CHAPTER SIX

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SUMMARY AND CONCLUSIONS

6.1 Summary

Introduction

The scientific and technological advancement of today is a long journey from the stone-age to the space-age. The discoveries in the field of information technology, space, biotechnology, genetic engineering, atomic energy, medicine, automobile, entertainment, education, communication, agriculture, defence, transport opened up many possibilities for further advancement. There is an explosion of information available to man leading to the bang of knowledge on all fronts. The pace of research and development is accelerated due to modern equipments, computers and internet for the welfare and betterment of human life. Science has shrunk the world as a global village and has contributed in changing the human life. Infact science now has all pervading influence on every sphere of human activity; further modern science is no longer confirmed to the surface of this globe. It has reached beyond the earth, on moon, mars and other planets in the solar system. Science has helped the man to acquire supremacy over the nature. This has made science more important than ever before.

Science also plays a vital role in the development of many qualities in the individual thereby helping him to be a good citizen in the society. Scientifically and technologically literate citizenry required in an increasingly democratic society. In this context relevant quality science education is a key tool to develop basic knowledge, life skills and critical thinking in people to participate meaningfully in the rapidly evolving world society.

Science is the effort to discover and increase human understanding of how the physical world works. Through controlled
methods, scientists use observable physical evidence of natural phenomena to collect data, and analyze this information to explain what and how things work. Such methods include experimentation that tries to simulate natural phenomena under controlled conditions and thought experiments. Knowledge in science is gained through research.

**Importance of Science**

As everyday dawns with scientific invention, this explosive expansion of scientific knowledge has penetrating influence on nation's economy. Today in our life we enjoy as a result of scientific inventions only.

Science content informed by a historical perspective enables the learner to appreciate how the concepts of science evolve over time. It also helps the learner to view science as a social enterprise and to understand how social factors influence the development of science. As science placed in the wider context of the learner's environment, local and global enable him to appreciate the issues at the interface of science, technology and society, and equipping him with the requisite knowledge and skills to enter the world of work. Science plays a vital role in the economic and social development of a country. Science is considered as the backbone of civilization.


**Science Education**

Science education occupies a very eminent place in curriculum both at school and university stages of education. Today's children are tomorrow's citizens. It is therefore essential to develop proper interests, abilities and appropriate skills in younger generations to prepare them for the use science and technology.

Education (1986), recognised science and technology as a key factor for economic development and for inculcating the basic human values.

Science education engages the learner in acquiring the methods and processes that lead to the generation and validation of scientific knowledge and nurtures the natural curiosity and creativity of the child in science. Thus, it helps the student in 'learning to learn' science.

In this era of Science and Technology, lot of information is generated; there is an explosion of information. Students have to pick up this information quickly in a very short period. We know that knowledge without understanding is not only useless but also harmful. Therefore grasping of information (knowledge) can be done only when they have interest and the abilities to learn science content.

**Objectives of Science Education**

The study of science gives pupils a better understanding of the things around them. It gives experience with the scientific method in solving problems. It also helps them better to adjust their methods of living to changes in the Science and Information Technology age. The science curriculum will be designed according to the objectives of the course. Many commissions and individuals have proposed different objectives of science teaching. In general the objectives of science education are:

1. Functional information of habits,
2. Functional concepts,
3. Functional understanding of principles,
4. Instrumental skills,
5. Problem solving skills,
6. Attitudes,
7. Appreciations and
8. Interests.

All the aims and objectives of science education directly or indirectly stress the importance of science abilities, scientific attitudes, scientific aptitudes, skills and interest in science.
Interest in Science

One of the major aims of teaching science is to create an interest in the subject. According to Tyron Edwards, To awaken interest and kindle enthusiasm is the sure way to teach easy and successfully.

Interest in Science is the liking of the students to learn science content and participate in science activities of school level. It is indicated by reading, collecting, studying or becoming involved in scientific activity as a leisure time pursuit.

A science teacher should know the interest of the students towards the science as a subject. Instructions should begin at the point of interest of the students and this cannot be accomplished unless the interest is known. To test the students’ interest in science the Science Interest Inventories are very useful. Students become involved in science content or activities that enable them to pursue and develop their interests. Sometimes, the interest in science is derived from the developed abilities of students in science.

Ability in Science

To develop science abilities among the students is the major objective of science teaching. Content of science develops certain abilities among the pupils such as thinking, reasoning, problem solving, ability to develop reliance on facts, ability to organise scientific activities, ability to form independent judgment, ability to evaluate, to generalize, ability to interpret data systematically, to classify things and other general as well as higher mental abilities.

Science Ability is a group of abilities in learning science content that is essential for the achievement in science subject at school level.

A science teacher should know the ability of the students in the science subject. Science teaching should cater the development of these abilities. To test the students’ ability in science the Science Ability Tests are very useful. When Science Abilities among the students are well developed these students may take interest in learning of science.
Interest and Ability in Science

As we know that the cognitive and affective domains are related with each other, we can not compartmentalise human behaviours clearly in terms of cognition and affect. The cognition and the affect can never be separated. Interest in science comes under affective domain and ability in science comes under cognitive domain. It is noticed that interest in science arises from increased information about science. Development of science ability through learning of science content brings about the increased motivation for the subject and therefore develops interest and attitudes. Thus, the affective objective- interest will be attained at the same time as the cognitive objective-abilities.

The rate of advancements in science and technology is so high that one needs to have a re-look at the strategies to cope with change and to be able to contribute towards the growth of new knowledge and its application. The young students have to be prepared to face the challenges of shrinking world, a growing technology dependent human life and fast growing scientific base. Keeping in view the present scenario and challenges of future, emphasis should be given on the nurture and development of interest and abilities in science within the students. As interest and abilities in science are related with each other, the students must take interest in the subject at the same time they must have ability to learn the subject.

Need and Importance of the study

Science teaching should be effective through which interest should be created and abilities should be developed. The students in whom the interest in science is created and developed, they pay attention toward science teaching. They select and perform the activities related to science, read the books on science, write about the science, listen and watch the programs related to science in this way, their knowledge about the science content increases. They get motivated for deep study; their involvement in science related activities increases.
After their school education many students want to select science side as a field of career. We require many scientists, doctors, engineers, technicians and skilled workers. Most of the jobs are related to the science base so these students get proper jobs in the field of science and some of them become tomorrow’s scientists. The others who do not take science as a field of career, after standard IX, the knowledge of science and attitude towards science will be less in them. But they should become science literate, which is a need of the day. In our daily life we interact with or use various scientific instruments which also require little bit knowledge of science. The future society will be the learning society; Most of the content in this lifelong learning will be related to science. If the student has ability and interest in science, he will be able to learn throughout the life easily and interestingly.

Tomorrow's society will be the knowledge society. There is an explosion of information which we have to convert into knowledge. This explosion is due to invention of the computers and the other inventions in the field of science and technology. Most of the information is again based on or related with science which we have to convert in the form of knowledge. Thus for this knowledge society, knowledge of science and technology is a must which we can get if we have interest and abilities in science.

In the school days, if interest and abilities in science are developed among the students, it is easy to prepare a knowledge based, lifelong learning citizen of the tomorrow’s society. Therefore at the school level interest and abilities in science among the students should be developed. For this the role of a science teacher is very important. Teacher should create an appropriate environment in the classroom, for effective teaching and learning, so that students should enjoy the learning and their interest in science will be developed. If the student takes interest in learning the science, teacher should teach the content of science for the development of science abilities. As students' interest in science develops it increases their involvement in science learning. They will try to collect the information related to science by various sources by their own. Thus their knowledge about science will
increase and their science abilities will develop. In turn, they will get better achievement in science subject. As a result students' interest and abilities in science at school level is very important. Therefore researcher decided to study the secondary school students' interest and ability in science.

Similarly after school education they have to decide their career. It means they are able to think about their career. School education is the preparation for higher education. Most of the skills are also developed at school level. Therefore the standard IX students were selected for this study.

Researcher went through the available standardized tests for measuring the interest of the students. Very few tests were available for measuring the interest of the students in science. Out of these tests he selected Dubey and Dubey's standardized Science Interest Test for measuring the interest of secondary school students in science. To measure the science achievement of standard IX students not a single standardized objective test in Marathi was available, therefore the researcher decided to develop a Science Ability Test. This test is based on the syllabus of standard IX Science subject given by the Maharashtra State Board of Secondary and Higher Secondary Education, Pune. Researcher used this test to measure students' achievement in science.

**Significance of the study**

Science knowledge and abilities help to sharpen our intellect and promote intellectual honest. It develops the positive attitudes like open-mindness, reasoning etc. Such positive attitude is quite helpful to an individual to understand, evaluate and solve many social problems he faces in life. It also helps him to lead a happy, successful and satisfying life. To develop such abilities in science individual should take interest in science. Thus, for building happy society and strong nation, development of interest and abilities in science among the people is important.
India is a developing country and we want to become a super power in the world by 2020. Our democracy will become more successful only when citizens of our country think logically, rationally and systematically; proper scientific attitude and abilities should develop among them. Today's children are tomorrow's citizens; therefore to develop scientific attitude and abilities among the children, they should take interest in science. This training should be given from childhood.

Science teacher is responsible to develop interest and ability in science among their students. When teacher has interest and ability in science then and then only they can arouse interest and develop ability in science among the students or vice versa. There are different types of superstitions and false beliefs that still prevail in Indian society. For example, an idol of Lord Ganesh drinks milk is one of the blind beliefs. For removing such superstitions and beliefs from the minds of students, the teacher should develop science abilities such as ability to identify cause-effect relationship, ability to think critically etc. For the development of such science abilities, student should take interest in science learning.

In our country, unemployment is one among the many important problems. In this new era of science and technology, there is large number of vocations in the fields of medicines, engineering, agriculture, para medicine, computers, communication technology, biotechnology, genetic engineering etc. for which study in science is a primary requirement. Thus, it becomes quite clear that to enter in such vocational course an individual must have ability in science in terms of achievement, which can be developed when individual takes interest in science.

Sometimes students have high ability but do not have interest in science or vice-versa. At that time they can not achieve their goal which will be decided with the help of either only ability or only interest. In such cases teacher can arouse interest within the students with high ability or develop ability of the students having more interest in science. Thus, development of interest and abilities in science among the
students as well as studying their relationship is very important and relevant to present day problems.

According to the educational researchers, more studies are needed in the area of science interest, science ability, science skills and their correlation.

In the present work, as researcher decided to study interest and ability in science and their relationship, he wants to take an opportunity to fulfill the need of science education.

Interest and ability in science plays vital role in developing awareness, scientific attitude, broadening scientific outlook among the students. This will be helpful for moulding a child's character, selecting a career and deciding courses in science. Therefore, every student at school level should possess interest and ability in science. This study will be useful to find students' actual interest and ability in science and their relationship. This information will be useful for effective teaching-learning of science subject and to improve science education.

The study is intended to find out interest of student in science and ability to learn science, as well as their correlation. It will be useful for the teacher, the counselors, the curriculum planners, the educational researchers, the parents of a student and most importantly the students. The present study is useful as follows-

I. Science Interest Test (SIT) will be useful -
   i. To test the interest of students in science subject.
   ii. To identify the students with high and less interest in science
   iii. To compare the students' interest with achievement in science at school level.
   iv. To guide the students regarding scientific or non-scientific academic courses during career guidance.

II. Science Ability Test (SAT) will be useful –
   vii. To test the ability of students in science subject.
   viii. To identify the student who is especially advanced or retarded in science abilities.
ix. To compare the students’ ability with interest in science at school level.

x. To guide the students regarding scientific or non-scientific academic courses during career guidance.

xi. To guide parents to a realistic and straightforward estimate of their wards’ developed ability in science.

xii. For grouping the students of roughly similar levels of ability in science for some instructional purpose.

vii. To compare science ability of students in one school or group with those of other or larger groups.

III. The study will be helpful to construct ability test for other subjects like Mathematics, Geography etc.

IV. The study will be useful to compare the Science interest or science ability with interest and ability in other subjects.

Statement of the problem

A study of relationship between interest and ability in science of secondary school students

Operational definitions of terms

i. Interest in science-

   It is the liking of the students to learn science content and participate in science activities of school level, which is indicated by reading, collecting, studying or becoming involved in scientific activity as a leisure time pursuit.

ii. Ability in science

   Ability in science is the power to perform mental or physical act related to science. It is a group of abilities in learning science content which are essential for the achievement in science subject at school level.

iii. Secondary school students

   The students studying in secondary classes (standard IX and standard X) of secondary school are the Secondary school students.
Objectives of the study

The objectives proposed for the present study were -

1. To measure students' interest in science by adapting Dubey and Dubey's Science Interest Test (SIT) in Marathi.
2. To measure students' ability in science by constructing achievement test, i.e. Science Ability Test (SAT).
3. To study students' interest and ability in science according to their sex, Socio-Economic Status (SES) and type of school.
4. To study the relationship between students' interest and ability in science.

Assumptions

The present study was based on the following assumptions:

1. Interest and ability plays a vital role in the learning of science content.
2. Interest in science is affective in nature while abilities in science are cognitive.
3. Interest and ability in science are interrelated.
4. Interest in science can be developed among the students through teaching and learning of the science content.
5. Abilities in science are learned mental behaviours i.e., the abilities are reinforced over a period of time due to increased emphasis on science abilities during teaching-learning.
6. Science interest and science ability are learned behaviours. When abilities are reinforced over a period of time, due to increased emphasis on science abilities during teaching learning it leads in development of interest in science and vice-a-versa.
7. Science teaching process leads to the development of interest and ability in science among the students.
8. Science interest and science ability can be measured by the tests.
Hypotheses

Following main hypotheses and sub hypotheses have been formulated and subsequently tested in this study-

1. **Secondary school students possess high interest in science.**
   1.4 There is no significant difference between science interest of boys and girls.
   1.5 There is no significant difference between science interest of students from middle and lower Socio-Economic Status.
   1.6 There is no significant difference between science interest of students from private aided and municipal corporation school.

2. **Secondary school students possess high ability in science.**
   2.4 There is no significant difference between science ability of boys and girls.
   2.5 There is no significant difference between science ability of students from middle and lower Socio-Economic Status.
   2.6 There is no significant difference between science ability of students from private aided and municipal corporation school.

3. **There is no significant correlation between interest and ability in science of secondary school students.**
   3.1 There is no significant correlation between interest and ability in science of boys.
   3.2 There is no significant correlation between interest and ability in science of girls.
   3.3 There is no significant correlation between interest and ability in science of students from middle Socio-Economic Status
   3.4 There is no significant correlation between interest and ability in science of students from lower Socio-Economic Status
   3.5 There is no significant correlation between interest and ability in science of students from private aided schools.
3.6 There is no significant correlation between interest and ability in science of students from municipal corporation schools.

Research Methodology

A. Method of Research

In the present work, to study the interest in science as well as ability in science descriptive survey method of research was used while to study the relationship between interest and ability the correlation method was used.

B. Sample

The sample consists of 1454 students in 29 Secondary schools in Pune city. Random sampling method was adopted for the selection of the schools, while purposive cum incidental sampling method was used for the selection of divisions and students from IX standard. Students from Higher socio-economic status were excluded from the study, since enough number was not available.

C. Tools for data collection

For the present study the researcher used three tools for the collection of data. Out of these tools, Science Interest Test is a standardized test, while Science Ability Test and Socio-Economic Status Scale are developed by the researcher. The tool were as follows-

1. Dubey and Dubey’s Science Interest Test (SIT) adopted in Marathi to measure the interest of students in science.
2. Science Ability Test (SAT) developed by the researcher to measure the achievement of students in science.
3. Socio- Economic Status Scale developed by the researcher to measure the socio- economic status of students.

D. Statistical techniques

The data collected by the tools was analyzed with the help of the various statistical techniques. To study the interest and ability in science, mean and standard deviation has been used. To test the significant difference between mean scores of different variables, t-test
has been used. To study the relation between students' interest and ability in science Pearson's Product Moment Correlation (r) has been used. The collected data also represented graphically with the help of the bar graphs.

**Scope and limitations of the study**

In this study researcher intends to find the interest of students in science as well as ability of students in science. The researcher also proposes to study the relationship between students' interest and ability in science.

The scope of this study was the students of secondary schools. The study has been limited to the following aspects only:

1. The schools following the syllabus of Maharashtra State Board of Secondary and Higher Secondary Education, Pune were considered for this study.
2. This study was also limited to the students studying in Marathi medium schools only.
3. The study was limited to the schools in Pune city only.
4. The private aided schools and the schools run by the Pune Municipal Corporation were taken for this study.
5. The study was limited to only IX standard students of secondary schools.
6. This study was related to interest and ability in science only.
7. Available standardized Science Interest Test of Dubey and Dubey was used after adopting it in Marathi for testing the interest of students in science.
8. For testing the ability of students in science researcher developed the Science Ability Test in which only 15 science abilities were considered.
9. The content coverage of Science Ability Test is based on the IX standard science subject.
10. The Socio-Economic Status Scale was also researcher developed tool used to categorize the students.
11. An attempt has been made to determine the relationship between interest and ability in science on one hand and other variables namely sex, Socio-Economic Status and the type of school on the schools.

12. The scope of this study is limited to the sample drawn from secondary schools of Pune city.

13. Randomization procedure was adopted only for the selection of the schools where the tool is to be administered and not for the total sample.

6.2 Findings

On the basis of analysis of obtained data, following are the findings of the study:

1. The mean of the Science Interest Test scores of all students is 45.77 which show that the secondary school students' interest in science is **above average**.

2. The mean of the SIT scores of boys is **44.65** and the mean of the Science Interest Test scores of girls is **46.80** which show that the girls have more interest in science than the boys. The boys' and girls' interest in science is **above average**.

3. The mean of the Science Interest Test scores of students from Middle SES is **46.70** and students from Lower SES is **45.14**, which indicate that the students from Middle SES have more interest in science than the students from Lower SES. Their interest in science is **above average**.

4. The mean of the Science Interest Test scores of students from Private aided schools is **46.06** and students from Municipal Corporation schools is **44.37** which indicates that the students from Private aided schools have more interest in science than the students from Municipal Corporation schools. Their interest in science is also **above average**.

5. The mean of the Science Ability Test scores of all students is **58.00** which indicate that the secondary school students' Ability in science is **average**.
6. The mean of the Science Ability Test scores of boys is 54.17 and the mean of the Science Ability Test scores of girls is 61.53 which show that the girls have more Ability in science than the boys. The boys' and girls' Ability in science is average.

7. The mean of the Science Ability Test scores of students from Middle Socio- Economic Status is 62.52 and students from Lower SES are 55.03 which show that the students from Middle SES have more ability in science than the students from Lower SES.

8. The mean of the SAT scores of students from Private aided schools is 58.45 and students from Municipal Corporation schools is 55.86 which indicates that the students from Private aided schools have more ability in science than the students from Municipal Corporation schools. Their ability in science is average.

9. The mean of Science Interest Test scores is 45.77. This is between the score limit for above average interest. 42 to 47. As score limit for high Science Interest is 48 to 53; the main hypothesis No.1: Secondary school students' possess high interest in science is rejected as the students have above average interest in science.

10. Boys and girls have above average interest in science. As there is no significant difference in the mean scores of Science Interest Test both boys and girls. The sub hypothesis No. 1.1: There is no significant difference between science interest of boys and girls is accepted.

11. The students from Middle and Lower SES have above average interest in science. As there is no significant difference in the mean scores of Science Interest Test both the students from Middle SES and Lower SES. The sub hypothesis No.1.2: There is no significant difference between science interest of students from middle and lower Socio-Economic Status is accepted.

12. The students from private aided and municipal corporation school have above average interest in science. As there is no significant difference in the mean scores of Science Interest Test both the students from Middle SES and Lower SES. The sub hypothesis No.1.3: There is no significant difference between science interest of students from private aided and municipal corporation
school is accepted.

13. The mean of Science Ability Test scores is 58.00. This is between the score limit for average interest. **42 to 47**. As score limit for high Science Interest is **91 to 106**; the main hypothesis No.2: *Secondary school students’ possess high ability in science* is rejected as the students have average interest in science.

14. Boys and girls have average ability in science. As there is no significant difference in the mean scores of Science Ability Test both boys and girls. The sub hypothesis No. 2.1: **There is no significant difference between science ability of boys and a girl** is accepted.

15. The students from Middle and Lower SES have average ability in science. As there is **significant** difference in the mean scores of Science Ability Test both the students from Middle SES and Lower SES. The sub hypothesis No.2.2: **There is no significant difference between science ability of students from middle and lower Socio-Economic Status** is rejected and there is a significant difference between science ability of students from middle and lower Socio-Economic Status.

16. The students from private aided and municipal corporation school have above average ability in science. As there is no significant difference in the mean scores of Science ability Test both the students from Middle SES and Lower SES. The sub hypothesis No.2.3: **There is no significant difference between science ability of students from private aided and municipal corporation school** is accepted.

17. The coefficient of correlation (r) between Interest in science and Ability in science for all students was **low, positive** and significant at 0.01 level. As the calculated Pearson’s Product- Moment Correlation (r) value for all students is more than Critical value for Pearson’s Product-Moment Correlation (r) at 0.01 level from the table The hypothesis formulated in this context, viz. Main hypothesis No. 3: **There is no significant correlation between interest and ability in science of secondary school students** is rejected. There is significant correlation between interest and ability in science of secondary school students.
18. The coefficient of correlation (r) between Interest in science and Ability in science of boys was low, positive and significant at 0.01 level. As the calculated Pearson’s Product-Moment Correlation (r) value for boys is more than Critical value for Pearson’s Product-Moment Correlation (r) at 0.01 level from the table. Therefore, the sub hypothesis No. 3.1: There is no significant correlation between interest and ability in science of boys is rejected. There is significant correlation between interest and ability in science of boys.

19. The coefficient of correlation (r) between Interest in science and Ability in science of girls was low, positive and significant at 0.01 level. As the calculated Pearson’s Product-Moment Correlation (r) value for girls is more than Critical value for Pearson’s Product-Moment Correlation (r) at 0.01 level from the table. Thus the sub hypothesis No. 3.2: There is no significant correlation between interest and ability in science of girls is rejected. There is significant correlation between interest and ability in science of girls.

20. The coefficient of correlation (r) between Interest in science and Ability in science of students from middle Socio-Economic Status was low, positive and significant at 0.01 level. As the calculated Pearson’s Product-Moment Correlation (r) value for students from middle Socio-Economic Status is more than Critical value for Pearson’s Product-Moment Correlation (r) at 0.01 level from the table. Therefore, the sub hypothesis No. 3.3: There is no significant correlation between interest and ability in science of students from middle Socio-Economic Status is rejected. There is significant correlation between interest and ability in science of students from middle Socio-Economic Status.

21. The coefficient of correlation (r) between Interest in science and Ability in science of students from lower Socio-Economic Status was low, positive and significant at 0.01 level. As the calculated Pearson’s Product-Moment Correlation (r) value for the students from lower SES is more than Critical value for Pearson’s Product-Moment Correlation (r) at 0.01 level from the table. Thus the sub hypothesis No. 3.4: There is no significant correlation between interest and ability in
science of students from lower Socio-Economic Status is rejected. There is significant correlation between interest and ability in science of students from lower Socio-Economic Status.

22. The coefficient of correlation (r) between Interest in science and Ability in science of students from private aided schools was low, positive and significant at 0.01 level. As the calculated Pearson’s Product-Moment Correlation (r) values for the students from private aided schools is more than Critical value for Pearson’s Product-Moment Correlation (r) at 0.01 level from the table. Thus the sub hypothesis No. 3.5: There is no significant correlation between interest and ability in science of students from private aided schools is rejected. There is significant correlation between interest and ability in science of students from private aided schools.

23. The coefficient of correlation (r) between Interest in science and Ability in science of boys was low, positive and significant at 0.01 level. As the calculated Pearson’s Product- Moment Correlation (r) values for the total sample and sub- samples are more than Critical value for Pearson’s Product- Moment Correlation (r) at 0.01 level from the table. The hypothesis formulated in this context, viz. sub hypothesis No. 3.6: There is no significant correlation between interest and ability in science of students from municipal corporation schools is rejected. There is significant correlation between interest and ability in science of students from municipal corporation schools.
6.3 Conclusions

On the basis of data obtained, its analysis and interpretation as well as findings the following are the major conclusions of the study:

1. The secondary school students have above average interest in science.
2. The boys and girls are equally interested in science.
3. The students from middle and lower socio-economic status group have equal interest in science.
4. The students from private aided schools and Muncipal Corporation schools are equally interested in science.
5. The secondary school students have average ability in science.
6. The boys and girls have equal ability in science.
7. The students from middle Socio-economic status group having more ability in science when compared with the students from lower Socio-economic status group, this difference is significant.
8. The students from private aided schools and Muncipal Corporation schools have equal ability in science.
9. There existed low, positive and significant correlation between interest and ability in science of the sample (secondary school students) as well as sub samples based on sex, socio-economic status and type of school.

The present study has resulted in drawing the conclusions which may be utilized in improving the present state of affairs in science interest and science ability.

This study found that the secondary school students have above average interest in science. Not many studies are available on the students’ interest in science as an independent study, particularly with the secondary school students. Sumathykutty (1973) found that the
interest in science subjects got the third rank among the different school subjects of the High school students. The factors contributing to this above average interest in science are many and multifarious. The samples selected were from the Pune city which is an important educational centre in India; it is also the socio-economically advanced city, the schools were well equipped with laboratory and a library facility, the staff was experienced, most of the people in this city may know the value and importance of Science. The positive influence of family members, Career prospects and achievement possibility might have made the student to be interested in Science.

This study also found that the both boys and girls are equally interested in science. Deo Neha (2008) found the same result i.e., that both male and female students are equally interested in science. This may be because of the change in the attitude of the society towards women's education, many parents are encouraging their daughters to pursue higher education, and now-a-days girls are entering in the fields of Medical, Engineering, Computer Sciences, Biotechnology and the courses which are oriented towards Science. As the physiological conditions, exposure to society, education and other aspects of girls and boys may same; the girls may be exposed to the society to a larger extent, similar to that of boys. It is familiar that girls mature faster than boys at the early adolescent stage, both physically and mentally. Due to these reasons boys and girls are equally interested in Science.

The students from middle and lower socio-economic status group have equal interest in science. This may be because of that the parents from lower socio-economic group are more aware about the education of their ward.

The student from private aided schools and Municipal Corporation schools are equally interested in science. This may be because of that the conditions such as laboratory and library, class room climate; organizational set-up in private aided schools and Municipal Corporation schools may be similar. The quality of teaching
and teaching learning facilities in private aided schools and Muncipal Corporation schools may also be comparable.

The secondary school students have average ability in science. Not many studies are available on the students' ability in science as an independent study, particularly with the secondary school students. The factors contributing to this average ability in science are many and multifarious. The samples selected were from the Pune city which is an important educational centre in India; it is also the socio-economically advanced city, the schools were well equipped with laboratory and a library facility, the staff was experienced, most of the people in this city may know the value and importance of Science. But still, it is not satisfactory that the secondary school students in the era of science and technology have average ability in science. Therefore is an urgent need to take the essential measures for enhancing the ability and achievement of the students.

The boys and girls have equal ability in science. Ansari, A.M. (1984) found that the performance of boys was better than that of girls in general science. This may be because of the change in the attitude of the society towards women's education, many parents are encouraging their daughters to pursue higher education. As the physiological conditions, exposure to society, education and other aspects of girls and boys may same; the girls may be exposed to the society to a larger extent, similar to that of boys. It is familiar that girls mature faster than boys at the early adolescent stage, both physically and mentally. Due to these reasons boys and girls have equal ability in science.

The students from middle socio-economic status group having more ability in science when compared with the students from lower Socio-economic status group, this difference is significant. Usha, P. (1992) found that Parent's (both father and mother) educational level, occupational level and income level of father were, significantly associated with physical science achievement. This may be because of the parents from middle socio-economic status group are unable to pay attention towards the study of their ward. They may unable provide
essential facilities to the students. Schools may also not pay more attention towards these students.

The students from private aided schools and Muncipal Corporation schools have equal ability in science. Ansari, A.M. (1984) found that the students of non-municipal schools had a better performance in general science than those of municipal schools. This may be because of that the conditions such as laboratory and library, class room climate; organizational set-up in private aided schools and Muncipal Corporation schools may be comparable. The quality of teaching and teaching learning facilities in private aided schools and Muncipal Corporation schools may also be similar.

There existed low, positive and significant correlation between interest and ability in science of the sample (secondary school students) as well as sub samples based on sex, socio-economic status and type of school. Jha. V. (1970) found that there was a significant positive relationship between achievement in science and (a) general intelligence, (b) scientific aptitude and (c) adjustment. Nayar, P. P. (1971) found that the differences between the mean scores of boys and girls on Numerical Ability, Problem solving and Critical Thinking. Makhija, G.K. (1973) found that Intelligence had a significantly positive influence on scholastic achievement. Zacharia, T. (1977) found that there was high positive correlation between the secondary school pupils' achievement in social studies and their attitude. Chatterjee, S. et. al. (1978) found that there was systematic positive relationship between science interest and probabilities of success in science at different aptitude levels except in the highest aptitude level. Raveendranathan, A.K. (1983) established that Science achievement, science interest and mental health status of pupils of English medium classes were higher than those of pupils of Malayalam medium classes. Muthumanickam, R. (1992) found that there was a positive, significant correlation between achievement in commerce and reasoning ability. socio-economic status and interest in commerce.

As cognitive and affective domains are related with each other, we can not compartmentalise human behaviours clearly in terms of cognition.
and affect. The cognition and the affect can never be separated. Interest in science comes under affective domain and ability in science comes under cognitive domain. Interest in science arises from increased information about science. Development of science ability through learning of science content brings about the increased motivation for the subject and therefore develops interest and attitudes. Therefore their may be a positive correlation between interest and ability in science. The reason behind the low correlation may be that the teachers while teaching may not focus on the development of interest in science. It may be because of that the interest is not evaluated through the traditional method of evaluation.

6.4 Recommendations

Through the experience of the present study and the conclusions, the researcher gives some recommendations as follows-

1. It is necessary to identify the students with high and low interest in science, to take necessary steps to motivate the students with low interest in science.
2. While teaching science teachers must deliberately take efforts for the development of science interest among their Students through daily teaching as well as through curricular and extra-curricular activities.
3. It is necessary to identify the students who have necessary abilities in science and who have not, so that necessary steps could be taken to develop the abilities in science among the students.
4. Teachers also must deliberately take efforts for the development of science abilities among their students through daily teaching as well as through curricular and extra-curricular activities.
5. The teacher's competence in science plays a great role in developing science interest and science abilities within the students. Hence it is recommended that science teachers improve their competency in the subject and also create situations and experiences to develop the interest and science abilities of the students.
6. The teacher should teach the students the values that are acquired by studying science and its usefulness in higher studies and career prospects etc., so that they get more interest in science.

7. The students from lower socio-economic status should be equally encouraged in the study of science so that their interest in science and abilities in science are more and they do better in it.

8. Evaluation of interest of students should be considered in the examination system at school level.

6.5 Suggestions for further Research

The present study was intended to find out interest of students in science and ability to learn science. It was also intended to find out the relationship between interest and ability of students in science. This study brings to light some new areas to be studied by the further researchers. The areas and variables which are not covered by this study may be put to test to enlighten the other factors associated with the interest, ability and the association between interest, ability and other psycho-sociological variables. The present study suggests the need for carrying out studies of the following type.

1. Studies on interest and ability may be extended to other educational levels, viz., primary, secondary, degree, post graduation, at district as well as state level.

2. Studies on interest and ability in different subjects may also be taken up.

3. Studies may be conducted on interest to identify its association with other psychological variables in order to enhance the interest.

4. Studies may be conducted on ability to identify its association with other psychological variables in order to enhance the ability.
5. Studies may be conducted to find out the influence of locale of the institution, medium of instruction on interest and ability.

6. Studies on preparation of a programme for the development of students' interest in science or other school subjects at different levels and study its effectiveness may also be taken up.

7. Studies on development and standardization of the tool for measuring science interest of students at primary, secondary and higher level may also be taken up.

8. Studies may be conducted on development and standardization of the tool for measuring Science ability of students at primary, secondary and higher level may also be taken up.

9. Studies may be conducted on the relationship between students' interest in science and other correlates.

10. Studies on the relationship between students' ability in science and other correlates may be conducted.