CHAPTER-1

INTRODUCTION
CHAPTER - I

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The word “Science” has its origin from a Latin word “Scientia” meaning to “Know”. Science is both a body of knowledge and the process of accruing and refining the knowledge. The science education programme in secondary schools based on a sound pedagogical basis should be directed towards achieving awareness, knowledge, attitude, skills and participation. The science education keeps the students in programming learning experiences from simple to complex; to proceed from indefinite ideas to definite ones; ordering of learning experiences from the empirical to the rational; and to proceed from the concrete to the abstract. Science education being an important component of the educational system should contribute for the solution of the problems of the country by developing desirable understandings, skills, abilities, and attitudes among every one. The greatest challenge is to humanize science that is to make it relevant to human needs and aspirations.

Science Education is to a nation what protein is to a young organism. As a vital tool for the understanding and application of science and technology, the discipline plays the vital role of a precursor and harbinger to the much needed technological and of course national development, which has become an imperative in the developing nations of the world. Former president of India A.P.J.Abdul kalam called upon the universities to turnout a global cadre of skilled professionals in science and technology to make India to realize its dreams of a developed Nation by 2020.

The huge potential of science to alter the very life style of an individual is gaining ground in these days. The utilization of science and technology can easily be visualized because science has made its supreme power felt in every field of life. Science teaching is mainly intended to provide the student with the right kind of education that will provide an understanding not only about the existing problem, but also to develop the ability to recognize and interpret signals for the future. No society can progress if it neglects the growth in the quality and content of education.
and research in science and technology. The knowledge of scientific approach and method is vital for coping with the day-to-day needs of life. Science has no doubt helped in eradicating the regional, religious and caste prejudices and also in building up correct values and appreciation of scholastic and democratic institutions. Owing to this huge potential of science, the status enjoyed by science in school curriculum is also high. Educators every where have always been trying their level best to instill in the children such qualities like scientific attitude and a spirit of scientific enquiry.

Physical sciences play a very important role in the life of human beings. In the modern scientific world physical sciences occupies important place in the school curriculum. Hence the achievement in physical sciences is crucial for every pupil, studying in the schools. If the teacher teaches in a planned and methodological way it is expected that achievement of children is certainly going to be satisfactory.

One cannot deny the importance of intelligence in predicting scholastic achievement yet, intelligence is not the sole determinant of academic achievement. Now a-days education is taken as the awakening of curiosity, development of interests, attitudes and values and building capacity to think and judge for one self. There is a need and accountability on the part of the teacher to this in the interest of the pupils.

1.1 Meaning and definitions of education

Education is the most important invention of mankind. Man without education would still be living just like an animal. It is education, which transformed man from a mere 'two-legged animal' into human. It helps him to behave like a man and prevents him from behaving like an animal.

The word education is a diamond which appears to be of a different colour when seen from different angles. It is as basic to civilization, to social survival, as reproduction and nutrition are essential to biological evolution. Education of man does not begin at school, it begins at birth. It ends not when he graduates from the university but at his death. Hence education is a life long process. Education is the most powerful and effective instrument for inducing radical changes in the behavior of students.
There have been a lot of controversial statements about the meaning of education, beginning from Socrates and Plato to Dewey and Gandhi. If it is not completely impossible, it is rather very difficult to assess the real value of the term 'Education'.

Here under, we analyze the various viewpoints of various thinkers about the word 'Education'.

Education is a process through which a child makes its internal, external.

Frobel

The development of all those capacities in the individual which will enable him to control his environment and fulfill his possibilities. By capacities is meant physical, mental and moral capacities.

John Dewey

Education means bringing out the ideas of universal validity which are latent in every human being.

Socrates

By Education, I mean an all round drawing out of the best in child and man-body, mind and spirit.

Mahatma Gandhi

Education is defined as natural, harmonious and progressive development of one’s innate powers.

Pestalazzi

Education is the creation of a sound mind in a sound body.

Aristotle

Education is not a preparation for life; Education is life itself.

John Dewey

Education is the manifestation of divine perfection already in man.

Swami Vivekananda

In a world based on science and Technology, it is the Education that determines the level of prosperity, welfare and security of people.

Kothari Commission (1964-66)
1.2 Importance of education in human life

In scaling the top pinnacles of education the expedition can be successfully accomplished by one who has the necessary physical, psychological and intellectual equipments. 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. A man without education is like a flower without fragrance. Thus we can conclude that education is not only ambrosia for a novice or a neophyte but also a panacea for the ignorant and nonchalant.

The overall development of a nation depends on the proper utilization of its natural as well as human resources. The opinion of the planning commission in the 7th five year plan (1985-90) may be mentioned in this context. "Human resources development has necessarily to be assigned a key role in any development strategy particularly, in a country with a large population. Trained and educated on sound lines, a large population can itself become an asset in accelerating economic growth and in ensuring social change in designed directions. Education develops basic skills and abilities and fosters a value system conducive to and in support of national development goals, both long term and immediate".

Hence the development of human resource is a must for any modern society. As Swami Nathan remarks "Human resource is the most valuable global resource and any short or long term development strategy should be oriented towards the continued well being of human race".

Education plays a significant role in the development of human resources. If this change on a grand scale is to be achieved without violent revolution, there is one instrument only that is education.

Other agencies may help and indeed some times have a more apparent impact. But the national system of education is the only instrument that can reach all the people.

The school can help in manpower planning; though it has no direct role in the matter. It is a social agency and it has social accountability. Education is a social process and so it has a significant role in manpower planning in the light of individual as well as social needs.
In all the countries of the world, it may be seen that high per-capita incomes are associated with high rates of literacy. Education is valued because; it contributes to a better life. Alfred Marshall emphasized the importance of education as a national investment – it is the most valuable of all capital, invested in human beings. Economic growth in any society is dependent on education.

In a democratic country, education can be used for giving training in a good citizenship. It can produce leaders who are capable of independent thought, judgment, self expression, originality and initiative emphasizing the importance of education. The Kothari commission’s report on Indian Education (1964-66) says, “In a world based on science and technology, it is the education that determines the level of prosperity, welfare and security of the people and the quality and number of persons coming out of our schools and colleges, will depend on our success in a great enterprise of national reconstruction, whose principal objective is to raise the standards of living of our people”.

The development of a country is primarily determined by the quality of its human resources, which depend on the level of knowledge, skills, attitudes etc. Therefore, creating the right minds through the right process of education requires the top-most priority.

From the above discussion, it is clear that Education leads to the overall personality development (Spiritual, moral, social, cultural, mental and economic etc). Therefore ‘Education’ is a must for any individual and for the development of one’s country. The education is the key which allows people to move up in the world, seek better jobs and ultimately succeed in their lives. So, education is very important and no one should be deprived of it.

1.3 Need for science education

In the daily life of a person from the womb to the tomb science 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. Modern society is basically rooted in science. According to Jawaharlal Nehru “Science education has developed at an ever increasing pace since the beginning of the twentieth century, so that the gap between
the advanced and backward countries has widened more and more. It is only by adopting the most vigorous measures and by putting forward our at most effort into the development of science that we can bridge the gap. It is an inherent obligation of a great country like India, with its tradition of scholarship and original thinking and its great cultural heritage to participate fully in the march of science which is probably mankind’s greatest enterprise today."

The secondary education commission (1952-53) states that the science syllabus in the secondary schools is not directed to the production of scientists. Its aim is to give basic understanding and appreciation of scientific phenomena biological and physical which may prepare the non-scientist for a fuller and more complete life. At the same time, the courses should give fundamental principles to those relatively few who will latter specialize in science.

The Indian parliamentary and scientific committee (1962) recommended that at the high school stage science should be compulsory for all the students, but it has to take the form of separate subject as mathematics, physics, chemistry, biological science etc., along with the other humanistic subjects. General science, should be made compulsory for all at the lower stage to enable every citizen to understand the modern world.

The education commission (1964-66) took a pivotal stand on science education. It saw science as a basic component of education and culture. It was not only necessary to take science as an integral part of our education but also urgent to raise the quality of science teaching to promote an ever deepening understanding of basic principles, to develop problem solving and analytical skills and to foster the sprit of enquiry and experimentation. The scientific outlook has to become a part and parcel of our daily living. India should strive to bring science and the values of the sprit together and in harmony.

1.4 Historical development of science education

India is not a science - oriented nation. Its signal contributions in the realms of philosophy, ethics and religion have obscured its scientific aura. Certain sections in the Vedas and the Upanishads are replete with scientific information. There are references to the origin of the universe, the concept of atom, medicinal herbs and so
on. The ancient Indians were experts in military science. Indian scientists and scholars did a great deal of pioneering work in the field of mathematics, medicine, astronomy, agriculture and architecture till about 600 A.D. The oldest Indian scripture, Rig-Veda which was written about 4000 years ago, refers to physicians and speaks of the healing powers of medicinal herbs. The concept of atom and the formation of the world were discussed in the vaiseshika, one of the Upanishads. The upavedas or secondary Vedas discuss various sciences. Ayurveda consists of six books, deals with surgery, nasology, anatomy, therapeutics, toxicology and a supplementary section of it deals with various local diseases.

From the point of view of methods and techniques of acquiring scientific knowledge there had been in our land, considerable development and refinement of observation. The early universities of Taxsilla and Nalanda could be taken as a first giant steps towards institutionalization of teaching and acquiring knowledge.

Buddhism, in its normal cause and as a part of its tenets (before 750AD to1000AD) discouraged further development of life sciences. Rules of caste became stricter and Brahmins, for fear that their blood would be contaminated withdraw from all practices of medicine. They even shrank from touching dead bodies and as a result the number of good physicians dwindled and public hospitals had to be closed. Later on the gradual conquest of the country by invaders from west Asia and central Asia also brought an element of discontinuity in the ancient Indian tradition. There is however, some evidence to suggest that many of the scientific ideas brought to India by foreigners during the medieval period.

The modern period represents another sharp break in the traditions of scientific thought and practices in India which arose with the conquest of the country by the British. Modern science was introduced in India with the coming of the British rule and it stood in some opposition to the earlier two traditions especially because the new system was to be learnt in a foreign language i.e., English. Modern science came to India at a stage of its development which marks a radical change from the medieval and ancient sciences. Till the end of 18th century the universities sadly neglected the teaching of science and it had no place in the school curriculum.
In the early part of the nineteenth century a number of philosophical societies were at work for the spread of education. By the middle of nineteenth century however there were very few schools which were imparting instructions in science.

The most outstanding contributions to the history of teaching science are in the last quarter of nineteenth century. Since the beginning of the twentieth century there has been a substantial increase in the availability of equipments and facilities for teaching science in schools. In the year 1916 sir J.J. Thomson had a committee which examined the position of natural science in the educational system.

As a consequence of the findings of this committee known as a Thomson report many advanced courses in science were added in many schools. As a consequence of all this, the education Act of 1944 came into force in April 1945 which has meant an increase in the amount of science taught though not to the extent to which it should have been.

RadhaKrishnan Commission (1949) made recommendations for improving laboratories and libraries. It was against narrow specialization in science and technology. The Commission opined that the curriculum of general education should have relevance to the student’s physical and social environment and have sciences, language and literature at various levels upto the end of the secondary stage. The three − year degree course for science students should have two optionals like Mathematics, Physics and Chemistry and so on. Admission to P.G. course should be made on merit preferably on All − India basis.

The report of Secondary Education Commission (1953) recommended the teaching of general science as a compulsory subject in the higher secondary schools. In the year 1956 the all India seminar on the teaching of science in secondary schools held at Taradevi dealt with almost all the problems facing the inclusion of general science as a core subject for higher secondary classes. It was the first of its kind which touched almost all the aspects concerning the teaching of science in schools. It suggested a unique and uniform system of science teaching for the entire country, suited to its needs and resources. The Indian parliamentary and scientific committee was set up in August, 1961 under the chairmanship of late Sri Lal Bahadur Shastri to study the problems of “Science education in schools” with a view to finding out the relation between the policies and decisions of the centre and the states in the matter of science courses attended in the schools.
In 1963 the USSR experts of the UNESCO planning mission visited India to study the implementation of technical assistance projects in the country.

In the year 1964-66 the Indian education commission was set up under the chairmanship of Dr.Kothari for upgrading school curriculum which recommends curriculum development, the revision of text books and teaching and learning material. The commission recommended that “Science teaching should be linked to agriculture in rural areas and to technology in urban areas.

The methods of teaching science should be modernized, stressing the investigatory approach and the understanding of the basic principles.

The State Institute of Science Education (SISE) have been set up in all states to effect improvement of science education in schools. The following are the main functions of the SISE.

1. In-service training to science teachers with a view to make them aware of the developments in science education.
2. Preparation of Instructional Material in Science.
3. Research on science education in the region.
4. Arrange for guidance service in science education.
5. Find out and introduce innovations in science education.
6. To actively take part in the national science programmes.

Today science is regarded with due admiration and respect. Learning science by doing is stressed and liberal grants are given to schools to built up laboratories and buy equipment. Mobile science laboratories supplement built in school laboratories. In-service training is provided to teachers teaching science at various levels. The importance of organizing science clubs in schools has been recognized. The science talent search scheme is being put into practice and aids are available to make teaching and learning effective.

According to National Policy on Education (1986) (NPE – 1986) Secondary Education begins to expose students to the differentiated roles of science, the humanities and social studies. Science programme will be designed to enable the
learners to acquire problem solving and the decision making skills and to discover the relationship of science with health, agriculture, industry and other aspects of daily life.

National policy on education 1992, has laid great stress on the development of scientific temper among the students of all the classes. It has stated specially that Science Education will be strengthened to develop in the children the following. 1. The spirit of Enquiry 2. Creativity 3. Objectivity 4. The courage to question 5. Aesthetic sensibility 6. Problem solving and decision making skills and 7. Relationship of science with health, agriculture, industry and other aspects of daily life.

1.5 Importance of the science in the present day society

We are now in an age of rapid changes and science has been playing a dominant part in bringing about these changes. Science has provided the spring board for all the progress in our world and man has been able to conquer time and distance with its help. It has enabled man to probe into the vast space beyond the sky. It is no exaggeration to say that at present, science dominates every field of our activities. Science has improved the conditions and quality of living and has saved mankind from excessive toil and boredom. The technological advances have sought to explore and multiply the possibilities of affording more effective and responsible methods of providing sustenance and comforts to living creatures. Thus, from birth to the death, scientific discoveries and inventions have inextricably woven themselves into the fabric of human existence.

According to Ross and Stanley (1955) our environment to a great degree is influenced by science. The clothing we wear, the houses in which we live, the agricultural methods which produce our food and necessities, our automobiles, our telephones, radios, T.V, cell phones, the electrical appliances, are based on scientific information.

Science has specific applications in many of our activities. It is in operation in the application of the statistical methods. Psychology is a science applied for securing information regarding the working of the mind and without advancement of technology we would not be, at present, having any industry worth the name. When
one postulates into the contributions of science to the various branches of human progress one can only marvel at the advances made in medicine, astronomy, agriculture, engineering, oceanography, mountaineering, aeronautics, space travel, microbiology, nuclear biology and innumerable other branches of scientific study.

The explosion of scientific knowledge has been so rapid in our age, that in every decade, our stock of knowledge on any subject has tended to become double or more.

In such an age of rapid scientific advancement every body must have some knowledge of science. We require trained minds, capable of coping with more and more problems relating to basic and applied sciences. For ensuring welfare of the people, the country has to undertake many programmes for achieving increased agricultural production, industrialization, community development, including various social services, providing people with better nutrition, better houses, proper clothing and improve health. For implementation of these programmes a very large number of scientists and technicians are required.

Finally, a scientific literacy is needed. First of all, be each member of a culture such as ours that is so thoroughly based upon technology and scientific endeavor. We believe that in order to make effective decisions in personal, civic and national affairs, the citizens must have some knowledge of processes and products by which he is fed and clothed, entertained and inspired and defended from enemies, foreign and domestic.

1.6 The place of science in school curriculum

At the high school level, the beginning made at the earlier stage to introduce science as a discipline is to be further strengthened without emphasis on formal rigor. Concepts, principles and laws of science may now appear in the curriculum appropriately, but stress should be on comprehension and not on mere formal definitions. The organization of science content around different themes, as being practiced seems appropriate at the secondary stage, but the curricular load needs to be substantially reduced to make room for the additional elements of design and technology, and other co – curricular and extra curricular activities.
At the secondary school stage, concepts that are beyond direct experience may come to occupy an important place in the science curriculum. Since not all phenomena are directly observable, science also relies on inference and interpretation. For example, we use inference to establish the existence and properties of atoms, or the mechanism of evolution. By this time, the student should have developed the critical ability to evaluate the epistemological status of facts that encounter in science.

Experimentation, often involving quantitative measurements as a tool to discover verify theoretical principles should be an important part of the curriculum at this stage.

Participation in co-curricular activities must be regarded as equally important at this stage. These may involve taking up projects (in consultation with teachers) that bear on logical issue and involve the problem solving approach using science and technology.

The various components of science curriculum indicated above should be integrated imaginatively. The entire upper primary and secondary should have horizontal integration and vertical continuity.

Science has now become a compulsory subject in the school curriculum because of its multifarious value to the individual as well as the society.

Science education in schools is more so emphasized as it improves concept development, fosters higher cognitive abilities and skills besides promoting the spirit of enquiry and experimentation.

In the past decades science lessons were mainly reading text books and hearing the teachers talk. There was practically no seeing and doing. We never saw the various articles of science apparatus, except in the pictures given in the text books or the drawing on the black boards. But now conditions have greatly changed. The pupils have more things to do and learn and to hear with the help of more number of audio-visual aids.
With respect to science and mathematics in past days it is observed that the time provided in the time table is not quite adequate, more number of periods were allotted to languages especially English language. But now the trend is changed. More number of periods were allotted to science and mathematics in the school time table with the other subjects.

The science courses in the past were mostly based on foreign books having no relevance or little relevance to the Indian science. But now the science courses were designed with the relevance of Indian conditions. It must address to the problems of Indian masses for example, energy, health, hygiene, disease, nutrition, conservation, pollutions etc.

The science courses of the past could not be very functional, because of lack of equipment, lack of teachers with proper attitudes, abilities and skills and the approach. But now most of the schools have well equipped laboratories and necessary science kits. These are helpful to teachers for demonstration as well as experimentation and give the first hand experience to the students. The method of teaching is also changed from teacher centered to activity centered.

It is time that the countries intelligentsia, educational planners, educational administrators, educationists, politicians, teachers and parents should give some serious thought to what direction the countries educational system should go and what should be the place of science in the curriculum. To quote this, the late Prime minister of India, Morarji desai, while addressing the members of the review committee on the curriculum for the ten year school at New Delhi stated “The books that I did carry in college are being carried by school students today. The knowledge of science almost doubles every decade. We are to keep pace with this new development. Then the problem is how much knowledge in science should be given to a child at a particular level, so that he is not burdened”. National policy on education (1968) also recommended that “Science and mathematics should be an integral part of general education till the end of class X. The quality of science teaching should be improved at all stages and scientific research should be promoted. Thus science has now become a compulsory subject in the school curriculum because of its multifarious value to the individual as well as the society.
The main features of the National curriculum Framework for School Education – 2000 pertaining to Science education have been:

1. Teaching of environmental studies as a single subject of study at the primary stage instead of environmental studies (Science) and environmental studies (Social studies),

2. Teaching of 'science and Technology' in place of 'science' at the upper primary and secondary stages, so as to familiarize the learner with various dimensions of scientific and technological literacy, and

3. To continue the practice of teaching science at the higher secondary stage as separate disciplines: Physics, Chemistry and Biology.

1.7 Academic achievement

Scholastic/Academic achievement has been playing an important role, since formal education decides the level of learning of different students in different subjects in all classes. Achievement can be defined as total marks or score obtained by a student in a particular subject. Achievement differs from student to student and from subject to subject. Factors for this difference also vary from person to person. Various factors play their role for this difference in the achievement. It has been observed that in subjects like mathematics, science and English, the achievement is considerably low; when compared to the other subjects, in the case of majority of students at secondary level, due to various factors.

Scholastic/Academic achievement is a multi-dimensional phenomenon and may be effected by three main types of factors viz. Subjective, objective and personality factors. Subjective factors are related to the individual himself, his intelligence, learning ability, aptitude, self-concept, perception of school, study habits and level of aspiration; Objective factors lie with in the environment, socio-economic status, family traits, education system, system of evaluation, school situation, type of the school, number of students in the class etc. Personality Factors are related to the individuals' adjustment with the school environment, his attitude towards the subject, attitude towards the teachers, adjustment with his peers and emotional adjustment.
Scholastic/Academic achievement has raised several important questions for educational researchers. What factors promote achievement in students? How far do the different factors contribute towards academic achievement? Many factors have been hypothesized and researched upon.

Scholastic/academic achievement is of paramount importance, particularly in the present socio-economic and cultural contexts. Great emphasis is placed on achievement right from the beginning of formal education. A considerable number of students from schools go to the colleges and institutions of higher learning. It is very important to ensure that such students acquire the requisite competence so as to benefit more out of higher education. Setting the stage for achievement of youth is thus a fundamental obligation of the educational system.

In schools/colleges, great emphasis is placed on the achievement right from the beginning of the formal education. The school has its own systematic hierarchy, which is largely based on achievement and performance rather than ascription. The school/college performs the function of selection and differentiation among students on the basis of their scholastic and other attainments and open out avenues for advancement, primarily in terms of achievement.

The central aim of all formal educational efforts is academic achievement, on the part of the students. Even though, it is desirable to have all-round development as a goal of educational process, where academic achievement would be just one of the dimensions; but in most of the educational institutions, academic achievement continues to be the exclusive concern, narrowing down the very concept of educational process. Nevertheless it is important to note that achievement in curricular subjects is not an independent phenomenon. Rather, it is directly influenced by a number of factors, some of which are personal to the individual while many others are located in the environment in which learning process takes place. Thus in order to fully understand the concept, as well as, the process of academic achievement, it is imperative to identify and explore various factors related to the academic achievement.
1.8 Need for the present study

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 an ever growing concern of the researchers, educationists and administrators. Any enqiry into the previous works suggested that studies related to this area may be broadly classified into three categories. 1. Studies with sociological base.2. Studies with psychological base. 3. Studies relating to both sociological and psychological areas.

Some outstanding studies conducted by curry (1962), Chopra (1966, 1967, 1982), Gupta (1968, 1982) and Raymond (1977) have focused their attention mainly on sociological factors related to the academic achievement. The main emphasis on those studies, were on the variables, like socio-economic status, parental aspirations, family environment and so on.

In contrast, some of the prominent researches by Entwistle Kundu and Chakravarthy (1997) and Panda (1978) have in their own right, laid emphasis on psychological factors like personality, intelligence, adjustment, anxiety, self concept, motivation and so on in relation to the academic achievement.

"The destiny of India is being shaped is her class rooms" (Education commission 1964-66). So there is a dire need for teachers to reflect, visualize, plan and act accordingly, so that the children of today can become world class citizens of tomorrow. The cognitive growth and academic development of the individual has become a matter of concern for the psychologists, sociologists and educationists. Day-by-day achievement related problems are increasing. There is growing awareness of developing ways and approaches for improving children's scholastic achievement (Pathak 2007).

Though there is considerable number of studies related to the sociological and psychological factors at primary and secondary levels, very few studies were found, particularly at high school level in science. The present investigation considered to strike at the combination of both socio-psychological factors in the prediction of academic achievement in physical sciences.
Another interesting feature observed was that majority of the studies in the area of academic achievement confined to simple correlation analysis between predictors and the criterion variables. Individual and cumulative effects of several independent factors on academic achievement could be assessed more accurately by employing regression analysis. Therefore, the main aim of the study was to predict the multiple effects of the independent factors on academic achievement and further to suggest a suitable regression equation in the prediction of academic achievement in physical sciences.

The achievement in physical sciences, particularly at IX class level has been chosen, keeping in view the fact that physical sciences is a compulsory subject of study upto X class only and after X class, it is an optional subject. Those who develop interest and aptitude for physical sciences will only opt for physical sciences after X class. Since the students of X class are busy with the public examination at the end of the academic year, hence it is felt that there is a need for research study to find out the influence of various Psycho- Sociological and personal factors on the achievement in physical sciences, at IX class level.

It is observed that the study of physical sciences and its importance is very much felt in engineering and technical fields. Today it is observed that there are innumerable polytechnic and engineering colleges and technical institutions. Without the sound knowledge in physical sciences at secondary school level, the students may not shine in their future studies in engineering and technological courses. Hence the investigator felt that there is a need to know various psycho- sociological and personal factors contributing for physical sciences achievement at IX class level, so that proper and suitable suggestions and recommendations can be offered for physical sciences teachers, working in secondary schools.

1.9 Resume of succeeding chapters

Chapter II deals with an analytical presentation of research work conducted so far in the area, in which the investigator is interested to investigate further.

Chapter III deals with present study, which includes: Statement of the problem, Need for the present study, Operational Definitions of various terms, Objectives of Study, Hypotheses to be tested, Variables included and delimitations of the present study.
Chapter IV deals with tools employed, methods of collecting data, and statistical techniques employed in the analysis of data.

Chapter-V deals with analysis of data, and a detailed discussion of results of the present study.

Chapter VI deals with summary of investigation, major findings, conclusions, Educational implications, recommendations and suggestions for further research.