CHAPTER-II

REVIEW OF RELATED LITERATURE

This chapter deals with the internal review of the literature. It is an attempt to discover relevant material published in the problem area under study. This covers the empirical research studies done previously in the problem area. The studies conducted during the last few decades in the field of achievement that are more relevant and pertinent to the present investigation are discussed in this chapter.

2.1. Purpose of related literature

Review of related literature, provides a comprehensive understanding about what has already been known about a topic. It forms the basis for subscribing rationale for having chosen the problem for the study. Review of related literature allows the researcher to acquaint himself with the current knowledge in the field or area in which, he is going to conduct his research. It enables the researcher to define the limits of his study. It also helps the researcher to delimit and define his problem. The knowledge of the related literature brings the researcher up-to-date on the work, which others have done and thus state the objectives clearly and concisely.

By reviewing the related literature the researcher can avoid unfruitful and useless problem areas. He can select those areas in which positive findings are very likely to result and his endeavours would be likely to add to the knowledge in a meaningful way. Through the review of related literature, the researcher can avoid unintentional duplication of well established findings. It is no use to replicate a study, when the stability and validity of it's results have been clearly established.

The review of related literature gives the researcher an understanding of the research methodology, which refers to the way, the study is to be conducted. It helps the researcher to know about the tools and instruments,
which proved to be useful and promising in the previous studies. It also provides an insight into the statistical methods, through which the validity of the results is to be established.

The important specific reason for reviewing the related literature is to know about the recommendations of the previous researchers, listed in their studies for further research.

Good, Barr and Scates (1941) analysed the purposes of review of related literature as given under.

- To show whether the available evidence material solves the problem adequately without further investigation.
- To provide ideas, theories, explanations or hypotheses valuable in formulating the present study
- To suggest the research methods to the problems
- To locate comparative data useful in interpretation of the results
- To contribute to the general scholarship of the investigator

2.2. Need to know about related literature

For any worthwhile study in any field of knowledge the research worker needs an adequate familiarity with the library and its many sources. Only then will an effective search for specialized knowledge be possible. The search for reference material is a time consuming but very fruitful phase of research programme. Every investigator must know what sources were available in his field of enquiry, which of them, he is likely to use and where and how to find them. (Sukia et al 1980)

According to Best (1959), Practically all human knowledge can be found in books and libraries. Unlike other animals that must start a new life with each generation, man builds up accumulated and recorded knowledge of the past.
Availability of adequate information about educational thought and research does not by itself result in possession of its knowledge by investigator. The investigator may be very keen to possess up-to-date information regarding his field, and may try hard to be posted up-to-date, and yet fails to get enough information due to non-existence of source of such information (Sukhia 1980)

In the field of education, as in the other fields too, the research worker needs to acquire up-to-date information about what has been thought and done in the particular area from which, he intends to select a problem for research. But it is found that generally the extent of important, up-to-date information regarding educational research and ideas possessed by educational workers, is very limited (Sukhia 1980)

The investigator should strive hard to be posted with necessary information, relating to his field of enquiry, basing on which, he has to build up his findings.

2.3. Conceptualisation of the problem

An objective of teaching mathematics should be, to make clear the nature of mathematics itself as reflected in the following characteristics.

1. Mathematics is a dynamic intellectual enterprise.

Mathematics is primarily an intellectual subject. It should not be presented as a collection of rules, which have to be applied mechanically to a large number of examples. The whole curriculum should be built round interesting and intellectually challenging problems. The student of mathematics is not simply a verifier of results but an explorer of new vistas of knowledge. Mathematics is considered as the Science of Sciences and Art of all Arts. Almost all subjects require mathematical knowledge to a great extent.
2. **Mathematics is logical:**

Logic is the essence of mathematics. Mathematics draws necessary conclusions from explicitly stated assumptions. The student must study a number of axiomatic systems. These may not be deep, but they must be logically correct. They must understand the nature of the proof. After a good mathematical training, the student must be able to detect faulty deductive reasoning and to differentiate between definitions, axioms, postulates and validly drawn theorems deduced from axioms.

3. **Mathematics is a study of sets with structures.**

Sets and structures are the basic unifying concepts in mathematics. At the school stage mostly algebraic and order structures are studied. The students must be clear about these structures for natural numbers, for integers, for real numbers and for complex numbers.

4. **Mathematics is a study of patterns in number and space**

The student must develop a sense for noticing patterns, when he comes across these. Number and space institutions have to be strongly built. A student must be able to exploit symmetries in number and geometrical patterns.

5. **Mathematics deals with general structures**

By seeing carefully a number of particular structures; the student should be able to perceive, a general structure with his intuition. He must feel how certainty of scientific results depends to a great extent on the use of mathematical methods.

6. **Mathematics deals with abstract structures**

Abstraction is essential in mathematics. The school curriculum must be motivated by very concrete situations. The goal of abstraction must, however, not be given up and must ensure that the children can see the points of abstraction.
7. **Mathematics deals with precise and elegant structures**

The student must be able to make precise statements and should be able to detect loose statements, when these are made.

Mathematics is the numerical and calculative part of man's life and knowledge. It helps man to give exact interpretation of his ideas and conclusions in the form of a mathematical equation. On the other hand, describing the relationship between the qualified aspects of a phenomenon is not only exact but also brief.

8. **Mathematics deals with deep structures**

The students must build up an ambition to study deep structures and derive pleasure out of them. The primary aim of teaching mathematics is, to enable the student to develop understanding and skills related to mathematical concepts, Principles, formulas and operations and to develop abilities to apply them to problem-solving situations.

Nagalakshmi (1995) studied the secondary school students of Hyderabad, on their performance in solving problems at five stages of development, namely comprehension, Judging the adequacy of the data, given approximations drawing conclusions and making generalizations. She found that students were not aware of various stages and processes and were mainly concentrating on arithmetic operations rather than on the understanding of the process as a whole.

2.4 **The Recommendations of various committees and commissions on mathematics education**

In Indian schools, the present syllabus of mathematics has been modified in the light of changes suggested by kothari commission and the guide lines suggested by the N.C.E.R.T (J.N.Kapoor, 1993)

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The commission has recommended that at the primary level, the courses in Arithmetic and Algebra be integrated and emphasis be laid on the laws and Principles of mathematics and logical thinking. The syllabus should include the development of number system, systems of numeration and notation, equations, groups and functions. The Geometry course should be re-organised in a more rational manner.

At the high and higher secondary level, the mathematics syllabus, which at present, is divided in the traditional manner into Arithmetic, Geometry and Algebra, Trigonometry, statistics, calculus and coordinate Geometry, need to be revitalized and brought up-to-date. The whole of Arithmetic course and also the basic operations in algebra can be so arranged as to be completed by the end of primary stage. Out-dated topics like simplification, factorization, L.C.M and H.C.F etc. should be deleted. Trigonometry should be relegated to Algebra and then, there will be no need to treat it as a separate subject. Much of the work on identities, solution of triangles, heights and distances can be cut down. The emphasis on memorising of theorems and exercises in Geometry should be given up. The approach to the teaching of Geometry should be based on axiomatic and systematic treatment.

Set language may be used in designing the basic terms in Geometry, and difficult portions should be gradually taken up in the next grades.

Earlier the Indian Education Commission (1966) clearly pointed out: “We can not overstress the importance of mathematics in relation to science education and research. This has also been so, but at no time, the significance of mathematics been greater than today. It is important that deliberate effort is to be made to place India in the world map of mathematics within the next two decades or so”.

The National policy of Education (1986) made the relevant observation as follows: Mathematics should be visualised as the vehicle to train a child to
thin, reason analyse and articulate logically. Apart from being a specific subject, it should be treated as concomitant to any subject involving analysis and reasoning. With the introduction of computers in schools, educational computing and emergence of learning through the understanding of cause-effect relationship and the interplay of variables, the teaching of mathematics will be suitably re-designed to bring it, in line with modern technological devices.

In this context NPE suggests that a multimedia approach for curriculum transaction should be adopted and Educational Technology should be extensively used. Accordingly mathematics educators recommended the development of instructional packages comprising the following.

➤ The text book

➤ The supplementary problem books, consisting of additional material plus some challenging mathematical problems for high achievers and talented

➤ Enrichment materials for higher achievers and the talented for use in mathematics clubs in schools

➤ Teachers hand book, based on the above materials

➤ Models, charts, films etc.

According to the experienced mathematics educators, the implication of the policy (NPE 1986) statement for mathematics education, in the secondary level is as follows:

At the secondary stage, a beginning will be made to teach mathematics as a discipline in a suitable manner. Even then the concepts of essential learning outcomes, minimum level of learning and mastery learning are relevant and valid.
The NCERT publication 'position of mathematics in India' has listed the following objectives in the Indian syllabi (Kapoor 1993) at the secondary level.

1. To develop understanding of those mathematical concepts, facts, terms, procedures, symbols, relationships and principles, which are needed to solve every day problems,

2. To develop such qualities as
   
i) Working with speed, precision, accuracy and neatness
   
ii) Estimation and approximation and
   
iii) Capacity to apply mathematics to simple, concrete situations

The UNESCO Project lists the following objectives at the secondary level.

➢ To make pupils learn modern developments in mathematics;

➢ To prepare pupils for advanced study of science and technology

➢ To develop powers of logical thinking, abstract thinking and generalisation,

➢ To acquaint the pupils with a systematised knowledge of mathematics,

➢ To enable the pupils acquire techniques of problem solving, and

➢ To develop an attitude for investigation and critical analysis.

Thus mathematics is essentially a programme of education, which fosters mental processes of questioning, reasoning, analysing, inducting, logical and reflective thinking of a very high order. Hence the teaching of mathematics is of at most importance in any school curriculum, so as to make achievements in the subject satisfactory.
2.4.1 Academic Achievement in general

Academic achievement is of paramount importance, particularly, in the present socio-economic and cultural contexts. Obviously in the school/college level, great emphasis is placed on the achievement, right from the beginning of formal education. The school performs the function of selection and differentiation among pupils on the basis of their scholastic achievement and other attainments, which open out avenues for advancement in life.

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 the 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 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 takes place.

Mathematics is one of the subjects included in the school curriculum, the achievement in which is the main concern of the investigator. The investigator wants to know various socio-demographic and Psychological factors which influence the achievement in mathematics, which is considered to be one of the most important subjects in the school study. In this context, the investigator presents some of earlier studies made in this direction.

There are number of studies relating to the scholastic/academic achievement done in the past. However only the literature pertaining to the independent variables used in the present study is referred in the succeeding pages.

In general terms, achievement refers to the scholastic achievement of the student, at the end of an educational programme. It is to this concept that
the term achievement is referred here. To maximise the achievement within a given set up, therefore is the goal of every educationist, a teacher or an educational administrator. Research has been to our aid, looking into what variables – personal, home, school etc. promote achievement and what are the determinants to it.

A glance at the related literature reveals that a number of variables have their impact on the academic achievement or in particular achievement in mathematics.

The present investigation took note of the above facts and attempted to treat some of the prominent intellectual and non intellectual factors as Psychological and sociological factors and coined it as Psycho-sociological factors. The influence of certain Psycho-sociological factors on the scholastic achievement in mathematics of 10th class students is investigated.

2.4.2 Under Achievement in Mathematics

"Human talent is our greatest national resource. Its conservation and development should, therefore, be a primary concern of every one. When human talent is wasted, every one is deprived, when it is rightly developed, every one is benefited" Harriot (1963)

The wastage of talent is mainly observed in under achievers. In fact, under achievement is a crucial problem that needs urgent solution, so as to enable the society, to derive optimum benefits from the system of education. Though it is necessary to identify under achievement at different stages, during the course of the students educational career, there is a strong view that it is unfair to label a youngster as under-achiever. For once he is labeled so, he remains such for ever and very often the label is erroneous in many respects. This is a misconception in students, where they are backward or dull. A child, who is lagging behind in class, is considered backward. On the other hand, a child who does not fair well in class, even though his level of intelligence is normal or even above normal, is also considered to be
backward, only because his educational achievements are not satisfactory. In many cases the teachers are not able to distinguish one from the other, and label both these types of children under the category of "Dull children". Under such circumstances, even the child of normal intelligence becomes unable to exert himself, as he is made to believe that he is dull.

The under-achievers have restricted themselves opportunity for higher education. At the same time, they have difficulties in obtaining a job. Many times these under-achievers who could have been of great use to the society, misuse their potentialities and become a nuisance to the others. They can create tension in the society by their violent behaviour.

The studies have proved that the large number of drop-outs at school level is because of under-achievement, especially in mathematics. Mathematics is a single subject which has caused maximum wastage. Kothari commission (1966) while contemplating on the problem of underachievement has observed. "The group of under-achievers who are not intellectually dull but are not at least of average and may even be superior ability. The failure of such children should be of great concern to developing country like India which can not remain indifferent to this loss of potential man power within the higher ability range. Several factors like physical, intellectual, emotional and environmental contribute to the failure of under achievers to come up to the level of their talent abilities".

Dr. Akre pointed out that there are 18.46 percent of under-achievers in mathematics at secondary school level. It is a very serious problem, because of importance of mathematics in daily life. Especially in new vista of 21st century, mathematics is one of the important subjects to enable to fit oneself into a changing world and make one ready to adopt oneself to new circumstances. Right from human civilisation, use of mathematics is very close for development of man. At the present 'competitive era', mathematics may be offered in various competitive examinations. It gets witnessed for 'all-rounder personality' of the child, one who knows mathematics.
Under achievers are the lot of large students population of our country, who are just neglected and left unmotivated, thus causing a great loss to the society, collectively and individually. Hence it is our duty to attend these under achievers and challenge to our educators, Psychologists and national leaders. Hence necessary steps are to be undertaken to find the root causes for this under-achievement so as to eliminate the problem of under-achievement, thus reducing the wastage of talent.

Some of the earlier studies conducted on the impact of various Psychosociological variables on the achievement are presented in the following pages.

2.5 Earlier studies relevant to the present study.

There are a number of studies relating to the scholastic/academic achievement done in the past. However only the literature pertaining to the independent variables, used in the present study, is presented here under.

2.5.1 Achievement and Type of the Management

The type of the management of the school in which a student studies, may have some impact on the academic achievement in mathematics. Some of the studies conducted earlier in this direction are presented here under.

Jagannadhan (1983) investigated into the type of the school and academic achievement and found that pupils of V, VI and VII classes in Govt. schools achieved the highest mean (58.50) academic achievement followed by Panchayat Raj (49.81), Private (45.99) and municipal (45.02) schools. The F test (17.17) revealed that the means differed significantly at 0.01 level.

Jyoti Rathore (2000) revealed that the mean scholastic achievement of children (N=500) From Formal Primary schools in Science was better than children (N=500) studying in Non-formal education centres.
Manoranjan Panda (2000) reported that the mean academic achievement of IX class pupils in the schools managed by SC and ST Development corporation, Govt and Non-Govt differ significantly from one another at 0.01 level. The achievement of pupils \(N=370\) in Non-Govt schools is better than the pupils \(N=140\) from Govt schools. The achievement of pupils from Govt schools is better than that of pupils from \(N=40\) SC and ST Development Department schools.

Gnanasundararatharasu and Vincent De Paul (2002) found that due to video assisted instruction, there is no significant difference in the mean achievement scores in Social Science among the pupils of Govt and aided Primary schools.

Manjuvani and Mohan (2002) investigated that there is no significant difference in the academic achievement of

i) adolescent girls studying in single sex \(N=95\) and Co-education \(N=98\) schools.

ii) Adolescent boys studying in single sex \(N=95\) and co-education \(N=101\) schools.

iii) Adolescent boys and girls studying in single sex schools and in co-education schools.

Anice James and Marice (2004) investigated into the academic achievement in Science among XI standard students \(N=470\) and found that students from Matriculation \(N=196\) Schools and state Board \(N=270\) schools have no significant difference in their achievement scores in Science.

Laxmidhar Behera and Sushant Kumar Roul (2004) reported that type of the institution (coeducational and women) did not exert any influence on the achievement of BEd students.
Srinivasan and Arivudayappam (2004) reported that the achievement level of Aided Schools and Govt Higher Secondary Schools is greater than Panchayat union Middle School and Govt High Schools.

2.5.2 Achievement and Sex

In a male dominated society, girls are deprived in all aspects in the society. Pre-determined notion of Parents, Partiality in treatment, restrictions in their mobility, lack of freedom, Social evils like dowry system, have been the biggest impediments in the progress of the girls in the field of education. Sex is one of the important variables in the academic achievement.

The following are some of the studies reviewed on this aspect.

Farquhan (1963) observed no significant relationship between academic achievement and sex of XI grade High School students.

Pavithran and Feroze (1965) found that there is no marked difference between boys and girls in the scholastic achievement of X class pupils. Both are more or less on the same levels of achievement.

Padmanabhan Nayar and Visweswaran (1966) found that there was significant difference between the achievements of urban boys and girls of X class. But however, they found that there existed a marked difference in the achievement of rural boys and girls.

Balasubramanian and Feroze (1966) found that there existed no significant difference in the achievement of boys and girls of urban locality, while there was some marked difference in the achievement in mathematics between boys and girls of rural areas of X class.

Gupta (1968) observed no significant differences between boys and girls of 9th class in three variables (ie) academic achievement, intelligence and economic status.
Hargovinda Gupta (1968) observed that except in the high intelligence group of VIII class Pupils, a significant relationship between academic achievement and sex appears to exist in both the moderate and low intelligence groups.

Vasantha Ramkumar (1969) found that there existed significant differences in the achievement of boys and girls.

Rangaswamy and Visveswaran (1977) found that there was no significant difference in the achievement of sports men and non sports men in SSLC (XI class) Pupils examination. However they said that girls who participate in sports are better achievers than boys, sex difference is however not significant in case of non sports boys and girls.

Roach (1979) conducted a study on 206 boys and 212 girls from 5(five) urban elementary schools in Jamaica and found that the girls scored significantly higher than boys on a mathematics achievement test.

Dhalakia (1980) found no significant difference in the achievement of male and female teacher trainees.

Asudullakhanl et al. (1982) showed that sex of Pre-university students (XII class) was found to be not effective in bringing about any variation in the scholastic achievement.

Gupta (1983) found that girls on the whole, had better achievement motivation, than boys and had higher academic achievement than boys. The relationship between achievement motivation and academic achievement is positive and significant.

Jagannadhan (1983) reported that sex does not have any significant influence on the academic achievement of V, VI and VII class pupils.

Gopalacharyulu (1984) found no difference in the achievement levels between male and female teacher Trainees (TTIs).
Watkins, Hattie and Astilla (1984) showed that there existed significant influence to sex, self-concept and intelligence on academic achievement of pupils.

Quraishi and Bhat (1986) conducted a study on 200 undergraduate students of M.S. University of Baroda and found that sex has a significant effect on academic achievement.

Ramaswamy (1990) observed no significant difference between boys and girls of high and low achievers.

Verma and Gupta (1990) revealed that VIII class boys belonging to the high environment group achieved significantly greater mean than boys belonging to the low environment group. However no significant differences were found in the case of girls of high, medium and low environment groups.

Bujendranath Panda (1991) observed that 9th and 10th class boys of rural areas and urban girls were better in academic achievement than their counter parts.

Vijayalakshmi and Hemalatha Natesan found that XI class girls (N=50), (1992) have better mean academic achievement than boys (N=50) which is significant at 0.01 level.

Rama Rao and Sinha (1993) reported that the performance of girls in examinations at all levels of higher education was much better than that of boys.

Gilson, Judith (1999) observed that large differences were not found in mathematics achievement, quantitative ability of 8th grade girls from single sex schools or girls from Co-educational schools.

Sood (1999) in her study found that although girls achieved somewhat higher than boys, yet insignificant differences exist in their mathematical achievement.
Nestesan and Susila (2000) reported that there is a significant difference at 0.01 level in the scholastic achievement of V standard boys (N=300) and girls (N=300) in Environmental Science.

Govinda Reddy (2002) found that sex does not have any significant influence on the academic achievement of DIET students. (N=600)

Panda (2002a) observed that V class boys (N=478) and girls (N=404) studying in Urban, Rural and tribal areas did not differ in their achievement in all the school subjects.

Suneetha and Mayuri (2002) reported that gender was found to be more important variable than IQ in deciding the high academic performance, as more girls were found among top ranking students of classes IX and X.

Gakhar and Aseema (2004) found no significant difference in the academic achievement of boys and girls of X class, in their Previous annual examination (Class IX)

Aggarwal (1974), Sharma (1976), Tiwari (1980) and Dubay (1982) have found that girls perform better than boys in all the school subjects.

But Aruna (1981), Chanda and Sunanda Chandira (1985) have reported that boys had better achievement than girls.

Again Satyanandam (1969), Panchanathan and Shanmuga Ganesan (1992) found that sex had no bearing on the academic achievement.

Mohammad Khayyer and Philip R. Delacy (2005) found that girls academic achievement was higher than boy's academic achievement.


SN Pondey, Md Faiz Ahmad: (2008) conducted a study on a sample of 621 students of XI standard (Male adolescents = 417 and Female adolescents
= 204) from, Azamgarh (Dt), Bihar (State) and found that there is no significant difference between male and female adolescents on the measures of academic performance.

Paavola Sapiyonja (2008) stated that

A research group from Kellago school of management of North Western University headed by professor Paavola Sapiyonja conducted a study on the Proficiency in mathematics of boys and girls below the age of 15 years over 40 countries. The research group made a study on 2.70 lakhs students. The details of the study were given, by “Daily Telegraph”. As per the details given; in the worldwide average rate of efficiency in mathematics, girls average rate is 2% higher than boys. In Britan girls, average rate of scoring is 0.7% less than boys. Where there is no much encouragement for girls education, like in Tourkey, the girls average performance is 4% less than boys. If equal opportunities are given, the difference in scoring between boys and girls can be reduced.

From the above observations, it is clear that a few studies have shown a relationship between sex and academic achievement and hence sex has been is eluded as one of the variables in the present study.

2.5.3 Achievement and Locality

This variable is a neglected one in educational research, particularly on the influence of locality on achievement in mathematics. As the investigator is interested in mathematics, locality is included as one of the variables in the present study to examine it’s impact on the achievement in mathematics. Some of the earlier studies in this direction are presented below.

Pavithan and Feroze (1965) observed that, the scholastic achievement of urban students of X class, is significantly better than rural students in all the subjects.
Jagannadhan (1983) concluded that the Pupils of V, VI and VII classes from urban areas had better achievements than rural pupils.

Narayana Koteswara and Ramachandra Reddy (1998) showed that there is the influence of locality on the reading achievement of high school pupils. Pupils in residential schools performed better than pupils in rural and urban. Among the three groups, pupils from rural areas were the lowest in their achievement.

Salimn Kumar (1998) reported that locality has significant influence on the achievement in biology of secondary schools pupils (N=700) at 0.01 level.

Krishna Moorthy (1999) found that locality has caused no significant difference in respect of academic achievement in History.

Prakash (2000) in his study concluded that urban students were better in their mathematical achievement when compared to the rural students.

Naresh Kumar Gupta (2002) reported that the achievement of majority of V class pupils (N=946) in slum area schools has been observed to be unsatisfactory, not only in mathematics but also in all other subjects.

Ponda (2002a) revealed that V class rural students had shown better performance in all the school subjects, when compared to their urban and tribal classmates. (N=887)

Anice James and Marice (2004) studied the academic achievement in science among XI standard students (N=470). Students hailing from rural (N=199) and urban (N=271) areas have the same type of academic achievement in Science.

Gakhar and Aseema (2004) found that X class rural students significantly achieved better in their annual previous examination (IX class), than the urban students.
Panchalingappa (2004) concluded that there is no significant difference between rural and urban high school pupils of Devadasis in respect of their academic achievement.

2.5.4 Achievement and Age

Age of the students may have some relationship with their scholastic achievement. Some of the related studies are presented here.

Srivastava (1967) found that the relationship between the age and academic achievement is insignificant.

Har Govinda Gupta (1968) reported that no significant relationship existed between the age of the pupils and their academic achievement.

Asud Ulla, Prakasham et al. (1982) revealed that the age of the pupils was found to be not effective in bringing any variation in scholastic achievement.

Vyas (1982) reported that age of B.Ed students was significantly related to the total marks.

Quraishi and Bhat (1986) found that there is no significant relationship between the age and academic achievement.

Dowson et al. (1999) observed that age is strongly related to the academic motivation and achievement.

Biswa (2001) investigated into the relationship between the age and academic achievement of distance education learners and found that age has no effect on their performance.

Govinda Reddy (2002) found that there is no significant relationship between the age and total marks.

Suneetha and Mayuri (2002) found that age has significant influence on academic achievement.
Manchala (2007) found that age has significant influence on the academic achievement.

It is observed from the above studies that there are very few studies showing the relation between the age and academic achievement of 10th class students. Hence age is taken as one of the variables in the present study.

2.5.5 Achievement and Caste

In Indian societies caste, system is special social evil, there are reservations in the name of the caste in educational institutions for making admissions and in the recruitment to the various posts in the government service. There are many associations in our societies in the name of the castes, for their upliftment.

Hence the investigator is interested in knowing the effect of caste on the achievement of marks in various subjects and particularly in mathematics at secondary level. Hence caste is included, as one of the variables in the present study.

Some of the earlier studies made in this direction are presented here under

Dubey and Mishra (1977) have reported that the school environment was significant predictor of academic achievement among upper caste, backward caste, the S.C and Muslim girls.

Jagannadhan (1983) observed that the academic achievement of forward caste pupils of V, VI and VII classes is significantly better than that of backward caste pupils.

Gopalacharyulu (1984) found that different castes of student teachers of TTIs had, same achievement of three variables, Theory, Practical and total achievement.
Kumaraswamy (1992) found that caste of the adult learners did not have any influence on their academic achievement in the case of reading, writing, arithmetic (3Rs) as well as total achievement.

Sing (1993), Mehta (1992) and Lidhoo and Khan (1990) have found that the academic performance of upper castes was significantly higher than that of scheduled castes, scheduled Tribes and Back ward castes.

Jayachandrama Naidu (1998) observed that the influence of caste is not significant on the academic achievement of learners N=300 of formal education; where as caste has significant influence on the academic achievement of learners (N=300) of non-formal education and the total sample is (N=600).

Dubey and Mishra (1999) made a study to find the determinants of academic success of scheduled caste (SC), Backward castes (BC), Muslims (MS), upper castes (UC) and rural high school boys (N=400). Results suggest that there was no consistency in the predatory of academic success across the four groups.

Dash (2002) reported that ST students had the lowest percentage of passes in Higher Secondary Certificate (HSC) examinations in the state of Orrissa. A considerable number of X class students of high schools, managed by Tribal welfare Department, Govt of Orissa were detained and were not allowed to take H.S.C. examination.

Govinda Reddy (2002) found that cast is not significant on the achievement in Theory and total (Theory and practical) achievement of DIET students (N=600)

Manjula (2002) revealed that the achievement of Tribal students was low, except in language and mathematics, which was only on border line of average performance.
2.5.6 Achievement – Birth Order

Birth order means, the child born first, second, third and so on. Birth order may have some relationship with the academic achievement of the students in mathematics. The investigator included Birth order as one of the variables in the present study. Some of the earlier studies are presented hereunder.

Jagannadhan (1983) found that the birth order of V, VI and VII class pupils did not have any significant influence on their academic achievement.

Bhujendranath Panda (1991) found that birth order of IX and X class students did not have any significant influence on their academic achievement.

Govinda Reddy (2002) revealed that the birth order of DIET students have significant influence on the academic achievement in practical and in total achievement.

2.5.7 Achievement – Size of the Family

It is assumed that the size of the family (i.e.) the total number of persons in the family may have some impact on the studies of the children and hence on the academic achievement. Some of the earlier studies are presented hereunder.

Bhujendranath Panda (1991) observed that IX and X class pupils coming from small families were better in their academic achievement, when compared to that coming from big families.

Jayachandrama Naidu (1998) reported that family size has no significant influence on the academic achievement of learners from formal education centres (N = 300); whereas family size has significant influence on the academic achievement of total sample (i.e.) formal and non-formal education learners (N = 600).
From the above limited studies, it is clear that there were no much studies on the effect of family size on the academic achievement. Hence size of the family is included as one of the variables of the present study.

2.5.8 Achievement and Mother’s Education

Educational status of the mother may have influence on the scholastic achievement of the students. If mother is educated, it would have an impact on the child’s performance. Some of the studies reviewed are presented hereunder.

Pavithran and Feroze (1965) found that there is no significant relationship between scholastic achievement and educational status of the mother in the case of 10th class students.

Har Govinda Gupta (1968) found that there is no significant relationship between academic achievement of pupils and their mother’s education.

Sarma (1984) showed that mother’s education is highly associated with the academic achievement of their sons and daughters.

Jagannadhan (1986) conducted a study on highschool pupils and found that mother’s education is not associated with the achievement of the pupils whereas father’s education has impact on the scholastic achievement.

Vijaya Kumar Sethi (1990) revealed that the parents of high achieving students of all the four professional groups (i.e.) engineering, law, medicine and teaching are better qualified than those of low achieving students.

Bhujendranath Panda (1991) concluded that 9th and 10th class pupils with college educated mother’s are having better academic performance than illiterate or elementary class educated mother’s.
Ranga Swamy and Visveswaran (1977) reported that no definite pattern of relationship between the academic achievement of pupils and educational status of parents, is noticed.

Krishnamurthy (1999) revealed that there is significant relationship between academic achievement and education of mother.

Borbora, Rupa Das (2002) reported that backward classes children of literate mother’s showed better academic achievement, than the children of illiterate mother’s.

Chakrabarthy, Sharmistha (2002) observed that educational level of the mother’s influenced female learners’ literacy achievement attending the literacy centres.

Gnanasundararatharasu and Vincent Depaul (2002) inferred that due to video assisted instruction, there is no significant difference in mean achievement scores among the primary school pupils whose mother’s qualification is below metric and those above metric.

Govinda Reddy (2002) investigated that mother’s education has significant effect on the academic achievement of B.Ed. students both in theory and total achievement.

It is noticed from the above studies that very few studies are found showing the relation between scholastic achievement of 10th class students in mathematics and mother’s education. Hence mother’s education is included as one of the variables in the present study.

2.5.9 Achievement and Father’s Education

Education of the father may have some influence in the academic achievement of the pupils. General assumption is that educated fathers would assist their children in their studies in the form of counseling and guidance. Hence there may be some relationship between the scholastic achievement
and father's education. Some of the studies reviewed in this regard are given below.

Pavithran and Feroze (1965) found that there is no significant relationship between the scholastic achievement of 10th class pupils and the education level of the fathers or other members of the family.

Har Govinda Gupta (1968) observed that in the case of all the three (i.e.) high, moderate and low intelligence groups of VIII class pupils, no significant relationship seem to exist between subjects academic progress and their father's education.

Fraser (1959) found that there exists significant relationship between academic achievement and father's education.

Sarma (1984) found that father's and mother's education is highly associated with the scholastic achievement.

Jagannadhan (1986) found that high school pupils academic performance and father's education are significantly related.

Vijaya Kumar Sethi (1990) found that father's education has got much impact on the academic achievement of their sons and daughters studying in professional course (or) engineering, law, medicine and teaching.

Shamsuddin (1996) found that most of the secondary school male teachers were from families where fathers were not highly qualified, whereas most of the female teachers were from families with highly qualified fathers.

Krishnamurthy (1999) found that there is significant relationship between father's education and the academic achievement in history of second year higher secondary students. This gets support from earlier studies: Chatterjee et al. (1971), Khanna (1980) and Rajput (1985).

Grouws, Douglas A – Cebulla, Kristis J (2000) stated that there is a positive relationship between educational level of the parents and students'
performance in mathematics. But there is a considerable overlap in the performance of students from different educational background. Infact many students whose parents had a high school education or less scored higher than students whose parents had a university degree. Students whose parents were university educated, performed about two-thirds of a proficiency level higher than those whose parents had no more than high school education. However there is one important nuance to add to this finding. Students whose parents worked in an occupation that required advanced mathematics skill, infact, performed almost one proficiency level higher than students whose parents had similar education levels and income but whose occupation did not require advanced mathematics.

Govinda Reddy (2002) investigated that

1. Father's education and mother's education have significant influence on the academic achievement of B.Ed. students.

2. Brother's education has significant impact on the total academic achievement of DIET students.

Panda (2002a) revealed that V class pupils of college educated fathers had shown better achievement in mathematics.

It is noticed from the above studies that very few studies are found showing relationship between the scholastic achievement of 10th class students in mathematics and education of father. Hence father's education is included as one variable in the present study.

Barbara, Rupa Das (2002) reported that

1. Backward caste children of literate parents scored higher than the children of illiterate parents.

2. The academic achievement of first generation learners (i.e.) children of illiterate parents was found to be the lowest.
3. The achievement of girls was found to be comparatively better than that of boys.

Chakrabarthi, Sharmistha (2002) observed the education level of the family influenced female learners (N = 320) literacy achievement attending to literacy centres.

Gnanasundararathasau and Vincent De Paul (2002) found that due to video assisted instruction, there is no significant difference in mean achievement scores in social science among the primary school pupils of parents with below metric and those of above metric.

2.5.10 Achievement and Occupation of Parents

Scholastic achievement of students may vary depending upon the occupation of parents. Some of the earlier studies are shown hereunder.

Pavithran and Feroze (1965) found that the occupational status of the parents highly accelerates the scholastic achievement of X class students.

Har Govinda Gupta (1968) found no significant relationship between academic achievement and occupation of the father in the case of VIII class students, except in the case of moderate intelligent group. Other research studies namely Fraser (1959), Alexander (1965) and Smith (1966) corroborate these results.

Ford Dawson (1970) found that the employment of mother’s had no effect on the achievement of children either in a positive or negative direction.

Rangaswamy and Visvesvaran (1977) reported that no definite pattern of correlation could be noticed between the academic achievement and occupational status of the family of XI class students.

Jagannadhan (1986) found much impact of father’s occupation on the achievement of students
Bhujendranath Panda (1991) observed that 9th and 10th class pupils (N=280) with skilled professional parents were found to be better in their academic achievement when compared with their counterparts. This finding is agreed with the findings of Jamar (1964).

Ayishabi and Moly Kuruvalla (1998) found that there is no significant difference between mean scores of achievement motivation of pupils of IX standard of working and non-working mother’s, for the total sample (N=871). The findings are congruent with the findings of Stein (1973) and Bal (1988) who found a positive effect of maternal employment on the achievement motivation of adolescent and college going children.

Jayachandrama Naidu (1998) found that the influence of father’s occupation is not significant on the academic achievement of learners from formal education (N=300); whereas father’s occupation has significant influence on the academic achievement of learners from non-formal education (N=300) and the total sample is (N=600).

Goswami; Meenakshi (2002) found that children studying IX class with working mother’s were more achievement oriented than the children of non-working mother’s. Boys with working mother’s were most achievement oriented than girls with working mother’s.

Govinda Reddy (2002), reported that the employment of father, brothers and sisters have significant effect on the academic achievement of B.Ed students in practical work and practical examination (N=600).

Panda (2002a) investigated that father’s occupation did not have any significant impact on the learning achievement of V class pupils (N=882) in rural, urban and tribal primary schools.

2.5.11 Achievement and Religion

Cultural background of the students may have some influence on the academic achievement of the students. Community / religion may also have
some impact on the scholastic achievement. With this view, studies related to community / religion and achievement are presented hereunder.

Nair (1974) Asudullakhan et al. (1982) found that religion of pre-university students (XII class) was found not to be effective in bringing any variation in the scholastic achievement.

Radhamohan (1998) reported that there is significant difference in the high school student's academic achievement belonging to different religions (viz.,) Hindu, Muslim and Christian.

Kobal-Palcic (et al. 1999) showed that French pupil's scholastic achievement was more, when compared to that of Slovenian pupils.

Krishna Moorthy (1999) observed that there was no significant difference on the achievement, in History of second year higher secondary students (N= 455).

Regnerus, Mark's (2000), study indicates that respondents' participation in church activities is related to heightened educational expectations and these more intensely religious students score higher on standardized Maths/ reading tests.

Form the above shown studies, it is clear that there were no many studies showing the relationship between achievement in mathematics and Religion. Hence Religion is included as one of the variables in the present study.

2.5.12 Achievement and Annual income

Annual income of the family may have some impact on the scholastic achievement of students. Studies related to annual income and achievement, conducted earlier, are presented here under.
Har Govinda Gupta (1968) found that except in the high intelligent group a significant relationship between academic achievement and their father's income, seems to exist, in the moderate and low income groups.

Fraser (1959) found higher correlation between income and scholastic achievement \((r = 0.44)\), than between income and IQ \((r = 0.35)\)

Wise man (1964) did not find any significant influence of father's income on the brightness of the child in the school.

Gopal Rao (1965) found a significant and positive correlation between economic status and scholastic achievement \((r = 0.39)\)

Jagannadhan (1986) conducted a study on high school pupils and found that father's income had much impact on the academic performance.

Vijayakumar Sethi (1990) observed that the parents of achievers of all four courses engineering, medicine, law and teaching were generally had better income than those of low achievers.

Bujendra Nath Panda (1991) found that IX and X class students with high income parents were better in their academic achievement, than those of students with low income parents. The studies of Chopra (1964) and Khanna (1980) strengthened the above findings.

Jaya Chandrama Nadiu (1998) found that the influence of father's income is not significant on the academic achievement of learners from formal education \((N=300)\); where as mother's income has significant influence on the academic achievement of learners of non-formal education \((N =300)\) and total sample \((N =600)\)

Krishna Moorthy (1999) observed that the economic conditions of the family has caused no significant differences in respect of academic achievement in History of the second year higher secondary students.

Govinda Reddy (2002) found that the family income has significant influence on academic achievement of DIET Students \((N = 600)\)
Selvam and Sundaravalli (2002) conducted a study on 300 higher secondary students and found that the academic achievement has significant relationship with their economical, educational and vocational problems.

From the above observations, it is clear that there was no much previous study conducted on the significance of father's income in respect of academic achievement of X class students in mathematics. Hence income of the family has been included as one of the variables in the present study.

2.5.13 Achievement and Socio-Economic status (SES)

Socio-economic status of a family plays an important role in different aspects of an individual's life. There may be some significant relationship between the SES and academic achievement of an individual. Some of the earlier studies made, on the relationship between SES and academic achievement of the students are presented here with

Pavithram and Feroze (1965) found that the relationship between economic status of the family and scholastic achievement of X class students is extremely low and almost negligible. There is no any conclusive evidence of either favourable or unfavourable influence of economic status of the family on the academic achievement.

Rao (1965); Srivastava (1967), Bernstein (1968) Sudamma (1973), Ahuliwalia and Shyam (1975) and Sharma and Bhargava (1980) found very little and negligible impact of SES on the academic achievement.

Gupta (1968) revealed that the students of 9th class with higher economic status and mental ability were better in their scholastic achievement, compared to those with lower SES.

Anand (1973) observed the relationship of SES and academic achievement. He found that the relationship between the two existed even when the influence of intelligence of non-verbal as well as verbal types were partialled out. He revealed that there was some of impact of socio-economic
status of family on the mental abilities as well as academic achievement of students of classes VIII, IX and IX.

Mennon (1973), in his study revealed that overachievement and under achievement were influenced by socio-economic and demographic variables.

Rangaswamy and Visvesvara (1977) claimed that no definite pattern of correlation could be found between socio-economic status and academic achievement.

Asud Ullakhan et al. (1982) showed that SES of pre-university students (XII class) was found to be not effective in bringing about any variation in the scholastic achievement.

Shakiba-Nejad et al. (1983) observed a strong positive correlation between SES and academic achievement of the students.

Lal Singh (1984) found that there is no effect of socio-economic status on the academic achievements of X1th class students (N = 200), when the students have intellectual ability.

Jagannadhan (1986) conducted a study on V, VI and VII class students and found that SES had got much impact on the academic performance.

Quaraishi and Bhat (1986) conducted a study on 200 undergraduate students of M.S University Baroda and found that socio-economic status has a significant effect on academic achievement.

Ramana Sood (1990) found that there is no significant effect on academic achievement of Pre-Engineering students (N = 120) and their socio-economic status.

Rossi (1950), Gopal Rao (1956), Washburne (1959), Saini (1968), Lincoln (19069) and Srivastava et al. (1980) found significant relationship between academic achievement and socio-economic status.
Thorndike (1952), Cattell et al (1966), Meller (1970), Ahuwalia and Deo (1978), and Venkaiah (1980) found either negative or very low correlation between academic achievement and SES.

Vijayalakshmi and Hemalatha Natesan (1992) found a positive relationship ($r = 0.46$) between academic achievement and SES of IX class students ($N = 100$) which is significant at 0.01 level.

Marcon, Rebecea (1999) observed that SES was found to be an important factor in the academic performance, with poorer performance noted for lower income students.

Young, Deindra (1999) revealed that SES had certainly some impact on the overall performance of students. They found the effect of other variables like self concept, class –room environment also, when they conducted a survey on 3397 also, covering 28 rural and urban schools in Australia.

Saxena (2001) revealed that the students who secured first division in High school examination, belong to the middle socio-economic status, indicating that the SES had only a little effect on the academic achievement.

Karla R and Pyari A (2004), investigated into the relationship between family climate and income and academic achievement. Their findings are

1) The achievement of the students having favourable family climate

2) The study finds in congruence with many research findings (Hari Krishnan 1992; Garg. V.P 1992) that student achievement is found to be affected by the income status of the family

2.5.14. Achievement and 14 Personality Factors (HSPQ)

Personality of a student plays an important role in his/her scholastic achievement. Some Indian researchers have attempted to isolate the personality structure of good and poor students. A few studies are
comprehensive, while a few others, have concentrated on specific aspects and dimensions of personality assessment. Some of the studies showing the relationship between personality and scholastic achievement are given below.

Cattell, Sealey and Sweeney (1966) claimed that high school Personality questionnaire (HSPQ) was predicting the school achievement of the students.

Vyas (1982) observed that personality adjustment was significantly related to university practical marks.

Anuradha Joshi (1990) reported that the personality of class IX students, effected the academic achievement. The extroverts were found to benefit significantly more through the developed instructional strategy, as compared to the intraverts.

Vijaya kumar Sethi (1990) studied the personality patterns of high achieving and low achieving students in professional courses (Engineering, Medicine and Teaching).

The major findings are:

1. High and low achieving students taken together differed significantly from each other on personality factors of lower-higher scholastic mental capacity (Factor-B); emotional instability (Factor-C); experience conscientiousness (factor G); shyness-venture some ness (H); placidity apprehensiveness (factor O) and low-high ergictension (Factor-Q1).

2. High achieving students were found to differ significantly from each other, on personality factors of lower-higher scholastic mental capacity (Factor-B); desurgency-surgancy (Factor-F) and tough mindedness-tender mindedness (Facto-I).
3. Low achieving students were found to differ significantly from each-other on factors of reservedness-out goingness (Factor-A), Low –Higher scholastic mental capacity (Factor-B), tough mindedness-tendermindedness (Factor-I); trust placement suspiciousness (Factor-L) and Lower-higher ergictension (factor Q₄).

Mavi and Iswarpatel (1997) explored the relationship between academic achievement and selected personality variables of IX grade students. The personality variables are Personality adjustment, intelligence, self-Concept and level of aspixtation. It was found that there was a weak relationship between the personality variable and academic achievement, in the case of tribal students. The non-tribal students, scored higher than the tribal, overall.

Koteswara and Ramachandra Reddy (1998) reported that

1) All the 14 factors of HSPQ have significant influence on reading achievement in Telugu language high school students.

2) Students whose personality characteristics for out-going, more intelligent, emotionally stable, excitable, assertive happy-go lucky, superego strength, venturesome, tense minded, doubting, apprehensive, self-sufficiency, controlled and tense, performed significantly better on reading achievement in Telugu language, than the students, whose personality characteristics were observed as less intelligent emotionally less stable, phlegmatic, obedient, sober, moral standards, shy tough minded, vigourous, placid, group dependent, undisplined and relaxed.

Panchanadhan (1999) found that maintaining emotional balance, among students, through a psychologist by using auto counselling increased their academic performance.
Nateson and Susila (2000) indicated that the chosen personality factors (cattell’s children personality questionnaire) are not significantly influencing the achievement of V standard boys (N = 300) and girls (N =300) in the age group of 9 to 10 years studying in the schools.

Govinda Reddy (2002) investigated that, factors B, E,F,M,Q2 and Q4 of 16 PF have significant influence on the total scholastic achievement of DIET students.

Kagade (2002) observed that

1) There was no significant relationship between educational adjustment, home adjustment, and educational achievement of pupils (N=1941) studying classes VIII and IX.

2) There was a significant relationship between social adjustment and educational achievement.

p. Ayodya (2007), while studying the emotional problems of school children and their relation to life events and school achievement found that

1. Secondary school children had high rate of emotional problems.

2. Boys had high life event scores and more number of events.

3. Boys out numbered girls in decreased scholastic achievement.

4. The emotional problems found were of minor nature.

5. Emotional problems did not have influence on scholastic achievement in the present study.

6. Life events too did not have influence on scholastic achievement.
7. No difference was found with regard to socio-demo-graphic factors and emotional disorders, scholastic achievement

8. No association was found between scholastic achievement and intelligence

It is observed that few studies are found establishing the relationship between, scholastic achievement and personality of X class students. Hence personality is taken as one of the variables in the present study.

K. Subramanyam and K. Sreenivasa Rao (2008) while studying to assess the impact of gender on emotional intelligence and academic achievement of secondary school pupils, concluded that

1. There is significant difference between boys and girls with regard to their emotional intelligence

2. There is no significant difference between boys and girls with regard to their academic achievement

3. There is no relation between academic achievement and emotional intelligence

2.5.15 Achievement and Study Habits

Individual study habits play an important role in determining the academic achievement of pupils in different subjects. The students' performance in the classroom depends upon several factors namely, the interest in the subject, study facilities, own study habits etc.

Most of the previous investigators pointed out that there is much impact of study habits on the academic achievements.

In this connection, it is worth mentioning the former president A.P. J. Abdul Kalam's views, on inculcating good reading habits in children and youth of the country.
He inaugurated a book fair held in Delhi and told the people to encourage their children and students with the advice that if they give one hour a day exclusively to book reading, they will become a knowledge centre in a few years. To acquire the habit of reading is to construct for yourself a refuge from almost all of the miseries of life. Reading is certainly one of the best experiences, a child can have and habits developed at a young age stay with a person for the rest of his life. What a gift for a child! There is more treasure in books than in all the pirated loot of Treasure Island. The more that you read, the more things you will know. The more that you learn, the more places you’ll go. Students who score higher on "tests, tend to come from schools which have more library resources, staff and more books, periodicals and videos, and where the instructional role of the teacher librarian involvement in co-operative programme planning and teaching is more prominent."

A wonderful thing about a book, in contrast to a computer screen, is that you can take it to bed withy you. Reading is to the mind, what exercise is to the body. The brains of the next generation need to be sharpened so that we can make our dream to be one of the best in world come true.

Some of the studies already made previously on the relation between the academic achievement and study habits of the individuals are presented here under.

Woodruff (1940) found that study habits failed to show some definite relationship with academic achievement.

Gordon (1941) found that the coefficient of correlation between scores on study habits and course grades was higher when students were tested late in the semester than when tested at its beginning.

Wrenn and Humber (1941) found that there existed relationship between the study habits and academic achievement in general.
Mary Esther (1945) found that there existed statistically significant differences in the achievement of most successful students with good study habits and least successful students with poor study habits.

Burnett (1951) reported that the student who has taken the course "How to study" increased their scores, as compared with those who had not taken the course.

Corter (1955) found a moderate positive linear relationship between the study habits and academic achievement.

Brown and Holtman (1955), Patel (1981), and Chauham and Sing (1982) found that there exists significant relationship between study habits and academic scores among school going children.

Noltan (1959) conducted an investigation into the relationship between study habits and achievement in general science and found that there existed no relationship between them.

Diener (1960) obtained the similarities and differences between over achieving and underachieving students and observed that the two groups differed significantly in their study habits, indicating a positive relationship between them.

Sinha (1960) found significant relationship between study habits and scholastic achievement. Richard and Virginia (1967) found a positive relationship between good study habits and achievement.

Brown and Dubois (1964) revealed that there existed a moderate positive relationship between the study habits and academic scores.

Samuel and Rao (1967) conducted a study on a sample of 500 pre-university course (P.U.C) students and showed that there is a significant positive relationship between the study habits and academic achievement.
Agarwal and Saini (1969) found that the coefficient of correlation between the study habits score and scores on achievement in mathematics of VIII and IX class students came to be $+0.014$. Although this index seems to be quite poor, it was found significant at 0.05 level of confidence.

Krishna Murthy and Rao (1969) conducted a study on 300 students. They observed that there existed significant correlation between study habits and academic achievement of urban students.

Sinha (1972) found that there is significant relationship between study habits and scholastic achievement.

Marentic-Pozaranik (1974) found positive relationship between study habits and scholastic achievement of IX Class pupils.

Girija, Bhadra and Ameen Jan (1975) made a study on the relationship between the study habits and academic achievement of first and final year students of under graduates of university of Agricultural sciences, Bangalore. They found the two groups differed significantly with regard to their study skills and achievement.

Asha Bhatnagar (1980) made a study on 600 students of Xth class of Delhi and found that there existed a positive relationship between the study habits and academic achievement.

Tuli (1980), Patel (1981), Chopra (1982) found that there was a positive relationship between study habits and academic achievement.

Premalatha Sharma (1986) reported that the underachieving rural girls significantly differ in their study habits from high achieving rural girls of IX and X class students.

Harbans Singh (1989) showed no significant differences in the study habits at different levels of achievement of X class scheduled caste pupils ($N=300$). But boys were found to have significantly better study habits than girls.
Deb and Gravel (1990) reported that the study habits and the academic achievement of BSc final year students are positively related.

Ruth Lee (1992) revealed that the development of study skills in IX and X class students resulted in improvement of grades.

Stella and Purushothaman (1993) showed that there is no significant difference between study habits of underachieving boys and girls.

Chitra, Thiagarajan and Santhana Krishnan (1993) found that the academic habits and achievement were positively related to intelligence of higher secondary students.

Ramamurthi (1993) found that despite the students possessing good intelligence, their academic achievement hampers due to the absence of good study skills.

Aruna (1994) found that study habits of X class pupils have significant influence on their scholastic achievement in all the subjects.

OnTseka and Watkins (1994) found that the study habits are significantly correlated with school grades of first year school students in Hong Kong.

Rawat and Leela (1995) found that there was no significant difference between the study habits of boys and girls and their academic achievement.

Patel M.R. (1996), revealed that

1. The achievement scores of the pupils having high and low general ability were significantly different.

2. Those pupils who had good study habits did get significantly more achievement scores than those who had poor study habits.

3. It was found that sex and study habits interacted significantly in explaining achievement scores.
Rawat and Leela (1995) found that there was no significant difference between the study habits of boys and girls and their academic achievement.

Varma (1996) found that the academic achievement in mathematics and general science is more or less same in the case of students with good study habits and students with poor study habits.

Kumar (1998) reported that there existed a significant positive correlation between academic achievement and study habits.

Gordan Darlene (1998) found that the students having good study habits possessed good achievement. Venden Hurl et al (1998) showed that the study habits of medical students were correlated with their academic achievement.

Verma, S and Kumar, R. (1999): found that

1. The achievement in mathematics was positively and significantly correlated with the study habits of the Students.

2. Overall achievements were significantly and positively related to the study habits of students.

Sam Sanada Raj and Sreethi (2000) found that study habits and academic achievement of students are positively and significantly related.

Nagaraju (2001) concluded that the academic achievement in all the school subjects has positive significant influence at 0.01 levels on the Study habits of the pupils (N=1800).

Govinda Reddy (2002) found that study habits of a DIET student have significant influence on achievement.

Vamadevappa (2002) found that there existed positive and significant relationship between study habits and achievement of pre University students in Biology subject.
Archana and Mona Sharma (2002) conducted a study on 26 Grade-1 children in Indoor. The results found that the instructional material could positively influence the achievement of students.

Naveen Kumar Reddy (2003) reported that study habits and academic achievement are positively and significantly related.

Guravaiah (2004) investigated into the academic achievement of X class students in all the school subjects and found that study habits of pupils do not have any significant influence on the scoring.

Rajani (2004) observed that the academic achievement of Intermediate students (N=1200) in all the subjects including group subjects is positively related to their study habits.

Lakshmi (2004) identified positive relationship between study habits and achievements of a DIET student.

Bhaskara Rao, Somasurya Prakash Rao and Bhuvaneswara Lakshmi (2004) have identified a positive relationship between study habits and academic achievement.

Ramana sood and Dalcinder kumar (2007) found that learners having good study habits have better academic achievement.

Manchala (2007) showed that all the ten areas of study habits inventory have significant influence on scholastic achievement of B.Ed students. Better study habits is associated with better scholastic achievement.

2.5.16 Achievement and Self-Concepts

Self-concepts play an important role in the life of pupils. Muktha Rani Rasthogi’s (1974) self-concept scale is adopted in this study to examine the impact of self-concepts on the achievement of 10th class students in mathematics. Some of the earlier studies showing the relationship between scholastic achievement and self-concepts are presented hereunder.
Mac Aculay (1990) reported that there is a positive significant relation between academic achievement and home environment.

Mc Robbie and Fraser (1993) found that there existed a positive relation between academic achievement and home environment.

Martin (1995) concluded that there was a significant relationship between academic achievement and home environment.

Walf Richard (1996), Marjoribanks (1996), Walberg and Paik (1997) reported that there existed positive significant relationship between academic achievement and home environment.

Basantia and Mukhopadhyaya (2001) indicated that the achievement of secondary school rural students was significantly related to their home environment. Both home environment and school environment were significantly related to each other.

2.5.17 Miscellaneous Studies on Achievement

Misra et al (1960) found that children coming from high home environment achieve better in schools than their counterparts coming from low family environment.

Morrow and Williamson (1961) while analyzing the background of the family factors responsible for higher achievement of physically challenged group children, concluded that more congenial home environment, less parent domination and sympathetic parental encouragement, have been found to be responsible for achievement of children.

Husen (1967) in his study “International study of achievement in mathematics; A comparison of twelve countries” found that boys were on the whole superior to girls in mathematics.

Husten (1967); Dave and Dave (1971) found that poor academic achievement was due to low educational standards of their parents.
K. N. Lalithamma (1975) conducted a study on “some factors affecting achievement of secondary school pupils in mathematics”. It revealed that

1. The average performance of pupils in mathematics was 23.14 with S.D of 8.20 and the distribution was negatively skewed

2. There was significant difference in the performance of boys and girls in mathematics, the difference being in favour of boys.

3. The urban pupils were superior to rural pupils in mathematics.

4. Intelligence and interest in mathematics were higher in boys and urban pupils than in their respective counter parts.

5. The achievement in mathematics is positively related to intelligence, interest in mathematics, study habits and socio-economic status.

6. Studying lessons daily, studying mathematics by writing, repetition in learning spaced learning, over learning etc. influenced the achievement in mathematics positively.

7. Private tuition, electric light facilities, radio equipment for study etc influenced the achievement in mathematics.

8. Achievement of the first born was better than that of the last born, and

9. Achievement of the students of scheduled castes and tribals was lower than that of the total sample

Long and Resh (1976) could not find significant differences between father's income and child's level of abstract achievement.

Sharma (1977) made an attempt to examine the achievement of children in relation to the school system. He found that children of the recognized private schools achieved higher scores in Arithmetic than those of the corporation schools.
Hilde Brand and Patricia (1978) have shown positive relationship between educational environment and child’s performance in mathematics.

Desai (1979) found that low achievers of high school had high ability in mathematics and less favourable attitude to the subject; they came from families with very strict standards or discipline, they were kept very busy in domestic work and did not receive any outside help for the study.

As no reliable and valid scale to measure the attitude towards mathematics was available, Rajendra Mishra (1980) developed a likert-type attitude scale in his study. “A study of attitudes towards mathematics of secondary school students”. Of all the variables studied it has been found that parent’s qualifications influence boys but not girls in their attitude towards mathematics. No strong evidence has been found to prove the influence of parent’s profession, family size, parent’s income and study room facility in this regard.

Sudha R. Sinha (1980) in the study “Effect of school system on the competence of secondary school students”, investigated into the difference between the system of private and government schools and how it influenced the competence of its students. Three aspects of the system were examined: the material, organizational and human relations. The findings revealed that despite less physical facilities and higher workload, the private schools had better organizational structure and more competent students than the government schools.

Head (1981) found that extraverted boys and introverted girls did well within their own sex group, when they were given mathematics activities.

Dr. S.C Gakhar (1982) in his article “A study of acquisition of mathematical concepts among 8th graders of different types of schools”, clearly demonstrates the differential effects of the type of the school on the acquisition of the mathematical concepts by the students on the whole.
Students studying in private schools had better achievement than those studying in government schools.

This achievement was due to the strict supervision by the principal and managements of private schools, better teacher-pupil interaction, good educational environment, teachers special care of the weak students, teachers interest in the study of the children and sense of security and guidance and counseling in private schools.

Chopra (1982) found that students achievement was not significantly different in different organizational climate of schools even at 0.05 level. There was no significant relationship between students’ achievement and teachers’ job satisfaction.

Vyas (1982) reported that 1 Age, academic achievement, verbal intelligence, non-verbal intelligence and SES contributed to the supervisors rating in case of a total of 300 male samples of BEd Students.

Lalthanhawla (1983) studied the causes of failures in science and mathematics among high school students of the Mizoram state and found that general standard of achievement in science was 33.24% as compared to 27.86% in mathematics. Students from urban areas and from privately managed schools and older schools did better than those in rural areas and government schools and newly established schools. The provision of good library, laboratory and special coaching classes are not related to the students achievement in these subjects.

Pattison and grive (1984) studied whether sex differences contribute to special skills to tackle different types of mathematical problems. They found that boys excelled in problems related to measurement and proportion and in special problems, where as girls performed better in more abstract and deductive problems.
Davidson (1985) reviewed studies that compared students achievement in small group settings with traditional whole class instruction. He found that using small groups of students to work on activities, problems and assignments can increase student's mathematics achievement.

Chada and Sunanda Chandna (1990) observed that there is a positive and significant correlation at 0.01 level between creativity and intelligence of XI grade students', when the effect of scholastic achievement is partialed out.

There is a positive and significant correlation at 0.01 level between intelligence and scholastic achievement when the effect of creativity is partialed out.

There is negative and significant correlation at 0.01 between creativity and scholastic achievement when intelligence is partialed out.

Venkataiah and Jayachandrarama Naidu (1990) reported that there is significant difference between academic achievement of dropouts N=(39) and Non-Starters (N=261) at Non Formal Education Centres (NFE). The dropouts from formal primary schools are superior to non starters in their academic achievement as NFE centres.

Mac Aculay (1990) reported that there is a positive significant relation between academic achievement and home environment.

Yeh- Hsiang-Yeng (1991) reported that weak but positive correlation existed between achievement motivation and academic achievement.

Dr. S. Sundararajan and Mr. B. Dhandapani (1991) conducted a study on the achievement in mathematics of higher secondary students of Pondicherry. The important findings of the study reveal the following:

- There is no significant difference in the achievement of boys and girls in the case of Govt and private schools.
Urban students are better than rural students in respect of their achievement in mathematics.

Cobb (1991) and his colleagues found that students number sense was improved by a problem centered curriculum that emphasized students interaction and self generated solution methods. Students also demonstrated increased persistence in solving problems.

Kumar Swamy (1992) investigated that variations in the amount of General Ability possessed by the adult learners significantly effects their achievement.

Vyas (1993) found that academic failure was associated with lower affiliation, teacher control, rule clarity and teacher support variables.

Nwankwo and kemjika (2003) found that the relationship between test anxiety and academic achievement were inversely proportional at secondary levels.

Varghese (1995) found that the achievement scores showed a systematic improvement with improvement in facilities of school and that the difference in the mean achievement scores between the learners in the last facility schools and the best facility schools was very large in both in Hindi and Mathematics.

Martin (1995) concluded that there was a significant relationship between academic achievement and home environment Panchalingappa, Shahpur Nagappa (1995) found that

Shui Feng (1997) conducted a study on the influence of family factors on the academic achievement and concluded that children's academic achievement has been shown to be influenced by many family factors. It indicated that authoritative parenting and children's academic achievement were significantly correlated.
Slemmer (1997) found that required tutoring seemed to be an effective way of improving the academic achievement of marginal students of 10th, 11th and 12th grades.


Khalid (1997) focused his research on factors affecting mathematics achievement and found that confidence, socio-economic status, gender, location of the school and school environment contributed significantly for the achievement in mathematics.

Dr. R. Vasanthi and Ms Bhama Lalithmbika (1997) in their article "interest of high school students in Mathematics" concluded that there is significant difference in the interest between the students of

1. Private Schools and Government Schools
2. Private Schools and Government aided Schools
3. Private Schools and Cooperation Schools,

There is no significant difference between the students of

1. Government Schools and Government aided Schools
2. Government Schools and Corporation Schools
3. Government aided Schools and Corporation Schools

It also shows that educational Qualifications of parents has a powerful bearing on the interest of the students in mathematics.

Shui Feng (1997) conducted a study in family influences and disadvantages children's academic achievement. The study revealed that the academic achievement has been shown to be influenced by many family
factors. It indicates that the authoritative parenting and children's academic achievement were significantly correlated.

Kumar (1998) in his study concluded that there existed a significant positive correlation between academic performance and study habits.

Dr. V. Sumangala (1998) in her article “Effect of tutoring on achievement in mathematics of Secondary School Pupils”, found that home-tutoring in Mathematics, whether by parents or by sibling has significant positive but low effect on achievement in mathematics.

Dr. MarlowEdiger (1999) in his article “parents the teacher and mathematics” suggested the following for the good of the child, in the achievement of mathematics

1. Having parent- Teacher Conferences
2. Meeting Parents at PTO meetings
3. Using Educational Psychology for providing a model to parents in assisting their off spring in home work.
4. Integrating human relations and curricular improvement in Teaching-Leaning situations.

Wood (1999) found that whole-class discussion works best, when discussion following individual and group work improves students achievement.

Molia MS (1999) showed that the use of inductive thinking models improved the achievement of the students in mathematics.

Panda (2000) found that

1. Rural students exhibited better performance in all the school subjects as compared to their urban and tribal class mates
2. Boys and girls studying in different areas did not differ in their performance in all the school subjects.

3. Non-SC/ST students performed better in mathematics as compared to their counterparts in rural areas.

4. Children of college educated father had shown better achievement in mathematics, general science and language subjects in rural areas, whereas children of middle income group had shown better performance in science achievement in urban areas.

5. Father’s occupation and tuition did not have any significant impact on the learning achievement in all the three areas.

6. Students studying in urban schools had shown better performance in mathematics where P.G. trained mathematics teachers taught the subject.

7. Rural students performed better in all the school subjects where infrastructure facilities were available in the schools compared to the schools with less facility.

Dhall, GD; Gautam SKS; Autar, Ram and Sankar M (2000) revealed that the teaching of students with low achievement with remedial materials prepared after diagnostic test increased their achievement Alam AM (2001) showed that:

1. The academic achievement of normal children was found to be significantly higher than that of learning impaired children in both boys and girls when taken together and when taken separately.

2. The normal students were found to be higher in academic achievement.

Basantia and Mukhopadyaya (2001) indicated that academic achievement of secondary school rural students (N=320) was significantly related to their home environment, but the school environment was not significantly related to academic achievement, where as both school environment and home environment were significantly correlated to each other.
Christman et al (2001) reported that a cost effective analysis was performed to determine the relationship between district expenditure and 11th grade mathematics and reading achievement during 4-year period from 1995 to 1999. The study indicates that the increases on expenditures were accompanied by decreases in academic achievement.

Elegbelye and Akoda (2001) investigated that there existed a significant difference between the academic performance of pupils (N=150) of secondary schools from single and double parenting background.

A significant difference was observed between the performances of father present, absent children in mathematics.

Academic performance of children of mother present was significantly better than children of mother absent.

Rose and Elizebeth (2001) examined the patterns of academic progress and outcome in different inner city school settings for African American and White, lower, middle and upper socio-economic strata students. They revealed that the overall academic outcomes were higher for gifted students enrolled in the programme sometime during their school career than for general education students.

Soundaravalli (2001) found that the academic achievement of standard XII students (N=300) had significant relationship with physical problems and family problems scores.

Anuradha and Bharati (2002) found that a trend of negative association was observed between III, IV and V classes children (N=300) academic achievement and their amount of T.V watching.

Watching only a selected programmes improved children's academic achievement significantly rather than watching all the programmes.
Basantia, Jaga Mohan and Mukhopadyaya Dulal (2002) revealed that psycho-social constraints and academic achievement of high school students are negatively correlated with each other.

Hamingthanzuala (2002) found that students of X standard who had higher interest in business were found good at English, social science and in overall academic performance.

Panda (2002a) observed that V class pupils (N=882), who were taking midday meal, free Uniform, Scholarships and free textbooks as incentives performed well when compared to that of not receiving any incentives.

Chakraborthi, Bhupal Prasad (2002) found that the urban and semi-urban students performed better when they were provided with multiple choice items and that the urban students performed better both in multiple choice items and non multiple choice items than semi urban students in mathematics.

Agrawal, Archana (2002) found that

1. Significant positive relationship was found between academic achievement and intelligence.

2. Academic achievement was found to be positively related with their socio-economic status.

3. There was significant negative relationship between the academic achievement and size of the family.

4. Significant negative relationship was found between academic achievement and birth order. The study has no reference.
Arya, Kalpana, and Kistwaria (2002) found that

1. The involvement of adolescent daughters in the household activities of employed home makers was more than corresponding non-employed home-makers.

2. A majority of the adolescent daughters of non-employed mother’s devote more time for their studies in comparison with the corresponding employed mother’s.

3. A higher percentage of the adolescent daughters of employed mother’s were not participating in co-curricular activities than that of the other respondents. The study cites 6 references.

Goel Swami Pyari (2002) in their study on the relationship of achievement and feeling of security, family attachment found that

1. Low achievement had a positive relationship with the feelings of security, whereas the average and high achievement had a negative relationship with the feeling of security.

2. Family attachment and achievement scores were negatively related. A related factor responsible for higher educational achievement was parental attitude.

3. Feelings of security— insecurity were significantly and positively related to the family attachment.

4. Theoretical, aesthetic and religious values were positively related with achievement score, but economic and political values were negatively related with achievement score. Social value had a positive relationship with the average achievements but the low and high achievements were negatively correlated.
5. There was no difference in value pattern of low and average achievers where as high achievers gave the first preference to theoretical, value, than to social, political, economic, aesthetic and religious value. The study has eight references

Sharmaj S. Nidhi (2002) in their study examined the effect of parental involvement and Aspirations on academic achievement of +2 students found that.

1. Parents of high and low achieving students exhibited differentiated behavioral profiles with regard to some dimensions of parental involvement. Parents of high achieving students often provided academic guidance to their and also planned various cultural activities such as arranging picnics, dance show and other festivals.

2. Achievement scores of children belonging to high, average and low groups of parental educational aspirations were not equal.

3. The academic achievement scores were different for children belonging to different parental involvement groups.

4. High parental involvement group, scores higher on educational aspirations as compared to their counter parts in the low parental involvement group.

5. Higher parental involvement resulted in higher occupational aspirations of students.

6. High, average and low parental occupational aspirations groups yielded unequal levels of learning styles.

Mohanty A.K (2002) conducted a survey to see whether components of family environment bear any relationship with academic achievement of gifted, underachievers and his findings were:
1. The mean score of boys was higher than that of girls.

2. The boys scored higher on cohesion, intellectual cultural organization, Moral and Religious emphasis, while the girls scored higher on conflict, achievement orientation and organization of components of family environment scale (FES).

3. Inutility the underachievers’ academic achievement was significantly related with all components of FES except active Recreational organization.

For underachieving boys no correlation between a component of FES and academic achievement was found to be significant. However in the case of underachieving girl’s cohesion, Independence and control components of FES were found to be correlated significantly with academic achievement.

Upadhya (2003) found that constructivism was found to be a better technique of teaching mathematics

Ravindra, Basavaiah D. and Basti (2003) showed that

1. Boys were found good in abstract thinking and symbolizing concepts in mathematics, where girls were good in logical thinking and mathematical modelling

2. Both males and females have the same level of liking for mathematics

3. Both males and females have the same level perception of mathematics

4. Males and females gave the same reason for liking and disliking the individual branches of mathematics like arithmetic, algebra and geometry.

5. Males stated that “social factors do not favor girls to go for higher studies in mathematics” as the main reason for not having top level women mathematicians. But females stated that “Vocational interests of women are different” as the main reason
George (2003) concluded that mathematical backwardness was due to neglect of mathematical basis during early years. Positive attitude should be developed towards mathematics, he suggested teachers should present mathematics in an interesting manner.

Devi and Mayuri (2003) revealed that

1. Family factors were not found to be critically important for the achievement of residential school children.

2. School factors like, qualified teachers good physical facilities and classroom organization, checking of the curriculum and subject matter, time maintenance impressive method of teaching and teacher student interaction contributed significantly to the academic achievement.

Rahman M.H. (2003) in his comparison of achievement in mathematics of eighth grade students of different ethnic groups of Nepal found that

1. There was significant difference among the four ethnic groups with regard to the over all achievement in mathematics.

2. Tamang students were found to be the best among the four groups in over all achievement in mathematics.

3. The four ethnic groups differed significantly from each other with respect to the achievement, on knowledge in arithmetic.

4. Ethnic groups significantly differed from each other with respect to the achievement on knowledge, skill, comprehension and application levels.

5. No significant difference was found between Tamang and Magar groups in knowledge.
6. Sarkari children were found to be the lowest achievers on knowledge among all ethnic groups. The study cited two hundred nineteen references

Prakash (2003) found that

1. The ascendance, vigorous and persistent temperaments were significantly related with mathematics achievement in girls and total sample

2. Among boys, the ascendance, accepting, vigorous, cooperative and tough-minded temperaments were significantly and positively correlated with mathematics achievement.

3. The memory of the subjects was significantly and positively correlated to their mathematics achievement.

4. Girls with low sociability appeared significantly higher in mathematics achievement than girls with higher sociability at high memory level only.

Dr. Suneel Kumar Singh, Saheen Malik, Dr A.K Singh (2003) in the article “Achievement difference of class II students in mathematics with regard to the area, Gender and social groups, reveal that locality affects the achievement in mathematics.

Urban students were found better than rural students where as sex would not affect the achievement in mathematics.

Newankwo and Kemjika (2003) found that the relationship between test anxiety and academic achievement were inversely proportional at secondary levels.

conducted research on the improvement of learning and teaching of school mathematics and found that.

1. It is generally seen that less importance has been paid to students attitude by the classroom teachers or researchers in comparison with considerable amount of attention, given to the cognitive achievement.
2. Mathematics, specially, can be quoted as an example in which very few attempts at measuring attitudes towards it's study have been made.
3. Mathematics is generally regarded as a difficult subject for study. 4. It is not so popular even at the college level where less number of students offer it for their studies. Even now models of teaching, innovations and modern techniques of teaching the subject, have not changed the situation.

Gakhar and Aseema (2004) investigated that

Dr. Shahpur Nagappa and Panchalingappa (2004) while investigating the influence of the study habits, family climate adjustment and academic achievement of Devadasi, children of Karnataka state, found that

1. There is no significant difference between boys and girls children of Devadasi with respect to family climate.
2. There is no significant difference between boys and girls children of Devadasi in respect of their academic achievement.
3. There is no significant difference between rural and urban children of Devadasi in respect of their academic achievement.
4. There is no significant difference in interaction effects of sex and location in terms of academic achievement of Devadasi children.
5. There is no significant difference between boys and girls children of Devadasi in respect of academic achievement.
6. There is no significant difference between boys and girls children of Devadasi in respect of their study habits.
Mehera (2004) found that

1. Achievement in mathematics was significantly related to major learning environment, attitude towards the subject, mathematics.

2. Urban students showed significantly higher achievement in mathematics, better learning environment and better attitude towards mathematics than their rural counterparts.

3. No sex-wise difference was found in achievement of students in mathematics.

Sensarma (2004) while attempting to determine the relationship between class-room interaction variables of different branches of mathematics and mathematics achievement and attempting to predict the achievement from interaction variables concluded that.

1. Higher values of Praise, acceptance of pupil's ideas, asking questions by teacher, pupil's response and the rate of class-room transaction are associated with higher pupil's achievements in mathematics.

2. Higher values of lecturing, criticizing and Justifying authority and silence and confusion are instrumental in lowering pupil's achievement in mathematics.

3. Teacher's tendency to react to the ideas and feelings of pupil's is positively and significantly related to the better achievements in algebra, arithmetic, and geometry.

4. Velocity of class-room transition is positively and significantly related to the achievement in algebra, arithmetic and geometry separately.

5. The pupil's initiation is negatively associated with mathematics achievement in all the branches, algebra, arithmetic and geometry.
Sirohi (2004) investigated that

1. All under-achievers indicated deficiency in study habits
2. 98.70% of the under-achievers tend to possess unfavourable attitude towards teachers and needed guidance.
3. 97.50% of the students had poor concentration
4. 92.50% of students indicated deficiency in school and home environment.
5. 72.80% of them faced mental conflicts
6. 72.80% of underachievers were low in self confidence
7. 24.60% of them indicated deficiency in attitude towards education

S. Uma (2004) on studying the role of computers in the performance found that

1. The achievement scores improved in the test conducted after the revision of the lesson by 'teacher'.
2. Thoroughly revising the lesson through computers has increased their performance, the best scores are when the revision is by the Teacher and when computers are not used.
3. Some of the interesting points observed by her are

   (i) Learning through computers was high with below average students than with good students.

   (ii) The attention span and interest duration of the slow learners is comparatively, less than that of very good students.

   (iii) Very good and good students have better reading and comprehension skills. Thus they were fast on the computers. The below average students took time to read and comprehend. Thus they usually took more time to complete the work on computers.
Kumar .S and Anita (2004) from their findings revealed that

1. Both the variables self-learning module and classroom environment can not be ignored in respect of their effect on achievement.

2. There was no interaction between mode of teaching and classroom environment.

Bose. S and Joshi V (2004) studied the effect of parents involvement in the achievement of students and found that

1. Children whose parents were involved in their education led a disciplined life at home and had better academic achievement at school.

2. Involvement of parents was also reflected in the activities that a child pursued in his leisure time.

3. It was found that parents could not reinforce the things, the children learnt at school and some children attended tutorials.

4. Tutorials did not help the children in performing better, rather the children who attended school regularly and received proper care at home, fare better.

5. The study also found that home environment that indoctrinates children into a disciplined life and healthy life style ensures better academic achievement.

Bhaskar Rao, Somasurya Prakash Rao and Bhuvaneswara Lakshmi (2004) have identified a positive relationship between study habits and academic achievement.

Madankar (2004) observed that

1. Residence

2. Peer group
3. Curriculum
4. Classroom teaching and
5. Evaluations have negative and significant relationship with academic achievement, whereas ‘food’ and ‘co-curricular activities’ have negative and not significant relationship with academic achievement of school subjects.

Peria Swamy (2005) showed that the teaching and learning of addition and subtraction through activity-based learning materials (TLM) improves academic achievement of IV standard pupils (N=30).

1. A significant relationship was found between student’s perception of teacher’s attitudes towards them and their academic achievement.
2. A significant relationship was found between the academic achievement of students and their self-perception.

Sindhu I.S (2005) revealed that better liking of teachers contributed to better achievement of boys.

Vamadevappa HV (2005) conducted a study to find out the relationship between parental involvement and academic achievement. His findings were

1. There was positive and significant relationship between parental involvement and academic achievement.
2. There was a significant difference in the achievement scores of boys and girls of high parental involvement group.
3. There was no significant difference in the achievements of boys and girls of high parental involvement group.
4. There was significant difference between high achievers and low achievers with respect to the parental involvement.
5. There was no significant difference between boys and girls in their academic achievement.

Satya Prakash and Patnaik SP (2005) made a study to find out the effect of cooperative learning and found the following:

1. There was positive effect of cooperative learning on achievement motivation.

2. Cooperative learning has a positive effect on achievement in biology in terms of understanding, Knowledge and application of objectives as well as total achievement.

Dwivedi R.D (2005) conducted a study to compare the educational achievements of students belonging to different categories of schools, according to their environment and found the following:

1. The students from schools with enriched environment had significantly better academic achievement than students from poor school environment.

2. The students who were high approval seekers had significantly greater achievement than the students who were low approval seekers.

3. Academic achievement of students of the urban schools was significantly higher than that of the schools of the rural schools.

NEETHA GEORGE, Dr. ANITHA RAVINDAN (2005) revealed that there is a linear relationship among accuracy in time perception, coping styles and level of academic achievement. In other words time consciousness or punctuality is a quality that would enhance the academic achievement. They suggested that these results can be considered in helping low achievers.

Manas Ranjan Panigrahi (2005) while studying the influence of intelligence and socio-economic status on academic achievement of high school students concluded that
1. There exists a significant and positive correlation between academic achievement and intelligence. It is also found that high intelligence leads to better academic success.

2. There exists a low positive correlation between academic achievement and socio-economic status. It is observed that high socio-economic background might not always facilitate high academic success.

3. It is found that there is no significant difference between boys and girls with respect to academic achievement.

4. The students having higher intelligence are high achievers in academic performance than students having low intelligence.

5. High socio-economic status has effected the girls greatly to be very conducive to high achievement and vice-versa is the case with boys.

6. The girls of high socio-economic status are high achievers in academic performance than boys of high socio-economic status, boys of low socio-economic status and girls of low economic status.

Manoranjan panda (2005), in his study on correlation between academic achievement and intelligence of class IX students concluded that

1. There is significant difference in academic achievement of students studying in different categories of schools.

2. There is no significant difference in intelligence of students studying in different categories of schools.

3. There is low relationship between academic achievement and intelligence in different categories of schools.

The findings of the study clearly state that there is little significant relationship between academic achievement and intelligence in schools of Dhenkanal district of Orissa state.
AVINASHILINGAM N.A.V and SHARMA. G (2005) made a study to find out the factors influencing the student's academic achievement. Their findings are:

1. It was found that classroom factors play a major role in affecting the student's academic performance. This is followed by the environmental factors and developmental factors.

2. The student's inner urge, the competency of teachers no physical distraction and contacts with like minded colleagues make a student more competent to succeed in life.


Gurubasappa (2005) while studying the effects of adjustment and mental ability on scholastic of secondary school children, concluded that

1. The well adjusted children's achievement in school is high

2. The children with better mental ability will definitely achieve high.

3. The product of learning academic achievement of students is certainly influenced by some psychological factors like adjustment and mental ability

Arockiadoss (2005) studied the correlation between study habits and academic performance of college students (N=025) He reported that the academic performance of college students in influenced by study habits.

Malvinder Ahuja (2006) studied the impact of parental involvement and socio-economic status of the family on academic achievement of IX class students. Their findings indicated that 1. socio-economic status of the family and parental involvement were associated with each other 2. socio-economic status and academic achievement of students were independent of each other 3. academic achievement of high and low parental involvement group were not significantly different. 4. There was an interaction effect of socio-economic status and parental involvement on academic achievement of IX class students.
P. Ayodya (2007) revealed that

1. Emotional problems did not have any influence on the scholastic achievement in the present day.

2. Life events did not have any influence on the scholastic achievement.

3. No difference was found with regard to socio demographic factors and emotional disorders, scholastic achievement and life events.

4. No association was found between scholastic achievement and intelligence.

Manchala (2007) showed that all the ten areas of study habits inventory have significant influence on scholastic achievement of BEd students. Better study habits is associated with better scholastic achievement.

K. Subramanyam and K. Sreenivasa Rao (2008) established that there is no significant difference in the achievement of boys and girls with regard to their emotional intelligence.

S.N. Pandey, Md Faiz Ahmed (2008) conducted a study on a sample of 621 students of XI standard Male Adolescents (417) and Female Adolescents (204) and found that there is no significant difference between male and female adolescents on measures of achievement motiveation.

Annakkodi (2008), in her study entitled “study of scientific attitude of pupils of class XI and their achievement in Science, concluded that

1. There was positive significant difference in the scientific attitude of students in relation to their achievement in Science.

2. It was found that there was a high significant difference in the scientific attitude of students based on their type of school, the corporation school students show high mean value of scientific attitude when compared to Government aided schools.
3. It was found that there was high positive significant difference in the scientific attitude of rural and urban students.

4. It was found that there was a significant difference in the scientific attitude of students based on their Gender.

The N.C.E.R.T. (2008): Conducted a mid-term national survey to gauge the learning achievement of class V children. The survey covered Eighty four thousand, three hundred and twenty two (84322) students, Fourteen thousand, eight hundred and ten (14810) teachers and six thousand, eight hundred and twenty eight (6828) schools, across. Two hundred and sixty six (266) districts, in the country. The survey tested the learning achievement of class V level students in mathematical, environmental studies and languages. It concluded that 1. Mother’s education is important than father’s education. 2. The schools that enjoyed better infrastructure and facilities like T.V, computer, more number of teachers and community participation contributed ten Percent (10%) more in (E.V.S) Environmental studies, eight point four (8.4%) percent better in mathematics and Nineteen point six (19.6%) percent better in languages.

2.6 APPRAISAL

From the brief review presented in the foregoing pages it may be seen that a few studies have been carried on, in the area of academic achievement at secondary level and more particularly the achievement in mathematics. A gain by and large, except on a few variables the results obtained are not coinciding, which necessitates, further exploration in this area. Further, studies on the relative impact of each of the several independent variables that effect academic achievement are rare to find.

Selection of some important demographic variables, sociological and psychological variables are supported by many other studies, even though, they are not exhaustive for obvious reasons.
It is an attempt to see the relationship between the academic achievement and various psycho-sociological variables. The area under investigation is novel and unexplored with respect to the 10\textsuperscript{th} class students and their achievement levels in mathematics.

Further the study aims at providing some mathematical models with which it can be possible to prove the academic achievement of 10\textsuperscript{th} class students in mathematics. The need for research on the area of scholastic achievement in mathematics of 10\textsuperscript{th} class students, is rather warranting.

The above crucial conditions lead the investigator to make an attempt in this area of scholastic achievement of 10\textsuperscript{th} class students in mathematics in relation to certain psycho-sociological factors. Keeping all these observations in view the problem is stated clearly with it’s objectives and suitable hypotheses are formulated in the succeeding chapters.