CHAPTER - II

REVIEW OF RELATED LITERATURE

2.0 Introduction:

Any scientific investigation starts with Review of Related Literature. The review of related literature gives any research a direction and insight into the problem that investigator is going to undertake. It helps the investigator to move by giving an overview of the work that has been done in the field and helps him to keep up with the recent developments. It actually acquaints a researcher with the available body of knowledge in the concerning field. It provides the guidance as to in which direction and how the future research to be carried out. Best (2003)\(^1\) stated that “Man builds upon the accumulated and recorded knowledge of the past and a familiarity with the literature. Any problem area helps the students to discover what is already known, what others have attempted to find out, what methods of action have been promising and what problems remain to be unsolved”.

The review of related literature begins with the search of the existing literature concerning to one’s area of research. Researcher

takes advantage of knowledge which has been accumulated in the past as a result of constant human endeavor. A careful review, of previous studies done and other sources of information on the problem to be investigated, is one of the important steps in the planning and execution of any research study. The review of related literature concerning to research topic not only gives direction but helps the researcher to know about the recommendations of previous researches listed in their studies for further research. Therefore the review of related literature concerning research must precede any well planned research. The literature review brings clarity and focus to research problem, improves methodology and broadens the knowledge base. Following the same guidelines the review of literature related to the topic mentioned above has been carried out from the previously existing sources.

In this chapter the investigator has made an attempt to survey the earlier work done and reviewed the research studies related to the present investigation conducted in India and Abroad. These studies helped the investigator in planning and designing the research work. The existing researches which are directly or indirectly related to the present study may be divided into following sections;
(i) Studies done Abroad.
(ii) Studies done in India.
(iii) Trends emerging from the Review of Related Literature.
(iv) Present Study

2.1 Studies Done Abroad:

Various studies have been done abroad concerning to the topic undertaken for research, as mentioned above, taking one or more dependent or independent variables i.e. scientific attitude, scientific aptitude and achievement in science. The various factors affecting the study had been taken as per the requirements by the foreign authors according to the suitability of place or gentry in that area. Few of the studies closely related to the study undertaken have been selected and reviewed as under.

Aiken and Aiken (1969)\(^2\) reviewed 54 studies undertaken in United States and concluded that teachers of science in contrast with the teachers of mathematics have generally recognized that teaching for development of favorable attitude was an important part of their work and it yields to better achievement of students.

Comber and Keeves (1973)\(^3\) studied the relationship between science interest scores and achievement in science up to 19 countries. They reported a correlation between 0.2 to 0.3, between science interest scores and achievement in science at 14 year old level and higher correlation between 0.4 to 0.6 for students in their final year of secondary schooling which concludes that interest and science aptitude play a vital role in achievement in science.

Gardner (1975)\(^4\) examined more than 200 studies from Australia, UK & USA in comprehensive review. He restricted the attitude towards science subject considered in terms of interest, satisfaction and enjoyment. He also recognized and concluded that relationship between attitude towards science and other students’ characteristics such as achievement, classroom climate, teacher’s behavior and instructional factors played vital role in achievement in science subject.

Ormerod and Duckworth (1975)\(^5\) undertook a review of 500 studies on attitude towards science and concluded that interest in science was aroused at an early age, also secondary, tertiary students perceived Physics and Chemistry to be more difficult than other


\(^4\) Ibid. p 5320

\(^5\) Ibid.
subjects. They also observed gender related differences and attitude towards physical and biological sciences and seen the science achievement getting affected with respective change in attitude.

Johnson and Butts (1983)\textsuperscript{6} conducted a study on the relationship among college science students’ achievement, engaged time and personnel characteristics (academic aptitude reasoning ability and attitude towards science and locus of control). The measure of personnel characteristics were obtained from subjects (N=76) of a private liberal college in Athens. After analyzing the data, collected from achievement test for Biology and judgment tests of logical thinking, scientific attitude and aptitude to judge personal characteristics, it was observed that average achievement scores were positively related to academic aptitude and reasoning ability. Positive relationship was also observed between observed engaged time and academic aptitude and also with reasoning ability, achievement and scientific attitude of the students.

Kyle (1988)\textsuperscript{7} studied the evolution of “Science through discovery” program applied in a school in Texas and found that the program positively affected the students’ attitude towards science and their interest in technological advancement. He also observed the increase in science achievement of students with the respective increase in their attitude towards science.

Duncan (1989)\textsuperscript{8} has carried out a study in Botswana. Central to Duncan’s study were the expected occupation, and science learning in schools. While the study revealed that the causal network of relations between science related attitudes and achievement was complex, and most of the time the estimated effects were observed to be significant but not strong.

Knungnit Punturat et al (2001)\textsuperscript{9} conducted a study on variables effecting learning achievement in Biology. The study was conducted on 215 mathayomsuksa IV students of Khon Kaen University in Thailand. The dependent variable taken was learning achievement in biology and independent variables were scholastic aptitude, critical

\textsuperscript{7}“U. S. China Education Review”, USA: ISSN: March 2010; Vol-07.
thinking, and aptitude in biology, attitude and study habits. The researcher concluded that along with the other variables, scholastic aptitude ($\beta=.161$, $P<0.05$), scientific skill process ($\beta=.115$, $P<0.05$) affected learning of biology directly. The variance of these predictors accounted for the variance of learning achievement of biology i.e. 41.70% ($R=.646$). The standard error estimated was 7.8755. The researcher also concluded that teachers can help developing attitude in biology and critical thinking along with science process skills.

Chuang and Cheng (2002)\textsuperscript{10} studied and investigated the correlations between gender, aptitude for biology, scientific attitudes, scientific process skills and rational thinking ability in China and concluded that a positive correlation existed between students’ attitudes, and aptitude towards biology, scientific attitudes, scientific process skills and rational questioning ability. They also observed that higher score on attitude and aptitude towards biology lead to higher achievement level of students in biology. Moreover it was found that the girls scored better on scientific attitudes and boys on rational thinking ability.

Elena and Zenibilas (2002)\textsuperscript{11} conducted a study in Cyprus with an aim to examine how pupils’ attitude towards science and their beliefs about themselves affect their achievement in science and vice-versa. The result of study demonstrated the differential effects that science achievement and science attitude can have on each other.

Balfakih Nagib M. A (2003)\textsuperscript{12} conducted a study on the effectiveness of Student Team Achievement Division (STAD) for teaching high school chemistry in Arab Emirates was investigated. An appropriate group of UAE high school students was chosen from Northern Province (Rural and Urban) involving 16 tenth standard schools, during second semester. Total number of students’ sample of 488(133 male and 123 female in experimental group and 114 male and 118 female in control group) was taken. Findings indicated that STAD is more effective teaching method than traditional one. And also the content in H3, H5, H6, and H7 proved that the achievement of students was effected by ability level and attitude of students and also by the teaching method.


Adolph Frasa and Aldridge (2003)\textsuperscript{13} conducted a cross national study in investigating learning environment and attitude towards science. A sample of 1161 students (594 from Indonesia and 567 from Australia were taken). The prior factor structure of questionnaire was replicated in both the countries with nearly all items having a factor loading of at least 0.30 on priori scale. The study revealed that Australian students had more positive attitude to science inquiry while Indonesian students have more positive attitude to carrier interest in science. The study also concluded that there was a positive association between learning environment, achievement and students’ attitude to science was observed.

Fadia M. Nasser (2004)\textsuperscript{14} conducted a study on structural model of effects of cognitive and effective factors on the achievement of Arabic speaking 162 pre service student teachers in introductory statistics in Tel Aviv. The researcher examined the extent to which statistics and mathematics anxiety, attitude towards mathematics and statistics, motivation and mathematical aptitude can explain the


achievement of Arabic speaking introductory statistics. Complete data were collected during statistics classes prior to midterm examination. As regards to variables examined in this study, only the hypothesized effect of mathematical aptitude on achievement in statistics was large. The result also indicated that mathematical aptitude, attitude towards mathematics and statistics and motivation together accounted for 36% of variance in achievement in introductory statistics for current sample.

Basdas and Kiriscioglu (2006) investigated the effects of science achievement made with the material selected according to learning circles approach to teach the topic ‘Flowing electricity’ to 6th grade science and technology students in Turkey and found that while doing these activities students developed positive attitude towards science and realized the connection between daily life and science.

Esther Sui Chu Ho (2006) conducted a study on family influences on science learning among Hong Kong Adolescents. A total of 4645 students form 146 schools in Hong Kong were accepted for the final study. It was concluded by the researcher that arranging science

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activities (watching TV programs related to science, reading books on scientific discoveries, reading or listening to science fiction) were found to be highly effective activities for promoting scientific achievement and self efficacy. Where the science activities mentioned above are directly associated with development of scientific aptitude amongst children. It was also discovered that increase of scientific aptitude also enhanced scientific achievement of students.

Duran and Ozdemir (2008)\textsuperscript{17} carried out a research study to investigate the effect of scientific process skills (aptitude and attitude) based learning approach used in 6\textsuperscript{th} and 7\textsuperscript{th} grade in Cumhuriyet primary school in Dalaman province of Mugla in Turkey, on 108 students (N=54, control group) and (N=54, experiment group). They observed in their study that experimental group students subjected to learning experience enabling them to improve and display their scientific process skills enhanced significantly than students in control group. It was also concluded in their study that though no statistically significant difference occurred in experimental group students’ attitude towards science, though significant reduction occurred in their negative attitude towards science.

\textsuperscript{17}``U.S. China Education Review”, USA: ISSN: March 2010; Vol-07.
Hilal Aklamis and Omer Ergin (2008)\textsuperscript{18} conducted a study on the effect of scientific process skills in education on students’ scientific creativity, science attitude and academic achievement. The aim of study was to investigate the effect of teaching scientific process skills on students to promote their scientific creativity, attitude towards science and achievement in science. The subject of research consisted of 40 students of seventh grade of elementary school existing in Buca district of Izmir province in Turkey. The result of research concluded that the scientific process skills (Scientific Attitude and Aptitude) in education increased the students’ achievement and scientific creativity; however no meaningful progress was made on their attitude towards science when compared to teacher centered method.

Afif Zeidan (2009)\textsuperscript{19} conducted a study on relation between grade 11 Palestinian students’ attitude towards biology and their perception of biology learning environment. This study investigated the learning environment and attitude to biology amongst grade 11

\textsuperscript{18} Hilal Aklamis and Omer Ergin, “The Effects of Scientific Process Skills in Education on Students’ Scientific Creativity, Science Attitudes and Academic Achievement”. In Asia Pacific Forum on Science Learning and Teaching, Vol-09 issue-01, June 2008.

\textsuperscript{19} Afif Zeidan, “A Study on Relation between Grade 11 Palestinian Students’ Attitude towards Biology and their Perception of Biology Learning Environment”. In International Journal of Science and Mathematics Education, 2010, pp. 783-800.
students in cities and village of Tulkam district in Palestine and concluded that the students possessed reasonably positive attitude to biology and perception of learning environment in biology. A significant gender effect in favor of females was also observed along with the significant positive correlation between attitude of pupils to biology, biology learning environment and achievement in biology.

Yara Philias Olatunde (2009) conducted a study on students’ attitude towards mathematics and academic achievement in some secondary schools in south west Nigeria. The study was conducted on 1542 senior secondary (two) students from south west Nigeria. The study concluded that the students’ attitude towards the study of mathematics was positive and it is a must for a teacher to develop and enhance positive attitude amongst students with positive relation in enhancing teaching learning process and to enhance students’ achievement in mathematics.

Samia Khan and Stiphen Petrina (2009) conducted a study to examine the contributors of ICT (Information & Communication

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20 Yara Philias Olatunde, “Study on Students’ Attitude towards Mathematics and Academic Achievement in South West Nigeria”. In European Journal of Scientific Research, ISSN-1450-216x, No.III. Vol -36.

Technology) specifically on CAI (Computer Aided Instruction) in Korean science classroom. A sample of 234 Korean middle schools were categorized into 5 achievement groups and data was collected from post and pre achievement test score and pre and post questionnaires for attitude towards science, future courses and carrier aspirations in science. Findings for the same included (i) the lowest achievement group showed most significant improvement. (ii)An improvement in students’ achievement in science significantly influenced students’ attitude towards science, future course selection and aspirations related to science.

Brian T. Gautreau and Ian C. Binns (2012) investigated students’ attitudes towards science and content achievements in three secondary biology classrooms using an environmentally place based curriculum as well as traditional curriculum and found that inquiry based academic class achieving the latest gain in scientific attitude of learners towards science and in their achievement level.

2.2 Studies done in India:

Numerous studies have been undertaken and successfully completed in India at various places under different circumstances and at different educational levels considering one or more variables matching to the study undertaken as above i.e. effect of scientific attitude and scientific aptitude on the academic achievement in science subject of class x students. The review of the studies similar to the study undertaken conducted at different places in India is compiled and analyzed as under.

Broadening the horizon of the study yields the widened comprehensive picture of the re-searches which have been conducted in past, in and around the field concerned. Nayar (1971)\textsuperscript{23} conducted a study on class X students in selected schools of Trivandrum Revenue District of Kerala. In his study he concluded the predictors of achievement in science at secondary school stage with the help of variables like verbal reasoning ability, numerical ability, comprehension and interpretation, problem solving, critical thinking ability and spatial ability and found a positive relation between all the

variables. He also concluded that there was no significant difference between the mean performance of rural and urban students on his selected experimental and criterion variables.

Pathak (1972)\(^{24}\) conducted a study at class X students in Rajasthan. His research narrowed down to the study of factors differentiating high and low achievers in science with respect to the factors like intelligence, personality traits, interest patterns, socio-economic status and study habits. He concluded that all the factors contribute to the achievement of students. Aggarwal (1973)\(^{25}\) studied the prediction of scholastic success in science subject with the help of battery of psychological tests among high school students in Uttar Pradesh and found that pupils of South Kanara had better scholastic aptitude than pupils elsewhere in the state.


Lalithamma (1975) studied the factors affecting achievement of secondary school students in mathematics in selected schools of Kerala and concluded that achievement in mathematics was positively related to intelligence and interest in mathematics along with the study habits and socio-economic status.

Mathew (1976) selected class X students in the district of Trivandrum in Kerala & studied the personality factors related to under achievement in science. In his study he found that a higher number of over achievers were in the high intelligence, low age group, amongst boys and among the parents with higher education than their respective counterparts.

Mishra (1978) carried out comparative study of high and low achievers in science, commerce and arts in respect of creativity in selected secondary schools in Rajasthan and concluded that the high

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achievers in science were higher on the level of creativity than their low achieving counterparts.

Tripathi (1982)\textsuperscript{29} conducted his study in Malpur, Tonk and Jhotwara Jaipur. He studied the effect and relationship between selected instructional methods and achievement in science and found that high creative students were quicker, intellectually well adjusted and emotionally more mature than low creative ones. Nair (1984) studied the factors affecting under achievement in biology of secondary school Students in Ernakulum Distt. of Kerala and concluded that less value of attitude towards science was also one of the causes of under achievement.

Mandilla (1988)\textsuperscript{30} conducted a study in Rajasthan and examined the attitudes of secondary stage students towards their own science curriculum and its relationship with achievement motivation and concluded that students from urban and rural areas who scored high, possessed favorable attitude towards the science curriculum.

Irudayaraj (1989)\textsuperscript{31} conducted a study of creativity and scholastic achievement in science of standard X students in Devkottai educational Distt. of Tamilnadu and found that there was no significant relationship existing between the said variables.

Jayaraman (1989) \textsuperscript{32} carried out a study of students’ achievement in mathematics at standard X level in Devkottai educational Distt. of Tamilnadu and established that there was positive association between their attitude towards mathematics and achievement in mathematics.

Darchingpuii (1989) \textsuperscript{33} carried out a study of science achievement, science attitude and problem solving ability among secondary school students in Aizawl and indicated a significant relationship between scores on scientific attitude and achievement in science. A significant sex difference in achievement in science & problem solving ability also existed.

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Ghosh (1989)\textsuperscript{34} carried out a study of scientific attitude and aptitude of students at Kalyani & concluded in her study that scientific aptitude was related to scientific attitude and also there was no significant difference observed in respect of sex, socioeconomic study and place of work amongst various groups in relation to the subjects possessing high or low scientific attitude and scientific aptitude.

Rao (1990)\textsuperscript{35} carried out a comparative study of scientific attitude, scientific aptitude and achievement in biology at secondary school level in Andhra Pradesh and observed that the scientific attitude in secondary school pupils was average. There was no influence of sex on scientific attitude of the pupils. The pupils studying in private schools, rural schools, English medium schools and residential schools held relatively better scientific attitudes than their counterparts. The scientific aptitude in secondary school pupils was also average. The pupils of private, urban, English medium and residential schools held highly significant and positive association amongst scientific attitude, scientific aptitude and biology achievement.


Kar (1990)\textsuperscript{36} carried out a study of relationship between attitude towards general science and achievement in science, of class IX students of Cuttack and found that the distribution of attitude score was negatively skewed. Boys were found more favorably disposed to science than girls and there was a positive relationship between attitude and achievement.

Kumar (1991)\textsuperscript{37} conducted a study at students of different schools in Cuddalore Educational District of Tamilnadu and showed that the development of scientific attitude depended upon the perception of students and also upon the nature of their learning experiences. Also it affected their result in school.

Bhaskaran (1991)\textsuperscript{38} conducted research on achievement motivation, attitude towards problem-solving and achievement in mathematics of class X. students in Devkottai Educational District in

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Tamilnadu and found that there was a positive and significant relationship between achievement motivation, achievement in mathematics and attitude towards problem solving.

Ngailiankim (1991)\(^ {39} \) selected students from eleven high schools in Shillong and carried out an investigation into attitude and study habits related to achievement in mathematics of these students and established that no significant difference was found in the attitude towards mathematics of students grouped high, average and low in mathematics achievements.

Sinha (1991)\(^ {40} \) selected her area of study from overall of south west Bengal and conducted a cross sectional study of the impact of scientific attitude, motivation and self concept in science, the achievements of students in science and concluded that urban boys and girls achieved more than rural boys and girls and also there was no difference in self concept of science between rural and urban students.


Kumar Sam (1992) 41 randomly selected the samples at Cuddalore Educational District of Tamilnadu and studied the teaching of general science and development of scientific attitude in secondary school students in relation to achievement in general science. He concluded that there was no significant difference between the means of scientific attitude test scores of pupils of urban and rural students, boys and girls.

Nelliappan (1992) 42 selected his area of work from South Arcot District in Tamilnadu and went a step further by studying both attitude and interest within the context of learning environment and showed that the various components of learning environment are significantly related to both scientific attitudes and interests. His steady revealed that sex and locality of students do not influence their scientific attitude and scientific interests.


Srivastava (1992)\textsuperscript{43} selected her samples from Agra city and carried out a study of creativity amongst higher secondary students in relation to scientific aptitude and attitude towards science. In her study she concluded that students of science of higher secondary levels having more scientific aptitude were more creative than those having less scientific aptitude. In the field of creativity boys having favorable attitude towards science were slightly better than those having unfavorable attitude towards science whereas the girls with favorable or unfavorable attitude towards science didn’t differ. The girls were more creative than boys. Boys had more scientific aptitude than girls. The girls had more favorable scientific attitude than boys.

A study by Salim (1994)\textsuperscript{44} selected students of secondary schools of Kerala state and carried out a study on the interaction of approaches to studying and achievement motivation on achievement in biology of secondary school pupils. In his study he found that variation in achievement in biology was not dependent on achievement motivation.


Padhi (1994)\(^{45}\) studied the high school students’ science classroom environment and their attitude towards science. His sample comprised of randomly selected students from different schools of Orissa. His research revealed that a significant relation was found between science classroom scores and attitude towards science, scores of boys & girls differed significantly with respect to their attitude towards science.

Gautam (2002)\(^{46}\) selected sample of students from the schools of Allahabad city and conducted a study of scientific attitude in relation to interest in science. He concluded in his study that girls exhibited greater scientific attitude and interest than boys. Scientific attitude was positively related to the interest in science and there was a significant difference in scientific attitude of students with high, average & low interest in science. Students with high level interest in science exhibited superior scientific attitude and showed greater achievement in science.


Raheem and Hasan (2003)\textsuperscript{47} studied the attitude of secondary school students of Aligarh District, towards science in relation to sex, socio economic status and intelligence and concluded that both boys and girls showed equal positive attitude towards science. The students from high socio economic background showed better positive inclination towards the subject of science. Students with high intelligence showed positive attitudes than students from middle or low intelligence level.

James and Marice (2004)\textsuperscript{48} carried out a research on achievement in science in relation to scientific aptitude and scientific attitude amongst students in Tamilnadu and concluded that there is positive relation between achievement in science and scientific aptitude whereas achievement in science and scientific attitude are not related. There is no significant gender difference in science achievement favoring girls; however, boys and girls are at par in scientific attitude and scientific aptitude. Students hailing from rural


areas have similar scientific attitude and same type of academic achievement in science but they differ in their scientific aptitude.

Thabor (2004)\(^{49}\) conducted a study of creative thinking ability and attitude towards science amongst students of secondary school in East Khasi Hills district of Meghalaya having different organizational climate and found that there existed a significant difference among students, belonging to schools of different types of management, in their attitude towards Science. The researcher also found no difference between rural and urban secondary school students in their attitude towards science.

Raheem (2006)\(^{50}\) took samples from schools of Aligarh District and conducted a study of certain cognitive and non cognitive predictors of attitude towards science and science achievement amongst Muslim and non Muslim adolescents and concluded that intelligence, SES and creatively are found to be significant predictors of attitude towards science for the total sample and have a predictability strength of


18.3%. Intelligence SES and creativity for Muslims and intelligence and SES for non Muslims are found to be significant predictors of attitude towards science. Students who achieved high possessed better attitude towards science.

Bhaskaran (2006)\textsuperscript{51} conducted a study on scientific attitude and academic achievement at upper primary level of 114 students of standard VIII in Panchayat Union aided and Municipal Schools in Virudhnavar District. And found that pupils possessing high scientific attitude attained higher position in science subject in their respective classes.

Johny Sholy (2008)\textsuperscript{52} carried out a study which was conducted on a sample of 500 secondary students in District of Kerala. The sample was selected by stratified sampling technique giving due representation to characteristics like school locality, types of schools (single gender or co-educated). This study revealed that mathematical creativity and achievement is significantly related to the variables like

\textsuperscript{51} Dr. S. Herbart Bhaskaran, Scientific Investigation and Research, www.education.nic.cd5oy. home. html.

\textsuperscript{52}Johny Sholy, “Effect of Some Environmental Factors on Mathematical Creativity of Secondary Students of Kerala”. DG 9: In Promoting Creativity in all Students in Mathematic Education. sec-IV. The 11\textsuperscript{th} International Congress on Mathematics Education Monterrey. Mexico, July 6-13, 2008, pp310-313.
intelligence, attitude towards mathematics, anxiety in mathematics and self-concept in mathematics.

R Mukhopadhyay (2013)\textsuperscript{53} carried out a study in Calcutta and concluded that there are several factors which influence science learning; among which their scientific attitude is a major determiner. Scientific aptitude indicates the possibility of future success or failure in the area of science learning.

2.3 \textbf{Trends emerging from the Review of Related Literature:}

Various studies have been conducted in India and abroad taking scientific attitude, scientific aptitude and achievement in science as either or all of the variables along with other variables in their studies. The area of study, the samples taken for the study and the circumstances under which the studies have been conducted varied place to place and country to country. More number of studies have been conducted taking scientific attitude along with science achievement with one or more other variables as compared to scientific aptitude and science achievement. The review of related literature pertaining to the problem under the study revealed that a thorough search for the factors affecting achievement in science subject has been

made in India and abroad concentrating on scientific attitude and scientific aptitude. After reviewing the studies done abroad and in India related to the topic the following observations can be made:

(i) A very few studies have been noticed in India and Abroad where scientific attitude and scientific aptitude have been taken as independent variables along with science achievement as dependent variable.

(ii) The population used for the researches in India and Abroad was selected in smaller values.

(iii) Only a few studies concentrated X Standard students as area of their studies to analyze the effect of scientific attitude and scientific aptitude on the science achievement of the students.

(iv) The circumstances and conditions of the studies done in India and Abroad are quite differing to the study undertaken by the researcher.

(v) The area of study which has been selected by the researcher in the review of the studies done Abroad and in India is different to the study undertaken by the researcher in the topic selected as mentioned above.
The delimitation of the above mentioned studies in India and Abroad varied the area, conditions and of standard of the samples selected by the researcher in the present study undertaken.

A retrospection into all the researches done with regard to the achievement in Science subject taking Scientific Attitude and Scientific Aptitude as affecting factors, none of the studies mentioned above in respect to India and Abroad has considered North Eastern Region concentrating on East Khasi Hills District of Meghalaya.

The review of the above studies shows that none of the studies have selected the North Eastern Region concentrating on East Khasi Hills District of Meghalaya to observe Effect of Scientific Attitude and Scientific Aptitude on pupils’ achievement with reference to X standard students.

2.4 The Present Study:

The review of above studies and the resume of the concerned study as carried out above shows that various studies have been conducted to probe into the factors which influence the pupils’ achievement in science subject but no such study has been conducted
to observe the effect of scientific attitude and scientific aptitude on pupils’ achievement with reference to the schools of Meghalaya that to be specially concentrating on East Khasi Hills District of Meghalaya. Therefore it is in this context that the present study has been undertaken to determine whether scientific attitude and scientific aptitude effect the achievement in the science subject of class X students in East Khasi Hills district of Meghalaya, considering scientific attitude and Scientific aptitude as independent variables and achievement in the subject of science of students of class X as dependent variable. Thus, the present study is unique in the following way;

(i) The present study aims to find out the effect of Scientific Attitude on Achievement in science subject on class X students who are at a level of deciding factor to achieve in science subject in X board.

(ii) The present study aims to find out the Effect of Scientific Aptitude on Achievement in science subject on class X students who are at a level of deciding factor to achieve in science subject in X board.

(iii) The study tends to find out which of these factors is more influential in better achievement in science subject.
(iv) The study aims to help the students by improving the basic aspects of Scientific Attitude and Scientific Aptitude to enhance the Achievement in science subject in East Khasi Hills district of Meghalaya region.

(v) The present study has been conducted on a large sample on the basis of which definite conclusions can be drawn.