emphasized that education is the one and the only instrument that can be used to bring about a change towards the social and economic betterment of India.

The modern world is a scientific world and today science is everybody's concern. At this stage one can not think of a world without science. In the words of Joseph Gallant (1980) "The most conspicuous aspect of our civilization today is the pervasive and ramifying impact of science in every department of life from household management to warfare." Such a remarkably amazing achievement of science as in the present century did never occur before in the long history of human civilization.

In view of the important role of science in the modern world it has been imperative for any nation or the world to promote science education in their respective countries. It is not possible for us to expect improved science education in the higher institutions of science and
technology unless we succeed in providing a sound science education in schools.

Achievement of the student is the most significant aspect in educational system. Among different areas of research in education academic achievement to be one of the most extensively investigated phenomenon. The standard of education at schools, colleges in turn would be reflected by the performance of pupils in their academic subjects. Academic achievement is the main concern of our educationists and the government. Achievement of the student depends upon several sociological, psychological, environmental aspects. This fact was established by several investigations in our country and abroad.

In the present day education it is seriously viewed that there is every need to raise the standards of the pupils. A concerted effort was made to identify some of the significant socio-psychological factors that influence the academic achievement of the students and to explain the contribution of these factors. It was also aimed at formulating a meaningful equation to predict academic achievement in science VIII class students with the help of socio-psychological factors.
6.1.1. STATEMENT OF THE PROBLEM:

The present study is entitled "A Study of Pupil's Achievement in Science in Relation to Certain Socio-psychological Variables". It examines the relationship between the achievement in science on one side and the personal and demographic variables on the other. It is also aimed at establishing possible relationships between role expectations and science achievement, scientific aptitude and science achievement, and possible solution for the prediction of science achievement.

6.1.2. OBJECTIVES OF THE STUDY:

The study outlines the following objectives:

1. To understand the present status of secondary school students with regard to their achievement in science.

2. To study their role expectation as perceived by themselves.

3. To study the scientific aptitude of secondary school students.

4. To identify some of the personal and situational variables influencing academic achievement, role expectations and scientific aptitude of secondary school children.
5. To study the influence of role expectations and scientific aptitude on the science achievement of school children.

6. To identify some of the socio-psychological variables that significantly predict the academic achievement.

6.1.3. HYPOTHESIS FORMULATED:

On the basis of the above objectives the following major hypothesis were formulated for testing. The hypothesis are set up in null form as this form of hypotheses is akin to the legal principle that man is innocent until he is proved guilty (Garrett, 1966; Guilford and Eruchter, 1978).

1. There would be no significant influence of personal and demographic variables on role expectations of the students (each variable will be considered independently).

2. There would be no significant influence between the personal and demographic variables and scientific aptitude of the students (each variable will be considered separately for analysis).

3. There would be no significant influence between the personal and demographic variables and the academic achievement of the students (each variable will be
considered separately to study its influence on achievement).

4. The role expectations of students and their scientific aptitude could not significantly influence their level of achievement in science.

5. It would not be possible to predict the achievement in science with the help of personal, social and psychological variables.

6.1.4. VARIABLES INCLUDED:

The review of literature in the field of academic achievement reveals the fact that the academic achievement of students has been influenced by a number of sociological and psychological variables collectively. Hence, the following personal, social and psychological variables are included in the study.

6.1.4.1. PERSONAL AND SOCIAL VARIABLES:

Gender, Caste, Age, Locality, Type of Management, Type of Residence, Type of Hobby, Size of the Family, Birth Order, Father's Education, Mother's Education, Father's Occupation, Mother's Occupation and Income of the Family.
6.1.4.2. PSYCHOLOGICAL VARIABLES:

1. Pupil’s role expectations (as perceived by the students).
2. Scientific aptitude of the students.

6.1.4.3. DEPENDENT VARIABLE: Achievement in Science.

6.1.5. MEASUREMENT OF VARIABLES:

Out of 17 variables (both independent and dependent) included in the study 14 are personal and demographic variables, for which information was gathered through a personal data sheet. The remaining three variables were measured with suitable instruments. Among these instruments (1) To measure pupil’s academic achievement in science an achievement test was developed by the investigator; (2) To measure pupil’s role expectations, (a role expectation scale) as perceived by the students a tool developed and standardised by Dr. Jagannadhan (1983), Department of Education, S.V.University, Tirupati was adopted; (3) To measure scientific aptitude of the students a scientific aptitude test battery (SATB) developed by Agarwal published by National Psychological Corporation, Agra (U.P) was translated, standardised and adopted for the purpose. (4) Personal data sheet was developed by the investigator to obtain information from the students with
their personal characteristics, like, sex, age, birth order, caste, hobby and home conditions like type of family, and whether residing with parents/relatives or residing in the hostel, and school conditions like type of management of the school, and locality and socio-economic factors of their family like parent’s education, occupation and income. Care was taken to include suitable items to obtain adequate personal information regarding all the variables included in the study.

6.1.6. SAMPLE SELECTED:

The sample for the present study has to be selected from a large population spread all over the S.V.University area, stratified random sampling technique was adopted. Out of 23 schools under different managements and situated in different localities consisting of 214 boys and 246 girls were formed as a sample for the study (N=460).

6.1.7. COLLECTION OF DATA:

The investigator personally visited all the schools included in the sample and good rapport was developed with all the Heads of the institution. All the data gathering instruments were administered to the sample towards the end of the academic year.
6.1.8. SCORING:

All the responses are scored conveniently with the help of scoring key prepared by the concerned authors. The obtained scores were entered on the top right side of the response sheet.

6.1.9. ANALYSIS:

The total scores obtained by each of 460 students on all the variables were computed. The data were carefully analysed by employing appropriate statistical techniques.

To understand the nature of the distribution of academic achievement scores in science all the descriptive statistics such as mean, median, mode, range, quartile deviation, standard deviation skewness, kurtosis were calculated.

To study the influence of independent and demographic variables on academic achievement in science and role expectations, inferential statistics such as 't' test and 'F' test were employed. Finally step wise regression analysis was employed to identify the contribution made by each one of the independent variables on science achievement of VIII class students.
6.2. MAJOR FINDINGS OF THE STUDY:

1. In general the level of students' achievement in science was below average.

2. Regarding the role expectations of the students, majority of the students are possessed with moderate to high expectations about their own role performance.

3. The scientific aptitude prevailing among the VIII class high school children is very poor.

4. Among the 14 personal and demographic variables, sex, caste, age, locality, residential status, hobbies, birth order, size of the family, mothers education, fathers occupation, mothers occupation were not significant in influencing the students' role expectations. On the other hand, the variables like type of management of the school, fathers' education, and income of the family were found significant in influencing the students role expectations.

5. Among the personal and demographic variables, sex, age, type of management of the school, size of the family, birth order, mother's occupation were not significant in influencing the science achievement whereas the variables viz., Caste, type of locality, residential status, hobbies, father's education, mothers education,
fathers' occupation and income of the family has got significant influence on science achievement.

6. Among 14 personal situational variables residential status of the students, birth order, family size and mothers' occupation of the students could not significantly influence the scientific aptitude of the students and the remaining variables could exercise profound influence on scientific aptitude.

7. Both role expectations and scientific aptitude of the subjects had significant influence on the achievement in science.

8. About 60 per cent of the variance in science achievement could be explained by the bunch of 7 independent variables. They are role expectations, reasoning ability, science vocabulary, sex, birth order, fathers' education and numerical ability. However, the first 3 variables alone could explain 57 per cent of the variance in science achievement.

6.3. EDUCATIONAL IMPLICATIONS OF THE STUDY:

Although Science education has become an essential and predominant component of educative causes at all levels, the achievement performance of secondary school students
found to be alarmingly at low level. The Scientific advancement and technological development have become the pre-requisite condition for economic advancement of any nation. As this fact has been realised the all educationists across the world. The prominence of science education is gaining momentum year after year. On the other hand, the students performance in Science achievement tests is in the opposite direction i.e., decreasing to the bottom level. The reasons may be obvious. The curriculum of science education is revised periodically and upgrading and incorporating the most essential recent additions at different levels of education. However, the Science teachers are not well equipped in transacting the curriculum successfully due to non-availability of facilities, insufficient knowledge in the newly developed areas, lack of Scientific awareness among the children and their parents etc., resulting in the poor academic performance of the students in Science.

To overcome the present situation; 1) It is necessary to provide minimum facilities for effective science teaching in our secondary schools; 2) To provide both pre-service and inservice programmes to Science teachers so as to make them more confident in transacting all curricular and co-curricular activities related to science education; 3) Teacher guides to Science teachers are to be prepared along with the text books when ever there is
upgradation of curriculum in science; 4) There should be more awareness programmes in familiarising the new concepts in Science and their importance to human life through mass media. If such steps are taken by the concerned authorities, the status of science education in our secondary schools will improve and all the objectives of science education will be realised.

It is found that the students of secondary schools were possessed with moderate to high expectations about different roles that they ought to play as ideal students. Their perceptions about their own role play is positive. But their academic performance was not in line with their perceptions about their own role performance. This may be due to the natural phenomena of positive perceptions of human beings about their own actions. However, when the resultant behaviours are measured the gap will be more between the perceptions and actual performance.

To reduce this gap it is necessary to have counselling either individually or with a group to discuss loudly on different roles to be played by ideal students to make the students realise the causes for the gap between the expectations and the actual performance. But unfortunately in our system of education we do not have well trained counsellors to solve either personal or educational
and vocational problems faced by the students at any level. It is supposed that every teacher should act as a good counsellor too. But in practice most of the teachers are not fulfilled the counsellors role in their carrier. A very few teachers are capable of playing the role of counsellors effectively that too when the size of the class he handles is very small. However, in most of the situations the class size is far beyond the normal. Hence it is recommended that (1) the teachers should be trained thoroughly in guidance and counselling techniques; (2) Specially trained counsellors should be appointed at least one for a group of five to ten schools and (3) Referrel system should be maintained.

With regard to the scientific aptitude of the children it is observed that majority of them were possessed with very low level aptitudes. Probably this may be a very strong reason for their low achievement in Science. Therefore it is suggested that the significance of Science in human life and the importance of Science in the developmental process of any society are to be made known to everybody in the society through mass media techniques, which may create an awareness of scientific temperament. This awareness creates scientific aptitude (Scientific reasoning; Numerical ability; Science information and
science vocabulary) among the children which finally results in high academic performance in Science. The poor scientific aptitudes prevailing among school children should be eliminated at an early date so as to achieve high standards of Science education.

Among the 14 personal and demographic variables included in the study only 3 variables namely management of the school, fathers' education and income of the family could bring significant impact on the role expectations of subjects as perceived by themselves.

It appears that the educational level of the father happened to be a determining factor of the income of the family and thereby the type of management of the school where the child is to be educated. Higher the level of education of the father, higher would be the family income in general and such parents would prefer to educate their children in privately managed institutions where the cost is more. Thus these three variables could influence the perceptions on the role expectations.

The other variables such as gender, age, caste, locality, hobbies, birth order etc., could not cause for variations in the role expectations of the subjects.
The achievement level among the children studying in private schools was significantly high when compared to children studying in other publicly managed schools.

Thus, the financial status of the family determines the school, where the children are to be educated and the relationship between Role expectations and achievement will be positive among children from high income group families. The performance and the role expectations will go together with less gap. On the other hand among the children of low income and middle income group of families, who get their education through government, Municipal and Zilla Parishad schools, the gap between the performance and role expectations is very high.

The Science achievement of the subject of the subjects, was significantly influenced by caste, type of locality, residential status, hobbies, parents' educational, occupational level and the income of the family. Again all these variables are interconnected. The parents educational and occupational level appears to be a key variable to fix the family income thereby influencing the residential status and hobbies of the subjects. Apart from this, better education could be obtained by people of forward communities and mostly from urban localities.
Therefore it can be concluded that the children of those parents who are well educated, better placed occupation viz., receiving high income, residing in urban areas and belonging to forward communities could secure high percentage of marks in Science achievement test. Mostly they live with their parents and develop hobbies related to learning process. Naturally such children will have a better aptitude for Science and are able to score high on Science achievement test. The Science teachers are supposed to understand the family background of the child, home environment and socio-economic status, comprehensively and devise intervention programmes suited to different groups of children to improve the standard in Science education. If the cause and effect relationships among different variables of the subjects are known to the teacher, it would be possible to check out suitable remedial measures for enhancing the status of science education in our secondary schools.

Similarly, the scientific aptitude which is supposed to be a prerequisite for a better learning of Science should also be understood along with its correlates so as to create avenues to develop scientific aptitude among school children.
The study reveals that except three variables all other personal and demographic variables could influence the scientific aptitude significantly. This means the science teachers are supposed to understand these relationships to initiate the development of Scientific aptitude among the secondary school students.

Both role expectations and scientific aptitude were found to be significant variables in influencing the science achievement of the children. While predicting science achievement it was found that these two variables (role expectations and the two sub-tests of scientific aptitude namely reasoning test and science vocabulary test) could explain about 57 per cent of the variance in the dependent variable i.e., achievement in Science. Keeping this in mind the secondary school science teachers are to work out to create more number of creative programmes such as science in human life, scientific temperament, science clubs, science fairs, etc., through which the scientific aptitude may develop among the school children which could in turn influence their achievement in science positively. Thus the results of the present investigation will act as guiding principles for the development of the Science education at secondary stage.
6.4 LIMITATIONS OF THE PRESENT STUDY AND SUGGESTIONS FOR FURTHER RESEARCH:

1. This study is confined to only Science achievement. Studies related to the achievement of the other subjects may be undertaken on similar lines.

2. The present investigation included VIII grade children alone as a sample of subjects. Similar studies on other grade children may be taken up by future researchers.

3. There are many more correlates of achievement, other than the variables included in the present investigation. Studies including other such variables may be undertaken by the future researchers.

4. This study is limited to only S.V. University area. Similar studies may be planned to include in the state and also in the country.