CHAPTER - II

REVIEW OF RELATED LITERATURE

Review of literature is a very important aspect of any research. A literature review is a description of the literature relevant to a particular field or topic. Every piece of ongoing research needs to be connected with the work which has been done already. The review of literature is needed to attain an overall relevance and purpose. It tells the reader about aspects that have already established or concluded by other researchers. It is a link between the research proposed and the studies already done. A careful review of the research journals, books, dissertations, theses and other sources of information on the problem to be investigated is one of the important steps in the planning of any research study. It is also important to highlight differences in opinions, contradictory evidence and the different explanations given for their conclusions.

A literature review is a body of text that aims to review the critical points of current knowledge including substantive findings as well as theoretical and methodological contributions to a particular topic. Literature reviews are secondary sources and as such, do not report any new or original experimental work.

A literature review usually precedes a research proposal and results section. Its ultimate goal is to bring the reader up to date with current literature on a topic and forms the basis for another goal, such as future research that may be needed in the area.

A familiarity with the literature in any problem area helps the students to discover what is already known, what others have attempted to find out. Afolabi (1992) states that a good literature review requires knowledge of the use of indexes and abstracts, the ability to conduct exhaustive bibliographic searches, ability to organise the collected data meaningfully, describe, critique and relate
each source to the subject of the inquiry, and present the organised review logically, and last, but by no means least, to correctly cite all sources mentioned.

According to Best (1978) “A familiarity with the literature in any problem area helps the students to discover what is already known, what others have attempted to find out, what attacking methods have been promising and disappointing and what problems remain to be solved.”

Cooper (1988) defined literature review as “... a literature review uses as its database reports of primary or original scholarship, and does not report new primary scholarship itself. The primary reports used in the literature may be verbal, but in the vast majority of cases reports are written documents. The types of scholarship may be empirical, theoretical, critical/ analytic, or methodological in nature. Second a literature review seeks to describe, summarise, evaluate, clarify and or integrate the content of primary reports.”

Different sources like educational journals, surveys of educational research published by NCERT, published books, unpublished and published theses of Ph.D, the websites related to educational research and encyclopaedias have been surveyed for the review of related literature.

The review of literature has been organised and presented in the following way:

2.1 Studies related to Intelligence.
2.2 Studies related to Academic Achievement Motivation.
2.3 Studies related to Attitude towards Mathematics
2.4 Studies related to Socio-economic Status.
2.5 Studies related to Causes of Low Achievement.

2.1 STUDIES RELATED TO INTELLIGENCE

Masih (1974) conducted a study on intelligence and achievement on 410 students of higher secondary school of Ajmer district in Rajasthan and found that intelligence and achievement are
significantly correlated. No significant sex differences in correlation value were found. There was no significant difference between the values of intelligence and achievement of urban and rural boys. Correlation between intelligence and achievement of the upper intelligent group and lower intelligence group was high in case of girls. In case of urban boys in the upper intelligence group, correlation between intelligence and achievement in biology was high, but it was low in case of lower intelligence group. In case of rural boys, lower intelligence group showed higher correlation between intelligence and achievement than the higher intelligence group.

Nutan (1979) studied the academic achievement and interests of students at different levels of intelligence. 400 students of matriculation (200 male and 200 female students) of Patiala city were selected as sample. It was found that the more the intelligence level, more was the academic achievement. There was significant difference in the achievement scores of high and low intelligent boys at .01 level. It suggested that the high intelligent students achieved significantly higher scores than the low intelligent students.

Gakhar (1986) conducted a co-relational research to find individual differences in intelligence, aptitude, personality and achievement among science, commerce and arts students. The sample consisted of 150 students of Prep class, (50 students from science stream, 50 students from commerce and 50 students from arts group). Jalota’s Group Test of General Mental Ability, Differential Aptitude Test of George, Herold and Alexander and 16PF by Cattell and Eber (1962) were administered to the sample. Marks obtained in the Matriculation Examination conducted by Punjab School Education Board were taken as achievement scores. It was found that intelligence was more closely associated with aptitude and achievement than personality factors in all the three groups.

Srivastava (1987) designed a study to determine the nature of relationship between academic achievement and intelligence of high
school pupils. 260 adolescents from the urban and rural areas of Tehri-Garhwal district were selected for study. Mehrotra’s intelligence test was administered to check the intelligence level of the subjects. The results revealed that academic achievement is positively correlated with intelligence at its every level.

Chadha and Chandna (1990) studied correlation between creativity, intelligence and scholastic achievement on a sample of 79 students (42 boys and 37 girls) of grade 11th from reputed Delhi school. Findings of the study show positive and significant correlation between creativity and intelligence and creativity and scholastic achievement. A positive and significant relationship between intelligence and scholastic achievement was found when the effect of creativity was partially out.

Goyal and Kaur (1991) investigated the relationship of verbal and non-verbal intelligence with academic achievement in different school subjects of 320 students (boys and girls) of ninth class from three higher secondary schools of Patiala. It was found that verbal intelligence was related to academic achievement in English, Mathematics, Punjabi, Hindi, Science and Social Studies both for boys and girls, while non-verbal intelligence was significantly correlated with only English, Mathematics and Punjabi for girls and English, Mathematics, Hindi and Science for boys.

Kaur (1991) conducted her study to examine relationship among creativity, intelligence and academic achievement in different subjects of 10th class students. The sample consisted of 600 tenth class students (300 boys and 300 girls). From 300 boys and 300 girls, 150 boys were rural and 150 were urban. 150 girls were rural and 150 were urban. The subjects were taken from thirty high and higher secondary schools of all the five tehsils of Patiala with the help of random sampling technique. A significant and positive relationship was found between composite creativity and its dimensions with the subject wise academic achievement of male and female. Creativity and
academic achievement tended to be better correlated in females than in males. Intelligence was found highly correlated with both creativity and academic achievement in males and females and total sample. Intelligence was found as significant correlate of academic achievement. Irrespective of sex, it was found positively and significantly correlated with achievement in all subjects.

Aswal (2001) conducted a study on 'Intelligence as a correlate of Achievement in mathematics across different levels of socio-economic status' on a sample of 200 eleventh grade students of five intermediate colleges of Tehri District. The result indicates that intelligence and achievement in significant contribution towards variance due to variable of intelligence. It was found that mean scores of students under high intelligence was higher as compared to mean scores of students under low intelligence. Similar results were obtained in case of SES. In this study achievement of high intelligent high SES group was the highest as compared to other groups.

Ahmad and Raheem (2003) conducted a study to find the relationship of academic achievement with intelligence, socio-economic status and adjustment of adolescents on a sample of 180 students. The study reveals that all the three predictive variables contributed significantly to the criterion variable, intelligence being the most important factor that contributes 48.5% to the academic achievement.

Ajawani and Rungta (2004) studied the intelligence variance of under and over achievers. It was concluded that it is not necessary that all the under achievers are of less than average IQ or abilities. Sometimes a genius having greater IQ cannot make progress according to his abilities and academic efficiency and comes under the category of under achiever. It can be concluded that intelligence is not a variance in under and over achievement. The findings suggest searching for other variables than the intelligence as the cause for under/over achievement.
Begum and Phukan (2005) investigated correlation between academic achievement and intelligence on a sample of 180 students of ninth class (118 males and 62 females). Results revealed that intelligence of students under the study was positively correlated (r=0.70) with academic achievement.

Panda (2005) investigated the correlation between academic achievement and intelligence. The main objective of the study was to discover the effect of intelligence on academic achievement in different categories of schools and assess interrelationship between academic achievement and intelligence. 550 ninth class students of different categories of schools of Orissa were taken. Significant difference in academic achievement of students in different categories of schools was seen. There was no significant difference in intelligence level of students of different categories of schools. There was low relationship between academic achievement and intelligence in different categories of schools.

Chamundeswari and Sumangala (2006) conducted a study on ‘General Mental Alertness and Intelligence in relation to Academic achievement of students at the secondary level’ on a sample of 291 students (145 days and 146 girls) at the secondary level in different types of schools. They found that there was significant difference between intelligence of students at the secondary level in different type of schools i.e. Govt. and Govt. aided, Matriculation and Corporation, corporation and Govt. aided and Govt. and Matriculation schools. Also there was no significant difference between intelligence of students at the secondary level in govt. and matriculation and corporation and Govt. schools. There was significant correlation among the variables, mental alertness, intelligence, achievement in mathematics and English of students at the secondary level in different types of schools.

Gnanadevan (2007) aimed at finding out the social intelligence of higher secondary students. Sample of 400 higher secondary
students was chosen randomly. In the study social intelligence of higher secondary students was found to be high. The social intelligence scores of higher secondary students differ significantly with respect to caste, mother’s education and parents’ income. They do not differ significantly with respect to gender, father’s education, father’s occupation and mother’s occupation.

Taub et al. (2008) investigated the direct and indirect effects of general intelligence and cognitive abilities on mathematics achievement. The participants consisted of 4 age-differentiated subsamples (ranging from ages 5 to 19). The following CHC broad cognitive ability factors demonstrated statistically significant direct effects on the mathematics achievement variables: Fluid Reasoning, Crystallized Intelligence, and Processing Speed. In contrast, across all age levels, the general intelligence factor demonstrated indirect effects on the mathematics achievement variable.

Tulani (2008) investigated cognitive and non-cognitive variables as predictors of achievement in Biology at the senior secondary stage. The study was conducted on a random sample of 515 students of XI class (males-277 and females-238) studying Biology in Government and Private Senior Secondary Schools situated in the state of Punjab. It was found that variable of intelligence measured through general mental ability was significantly and positively correlated with the achievement in Biology. Positive and significant relationship between academic achievement in Biology and family environment was also found.

Dhall and Thukral (2009) in their study made an attempt to reveal the relationship of intelligence with self-confidence and academic achievement relationship of secondary school students. The sample of 1000 students (both boys and girls) of IX class was randomly drawn from secondary schools affiliated to PSEB of four districts. It was found that positive relationship exists between intelligence and self-confidence in respect of secondary school
students and boys whereas for girls no such relationship exists. Intelligence is significantly related with academic achievement of the students of secondary school as well as boys and girls taken separately. Studies conducted by Panigrahi (2005) and Chamundeswari (2006) also support the results that academic achievement and intelligence are significantly related.

Gurubsappa (2009) conducted a study on intelligence and self-concept as correlate of academic achievement of secondary students. It was investigated that the highly intelligent students and students with better self-concept achieve high in school i.e. the academic achievement of the students is certainly influenced by psychological factors like intelligence and self-concept.

Charan (2011) studied the effect of intelligence and academic motivation on academic achievement of tribal and non-tribal students of standard X. The research was conducted on a sample of 250 tribal and 250 non tribal students studying in secondary schools of Panchmahal district. The findings show that there is significant effect of intelligence on the level (High, Medium Academic Achievement) of the Academic Achievement between tribal and non-tribal students. There is significant effect of academic motivation on the levels of the academic achievement of tribal and non-tribal students.

suggest searching for other variables than the intelligence as the cause of under and low achievement.

The studies reveal that Intelligence and achievement are significantly correlated factors. High achievers show significantly higher mean IQ than the low achievers. Studies reveal significant difference among over-achievers, average achievers and under-achievers with regard to their adjustment. Students with high intelligence level have better study habits than the students with low intelligence.

2.2 STUDIES RELATED TO ACADEMIC ACHIEVEMENT MOTIVATION

Gupta (1982) investigated the personality characteristics of ninth grade over and under achieving boys and girls at different levels of achievement motivation. 310 ninth class boys and 312 girls were taken as sample from different schools of Patiala. The present investigation concerned students-boys as well as girls who passed the ninth class state level examination by Punjab School Education Board, Mohali and were admitted to the tenth class and found that academic achievement has highly significant correlation with intelligence but correlation between intelligence and over and under-achievement is found to be not significant. Achievement motivation is found to be significantly correlated with academic achievement and with over and under achievement. The students of both the sexes, belonging to different castes communities, socio-economic strata, and age levels and pursuing different courses were taken as sample.

Sontakey (1986) studied a comparative study of personality factors and achievement motivation of high and low achievers in natural and biological sciences. The study was conducted on 482 boys and girls (251 high achievers and 231 low achievers). It was found that high achievers were more intelligent than low achievers. High achievers belonged to higher socio-economic status background. High
achievers and low achievers did not differ significantly on achievement motivation.

Bretscher et al. (1989) in their study found that students who were involved in learning, scored significantly higher than their counterparts. They further contended that effectance motivation was a predictor of mathematics achievement. This influence is understandable since students with high motivation usually enjoy doing mathematics, stick at problems until they are solved and become absorbed in their mathematical problem solving activities.

Kingra and Kaile (1994) found impact of achievement motivation upon socio-economic status and academic achievement. They found negative correlation between academic achievement motivation and academic achievement. This shows that students with desire to excel may not actually get good marks in the examination, because there are many other factors cognitive and non-cognitive upon with academic achievement of pupils depend.

The study of Juyal (2003) was undertaken to examine the relationship between home environment and achievement motivation of both the sexes on a sample of 100 school going adolescents studying in Hindi medium schools of Dehradun. The achievement motivation has been found to be greater in urban girls than rural girls. Family situation is a significant factor in the development of high achievement motivation. Home environment does not affect achievement motivation in rural boys and girls. Home environment and achievement motivation are highly correlated with each other and also both urban boys and girls have higher achievement motivation than rural boys and similarly urban girls have more achievement motivation than rural girls.

Singh and Kaur (2003) conducted a study of achievement motivation and parental background as a determinant of students’ academic achievement. In this study, it was found that there was a positive correlation between achievement motivation and academic
achievement of students. Qualification of parents and working of parents showed significant effect on students’ achievement motivation and academic achievement.

Manimekalai and William (2005) studied the effect of achievement motivation on scholastic achievement among the plus two girls. A sample of 100 boys and 350 girls of three government and three private higher secondary schools was taken from Kumbakonam, Thanjavur District of Tamilnadu. Cluster sampling technique was used for the selection of sample. The results showed a positive relationship between academic motivation and scholastic achievement of girls. It also revealed that girls of private schools had more achievement motivation than girls of government schools and had more scholastic achievement too.

The main objective of the study of Sharma, Narayan and Subramaniam (2006) was to find out the relationship between self concept, achievement motivation and achievement in mathematics among boys and girls. The sample of the study constituted 80 students of sixth class of Government and Old Champion Middle schools of Madhya Pradesh. No relationship between self concept and achievement motivation among boys was found while a significant positive relationship was found between self-concept and achievement motivation among girls. Boys and girls have shown a significant relationship between achievement motivation and achievement in mathematics. More positive the self-concept and achievement motivation of boys greater will be their achievement in mathematics.

Jaiswal (2007) investigated to find scientific creativity and achievement motivation of grade X students of different education boards of Kanpur city. Descriptive survey method was used. Stratified random sampling technique was used for data collection. The results indicated that achievement motivation has significant impact on scientific creativity grade X students, irrespective of their boards. It is also clear that highly motivated students have more creativity in
comparison to low motive students. It is also observed that there is no difference in scientific creativity and achievement motivation of grade X students of three different educational boards.

Pandey and Ahmed (2007) aimed at measuring the achievement motivation of adolescent in relation to their sex difference. The sample comprised of 100 randomly selected students of whom 50 boys and 50 girls were taken from the schools of Azamgarh district. No significant difference in the achievement motivation between scores of boys and girls was found. The investigator found that the girls are more motivated than boys in the factor of anticipatory behaviour.

Zakaria and Nordin (2008) in their study investigated the effects of mathematics anxiety on matriculation students as related to motivation and achievement. The purpose of this study was to investigate whether there was a statistical difference between matriculation students’ motivation and achievement when they were classified according to the math anxiety levels. Subjects included 88 students (73 females and 15 males) of their second semester of study. The ANOVA results showed that the mean achievement scores and motivation scores of low, moderate and high anxiety groups were significantly different. The study revealed a significant low positive correlation (r=0.31) between motivation and achievement. The results indicated that matriculation students with high mathematics anxiety scored significantly lower in achievement. The results also indicated that there was a relationship between mathematics anxiety and achievement. This indicates that as math anxiety scores increase, achievement scores decrease. The effect of math anxiety on motivation was significant. Students with low math anxiety scoring significantly higher than students with moderate or high math anxiety and students with moderate anxiety scoring significantly higher than students with high math anxiety. These results concurred with the findings of Tapia (2004). This finding is consistent with the studies of
Betz (1978), Ma (1999) and Woodard (2004), which revealed a negative relationship between these two variables.

Alam (2009) conducted a study on the relationship between academic achievement, creativity and academic achievement motivation. The students of class X drawn from different government schools of Darbhanga district in Bihar. Their age ranged from 15 to 16 years. Only the government schools were surveyed for the sake of similarity in infra structure and educational environment of the students. Creativity Test by Mehdi, Achievement Motivation Scale by Beena Shah was taken as tools. Aggregate marks of the annual examination were collected from official records of schools. Results indicated the correlation of academic achievement with creativity and achievement motivation of the students. Creativity has significant positive relationship with academic achievement for the total sample boys, girls, urban and rural students. In case of achievement motivation and academic achievement of the students, the coefficients of correlation for the total and sub-samples are again significant and positive. The significant positive relationship shows that academic achievement increases with achievement motivation and vice-versa.

Ali et al. (2011) attempted to check the impact of motivation on problem based learning environment on the academic achievement of High achievers and Low achievers in the subject of mathematics. The study was experimental in nature and pre-test- post test design was used the study. Students were distributed into two groups. An experimental group comprising 19 participants received problem based learning practice including students motivational techniques, e.g. (well structured problems, quiz, projects, self learning in groups, discussion in groups, representation, self-assessment, peer-assessment). A control group comprising 19 participants received treatment of traditional teaching in shape of lecture/demonstration method for four weeks. At the end, post-test was administered and the scores of pre-test and post-test were served as data of the study. It
indicated the significant impact of motivation on the academic achievement of students in problem based learning environment. The result further indicated that motivation in problem based learning plays more effective role than traditional method of teaching.

From the review of related literature of researchers Cuppens (1967), Gupta (1982), Bretscher et al. (1989), Gupta (1989), Ulrich and Mihale (1995), Juyal (2003), Singh and Kaur (2003), Manimekalai (2005), Sharma et al. (2006), Jaiswal (2007), Zakaria and Nordin (2008), Alam (2009), Ali et al. (2011) positive and significant relationship was found between achievement motivation and academic achievement. It is concluded by them that higher the achievement motivation higher is the academic achievement. Over achievers have more achievement motivation than under achievers. But on the other hand, Sontakey (1986), Kingra and Kaile (1994) did not find significant relationship between achievement motivation and academic achievement. They concluded that the students with desire to achieve may not actually get good marks because the academic achievement of students may be influenced by other cognitive end non-cognitive factors. Vijaylakshmi (1997), Juyal (2003), Singh and Kaur (2003) indicated that children coming from high educated groups have high academic achievement motivation. Thus family situation is a significant factor in the development of high achievement motivation.

2.3 STUDIES RELATED TO ATTITUDE TOWARDS MATHEMATICS

Fennema and Sherman (1977, 1978) reported that middle school and high school students who achieved higher scores on tests of mathematical achievement perceived mathematics to be more useful than lower-achieving students.

Jain (1989) designed a study to find out the mathematical interest of four hundred 9th grade students (male and female) from the high/higher secondary schools of rural and urban schools of Bathinda District in relation to their residential background, sex, achievement
motivation and academic achievement. Two groups of students on the basis of residential background, sex achievement motivation and academic achievement were formed. It is concluded that the residential background is significantly related to mathematical interest of students. Sex has significant influence on the development of mathematical interest of students. It is concluded that the measures of residential background, sex and achievement motivation are contributing individually but for academic achievement which does not influence the development of mathematical interest of the students.

Stipek and Granlinski (1991) in their article indicated that girls have lower expectations for themselves in math than boys, and that girls believe they do not have mathematical ability. When girls do poorly in mathematics, they attribute their poor performance to their inability to do math. It is suggested that girls should be encouraged to have higher expectations for them in mathematics.

Gill (1994) in her article indicated that middle school and high school girls have positive attitudes towards school but negative attitudes towards mathematics. It focussed on the gendering, the separation of boys and girls of Australian schools through the study of 7th, 8th and 10th graders in co-educational programmes as well as girls school only. The results indicated that even when girls are taught in all girls schools, they still have negative attitudes towards mathematics.

Barbara et al. (1997) investigated the interaction of ethnicity, mathematics achievement level, socio-economic status and gender among high school students’ mathematics concepts. 100 white and African-American urban secondary students were interviewed for this study. After the interpretation of interviews three dependent variables were selected. It was verified that male students are more interested than females to enrol on additional mathematics courses. There is
found a positive correlation between attitude towards mathematics and achievement in mathematics.

According to Ma and Kishor (1997) the variable ‘attitude’ is one of the most potent factors that relates to achievement. This researcher has experienced many different outlooks on mathematics during teaching.

Sherman and Christian (1999) investigated the relationship between mathematics attitudes and global self-concept. The purpose of the study was to examine the effect of math attitudes on pre-service elementary school teachers’ global self-concept. Individuals with poor mathematical attitudes are often reported to have a low self-concept and feeling of incompetence. Improving pre-service students’ attitudes towards mathematics is an important concern for university education courses in order to facilitate positive mathematics attitudes in future elementary pupils.

Hannula et al. (2005) explored the structure of 269 Finnish pre-service teachers’ views of mathematics and also their different belief profiles. The core of the student teachers’ views consisted of three correlated beliefs: belief of one’s own talent; belief of the difficulty of mathematics; and one’s liking of mathematics. Concerning their view towards mathematics, students fell within three main categories: positive (43%); neutral (36%); and some negative (22%). Hannula et al. found that “some of the students with a negative view were seriously impaired as they felt that they have tried hard and failed. Consequently, they have adopted a belief that they cannot learn mathematics”.

Allan and Bob (2006) reported on a study focused upon 83 pre-service primary teachers in their first mathematics pedagogy subject at the University of Western Sydney. They completed three surveys: an achievement test of the mathematics they would be expected to teach; a survey of their beliefs about mathematics, mathematics teaching and mathematics learning; and a survey of their attitudes towards
mathematics. The experiences and beliefs of pre-service teachers influence the formation of attitudes and these, in turn, influence their classroom practices and beliefs. The analysis reveals a lack of relationship between beliefs and attitudes with the only statistically significant relationship between insecurity about teaching mathematics in the attitudes scale and the transmission factor in the beliefs scale. Also, the data from the attitudes scale indicate that a negative attitude regarding the nature of mathematics does not preclude a positive attitude to achievement in mathematics. At different times an individual can feel insecure about one aspect of mathematics and confident about their ability to handle mathematics in the classroom. This means that a student could be keen about doing mathematics but not have the necessary background to succeed. The data from this study show that, in the cohort of pre-service teachers involved, there was an overall trend towards positive attitudes to mathematics and the teaching of mathematics, and a general security or confidence in their abilities.

Baskaran and Sadatcharavel (2006) conducted a study on relationship between scientific attitude and achievement. It was conducted on a sample of 114 students of 8\textsuperscript{th} standard (56 boys and 58 girls of Panchayat union aided and municipal schools). It was found that there was no significant difference between the mean attitude scores of the pupils in terms of gender, locality, panchayat and aided schools. There existed a higher positive relationship between scientific attitude and achievement in science. There is a higher positive correlation between achievement in science and that of Mathematics.

Ravanan et al. (2007) conducted a study to study the attitude of XI standard students towards mathematics in Trichy district. The study was restricted to four government schools, three aided and three un-aided schools from both rural and urban areas. The sample was limited to 450 students of XI class. There is no significant
difference in Attitude towards Mathematics of XI standard students in Trichy District owing to differences in their Gender, Region and Medium of Instruction. There is significant difference in Attitude towards Mathematics of XI standard students in Trichy District, owing to differences in their Stream of Study, Types of School Management and Socio-Economic Status. There is significant association between Attitudes towards Mathematics of XI standards students in Trichy District with their Region, Stream of Study, Types of School Management and Socio-Economic Status. The present study revealed that the students of Low Socio-Economic Status are better in Mathematics Attitude. The purpose of the present investigation was to study the mathematics attitude with reference to some selected variables and the study indicated significant relationship among the variables.

The study by Akre and Bais (2008) was undertaken to find out the relationship between the attitude towards mathematics and SES. Investigators collected the data from 992 IX class students of different schools and localities of Sagar District in Madhya Pradesh. The combined scores of the areas, social, family, education, profession, caste were treated as social status. Total assets and monthly income was treated as an economic status. The relationship between social factor and economic factor and attitude towards mathematics of boys and girls in rural areas was investigated. It was found that a significant relationship existed between economic factors and attitude towards mathematics in respect of rural boys and girls. The significant relationship between social and economic factors and attitude towards mathematics of boys and girls in urban areas was found. A relationship between economic factors and attitude towards mathematics in respect of boys and girls in both rural and urban area was seen.

Benjamin (2009) attempted in a study to look at how students and teachers attitudes impact the mathematics performance of the
students in the classroom. One small private school in Southeastern Ohio was the focus of this study. Students and teachers both were surveyed by the researcher on their attitude towards mathematics education. The purpose of this study was to determine if there is a correlation between a student’s attitude toward mathematics and their performance in the classroom. They asked for the student’s grade, gender, and letter grade received during the third grading period. After the data analysis was complete from all of the surveys, this researcher believes that having a positive attitude about mathematics does have a positive impact on a student’s classroom performance of students at St. Mary’s School. The students’ scores on the eight attitude assessment questions were scored to give the student an attitude classification. The students could have been placed into one of the three following categories: A positive attitude was defined as having a response range from 37-55, a moderate attitude was defined as having a response range from 18-36, and a negative attitude was defined as having a response range from 0-17. After calculating all of the scores for the students at St. Mary’s, none were categorized as having a negative attitude, while the majority of the respondents had what the researcher categorized as a positive attitude. Of the 48 students who had a positive attitude, all were in the lower half of the scale. Therefore, all of the 48 positive attitudes would not be considered a strong positive attitude. Of the 31 moderate attitudes, 30 were with in two standard deviations of the positive/moderate split. Based on the data collected and tabulated, the research does show that there is a positive correlation ($r = 0.540$) between a students overall attitude toward mathematics and their success in the classroom.

Alkhateeb (2009) studied the gender differences in mathematics achievement among high school students in United Arab Emirates. This study explored gender differences in mathematics achievement of students in the last grade of high school and changes in these differences over a 10-year period in U.A.E.A random sample of 2000
students, 100 males and 100 females for each of the 10 academic years, was taken from Ministry of Education records and achievement results for males and females were compared. Findings indicated no significant differences. In the last six years females scored higher. In general, the present analyses suggest that high school females in this study outperformed males in mathematics achievement, in contrast with the general result of several studies in which males usually outperformed females.

Carmona (2009) conducted a study on mathematical background and attitudes towards statistics in sample of undergraduate students. 827 college students from two Spanish universities were selected from various introductory statistics classes. There were 180 males and 647 females. Information about secondary studies and maths grades was obtained by self-report. The results suggested that mathematical background has a strong association with the affective responses to statistics, especially the attitudes towards the statistics course.

Yara (2009) in his investigation studied the mathematical attitude of students and described that the attitude of students can be influenced by the attitude of the teacher and his method of teaching. Studies carried out have shown that the teachers’ method of mathematics teaching and his personality greatly accounted for the students’ positive attitude towards mathematics and that, without interest and personal effort in learning mathematics by the students, they can hardly perform well in the subject. The study adopted the descriptive survey design using simple frequency and percentages in analysing the data. 1542 senior secondary two students randomly selected from 2 schools in each of the senatorial districts from the six states in the Southwestern part of Nigeria were used. The results showed that 1458 students representing 83.3% agreed that they liked solving mathematics while 84 students representing 16.7% did not agree that they liked solving mathematics. These results showed that
majority of the students liked solving mathematics while very few students do not. It was found that the students’ attitudes towards mathematics were positive and that many of them believed that mathematics is a worthwhile and necessary subject which can help them in their future career.

Kaplan (2010) studied to examine the math attitudes of teachers and to show that the feelings of low attitude can spread to students and undermine their performance. Studies have shown that girls have just as much math ability as boys.

Palani and Benjamin (2011) conducted a study on 750 children of middle schools of Cuddalore district of Tamilnadu to investigate the attitude towards mathematics. It is revealed that children differ in their attitude towards mathematics based on their sex and location of school whereas they do not differ in their attitude based on the type of management of the schools. There is no significant difference among the children in their attitude towards mathematics with respect to community, parental education, parental occupation and parent income.

From the research studies done in foreign countries related to mathematical attitude it can be concluded that achievement in mathematics is highly affected by mathematical attitude. The researchers, Gill (1994), Sherman and Christian (1999), Baskaran (2006), Kaplan (2010) found that achievement in mathematics is influenced by mathematical attitude. Jain (1989), Ravanat et al. (2007) and Akre and Bais (2008) found the relationship between socio-economic status and mathematical attitude. The students belonging to high status families have positive mathematical attitude. Stipek and Granlinski (1991), Gill (1994), Barbara (1997) have shown that male students are more interested in mathematics than girls. So girls have negative attitude towards mathematics. But Alkhateeb (2009) and Kaplan (2010) contradicted that high school females outperformed males in mathematic achievement and the girls have
just as much as ability as boys. Hence teachers should not neglect pupils’ attitude while pursuing academic excellence. Pupils probably feel threatened by difficult sums and this may cause them to develop negative attitude towards mathematics.

2.4 STUDIES RELATED TO SOCIO-ECONOMIC STATUS

Thatai (1970) investigated the scholastic achievement of ninth class students in relation to their income and education of their parents. Four hundred students of different localities such as urban and rural and boys and girls were taken. It was studied that economic and educational statuses of parents do have positive effect on the scholastic achievement of rural girls. Positive correlation was found between the education and income of parents with the scholastic achievement of their children.

Mathur and Hundal (1972) studied the school achievement and intelligence in relation to some socio-economic background factors and found that there existed a close mutual relationship among factors of achievement and family background. The correlations reported by them were between the parents' income and achievement, 0.41; and between the parents' education and achievement 0.63. They concluded that the higher the family income the higher were the achievement levels of the subjects.

Abrol (1977) studied the achievement motivation in relation to intelligence, vocational interest, achievement, sex and socio-economic status. It was reported that socio-economic status of the family effects achievements motivation, i.e., the higher the status, the higher is the achievement motivation. The sample of his study consisted of 414 tenth class students from six higher secondary schools from the urban area of Delhi.

Khanna (1980) studied the relationship between students’ socio-economic background and their academic achievement at junior school level and indicated that socio-economic status was positively
and significantly related with academic achievement. The correlation was more consistent in urban areas than in rural areas.

Chauhan (1983) conducted a study on academic motivation in relation to intelligence and socio-economic status. It was revealed that academic motivation influenced by socio-economic status of the subjects and that children from low and middle socio-economic groups have no impact on academic motivation.

Lockheed, Fuller and Nyirongo (1989) show that students belonging to upper socio-economic status groups showed better academic achievement than students belonging to lower socio-economic status groups. With reference to achievement in Mathematics, Howley (1989) and House (2002) contend that students learn better if they are from above average or average income family, with well-educated parents who participate in the school’s education process and encourage their children to learn. They established that the socio-economic status of students affected their achievement.

Kumari (1992) studied the creativity of ninth graders in relation to their socio-economic status, achievement motivation and adjustment. The sample of 600 students of ninth class of government and private schools was taken. Only girls of high and senior secondary schools of Patiala city were selected as a sample. It was found that creativity and socio-economic status are positively and significantly correlated. Socio-economic status and achievement motivation are significantly and positively correlated.

Pradhan (1997) conducted a study which was undertaken to study the effect of socio-economic status and intelligence on scholastic achievement. A sample of ninety girls of sixth and seventh classes was selected from different middle schools of Nagpur by stratified sampling method. The age range of the subjects was from 10-11 years. The data collection devices used was intelligence test (Raven’s Coloured Progressive Matrices), Socio-Economic Status scale and scholastic achievement record. The total effective sample of the study was
classified into four groups on the basis of intelligence and socio-economic status. Here 2x2 factorial designs were used. Basing on socio-economic status and intelligence the data were classified into four different groups, such as HSES HI-A1B1, HSES LI-A1B2, LSES HI- A2B1 and LSES LI-A2B2. Mean, standard deviation, ANOVA and Duncan’s multiple range tests were used for analysis. It is found that socio-economic status is not effective with regard to scholastic achievement whereas, intelligence is seen to be more influential than socio-economic status.

Radha (1998) studied the sample of 415 students from different types of schools in Kotta district. Two standardised tests were used to measure creative thinking and socio-economic status. Academic achievement was computed from the sources obtained in the half yearly examination. Navodya schools appear to promote academic achievement followed by unaided school. The lowest mean was obtained by the students of the government schools. Socioeconomic status appears to be the best predictor of academic achievement at least among the variables included in the study.

Bookcock (2000) and Lloyd (2002) supported the relationship between school performance and parental socio-economic condition where they conclude that students with high achievement values tend to come from families that are more educated and with higher status of occupation. The point that for families in poverty, basic necessities are lacking, parents may place top priority on housing, clothing and health care and educational toys, games and books may appear to be luxuries is supported by them.

Kmara (2001) conducted a study on impact of feedback on the learning of scientific concepts among students at different levels of intelligence and socio-economic status. A sample of 200 students of XI class were taken Socio-Economic Scale was administered to only high intelligent and low intelligent groups resulting low socio-economic status, Low intelligent high socio-economic status and low intelligent
high low socio-economic status, High intelligent low socio-economic status, Low intelligent high socio-economic status and low intelligent low socio-economic status groups. Students under each of these four groups were further randomly divided into two groups; one group was given feedback whereas other was kept as control. The study shows significant contribution towards variance due to variable of intelligence. It was found that mean score of students under high intelligent was higher as compared to mean scores under low intelligent group.

Mirza (2001) conducted a research to study the “relationship of socio-economic status with achievement” and the findings showed that socio-economic status of students has fairly significant effect on their achievement without giving the clear description regarding which socio-economic status class has greater achievement and which perform poorly.

Coley (2002) described that children with higher socio-economic status backgrounds were more likely to be proficient on tasks of addition, subtraction, ordinal sequencing, and math word problems than children with lower socio-economic status backgrounds.

Kasinath (2003) investigated to find out the effect of socio-economic status on academic achievement in science and mathematics. The sample consisted of 200 secondary school students of Xth standard. It included 102 boys and 98 girls. Results of 2x2x2 ANOVA revealed that SES of students has influenced achievement in mathematics and science.

Pandey and Maikhuri (2003) conducted the present study to find out the relationship between socio-economic status and academic achievement of adolescents. The sample comprised 200 students (100 boys and 100 girls) in the age group of 16 to 18 years selected from government/private, Intermediate colleges of Kotdwara city. Shah's Socio-Economic Status Scale (1986) was used to measure socio-economic status of the students. Academic achievement was taken in
terms of aggregate marks obtained by the subjects in their previous examination. The results of the study revealed significant relationship between academic achievement and socio-economic status. However, significant differences were observed between academic achievements of adolescents belonging to high and low socio-economic status. Hence, it is concluded that a student belonging to low socio-economic status group will score low score in academic achievement. This may be due to the fact that the students who belong to low socio-economic status group are faced with many adverse circumstances. Due to the lack of interest in the parts of the parents, little attention is paid to the child’s school progress. Thus, apart from innate, mental, physical and intellectual deficiencies, there are some unfortunate environmental factors which hinder the scholastic progress of students.

Orr (2003) analysed the National Longitudinal Survey of Youth entitled NLSY79 Mothers and Children. Approximately 3000 women who were aged 14-21 in 1979 and had become mothers since that time were included in the study. These women were interviewed annually from 1979 through 2002. School aged children aged 5-14 were given the maths test. The children selected were black and white. It is observed that parents from low socio-economic status communities may be unable to afford resources such as books, computers, or tutors to create this positive literacy environment.

Kalu and Pyari (2004) conducted a study to find out the effect of family climate and income on educational achievement of the XI<sup>th</sup> class students of Arts stream. The sample consisted of 120 girls. Family climate scale constructed and standardised by Beena Shah (1990) was used to study the interpersonal relationship between parents and children. Results show that there was positive inter correlation among the variables under study. Students of Agra city ranging from 14-16 years were taken. 418 students of 11<sup>th</sup> grade were taken at the first stage. Final size of the sample was only 120
students. It was found that the achievement of the students having favourable family climate is better than the group of students having unfavourable family climate.

Davis and Pamela (2005) examined the process of how socioeconomic status, specifically parents' education and income, indirectly relates to children's academic achievement through parents' beliefs and behaviours. Data from a national, cross-sectional study of children were used for this study. The subjects were 868 8-12-year-olds, divided approximately equally across gender (436 females, 433 males). This sample was 49% non-Hispanic European American and 47% African American. Using structural equation modeling techniques, the author found that the socioeconomic factors were related indirectly to children's academic achievement through parents' beliefs and behaviours but that the process of these relations was different by racial group. Parents' years of schooling also was found to be an important socioeconomic factor to take into consideration in both policy and research when looking at school-age children.

Geis (2005) studied the low socio-economic status high school students who are academically successful. Low economic socio-economic status students tend to achieve academically at a much lower level than higher socio-economic status students. However some low socio-economic status students are very successful in school. In depth interviews with three high school students were conducted and recorded. The study was conducted in a sub urban school system in Georgia. They are low socio-economic status students because their parents were either high school drop-outs or only achieved a high school diploma. Parents were either unemployed or having low skilled jobs. So it may be predicted that there are other variables which influence the achievement of students.

Sirin (2005) conducted a meta-analysis on the relationship between socio-economic status and achievement. A total of six indicators of socio-economic status were examined. They included
parental education, occupation, income, the student’s free or reduced price lunch participation, neighbourhood demographics, and home resources (e.g., computer/internet availability, books). Parental education was the most commonly used measure of student’s socio-economic status. Barry (2005) also reported the same result; i.e. high achievers belong to high socio-economic status and low achievers belongs to low socio-economic status.

Ozturk & Singh (2006) explored direct and indirect effects of socio-economic status (SES) and previous mathematics achievement on high school advanced mathematics course taking. The two variables were placed in a model together with the mediating variables of parental involvement, educational aspirations of peers, student’s educational aspirations, and mathematics self-concept. In this study, the data were drawn from the base year and first and second follow-up of NELS: 88. The schools were stratified based on type (public versus private), geographic region, urbanicity, and percent of minority enrolment. Within each stratum, schools were selected with probabilities in proportion to their estimated eighth grade enrolment, which led to a pool of approximately 1000 schools. In the second stage of sampling, an average of 23 students was selected randomly from each school, producing a total sample of approximately 23,000 eighth-graders for the base year. The first and second follow-up data were collected from the same cohort in 1990 and in 1992, when most of the students were tenth and twelfth graders, respectively. During the development of the final measurement model, a very high positive correlation was found between parents’ educational expectations for their children and students’ educational aspirations.

The study of Viswanathappa and Farooque (2006) aimed at finding the influence of parents’ occupation of students’ achievement in primary schools of Kannaur district of Kerala. It was found that a significant difference among the achievement of students whose father’s occupation is in the administration or managerial field scoring
comparatively higher and a significant difference of scores are discovered among children whose mothers were in different occupations. Socio-economic status of students is affected by the occupations of their parents.

Bhangale (2007) conducted her study to find the impact of socio-economic status and environment on the children having low intelligence. The study was carried out on a random sample of 200 parents in Jalgaon district. Survey method was used for the present study. It was found that most of the mentally retarded children have lower social, economic status and lower environmental situation. Socio-economic status has its influence on child’s personality and educability through his/her family.

Gnanadevan (2007) aimed at finding out the social intelligence of higher secondary students. Chadha N.K and Ms. Usha Ganesam’s social intelligence scale has been administered to a random sample of 400 higher secondary students. In the study social intelligence of higher secondary students is found to be high. The social intelligence scores of higher secondary students differ significantly with respect to caste, mother ‘education and parents’ income. They do not differ significantly with respect to gender, father’s education, father’ occupation and mother’s occupation.

Nuthanap (2007) studied the gender analysis of academic achievement among high school students. The study was carried out in two schools each of rural and urban areas of Dharwad Taluka and Dharwad city. One hundred and fifty (150) students from each of the schools were selected of the 150 students 50 each were selected from 8th, 9th and 10th class. The total sample for the study was 600 students. In order to know the academic achievement level of the students the average of the final exam grades of two previous consecutive years were considered. It was found that almost equal percentage of boys and girls were found to belong to low and medium socio economic status while a small percentage of boys and girls
belonged to high socio economic status. There was significant association of socio economic status with academic achievement among both boys and girls. Locale, parental education, income and fathers occupation were positively and significantly related to academic achievement. Family size was inversely related to academic achievement. Seventy five per cent of rural students belong to the category of low socio economic status and seventy eight per cent of urban students belong to the category of medium socio economic status. There was found to be significant association between socioeconomic status and overall urban students. Urban students had significantly better socio economic status than rural students. Majority of boys and girls belonged to the category of excellent academic achievement and significant association was fund between academic achievement with boys and girls. There was no difference between boys’ and girls’ academic achievement. The socio economic status of the family had significant influence on the academic achievement of the boys and girls.

Okoye and Ebele (2008) examined the interaction of logical reasoning ability and socio-economic status on achievement in genetics amongst secondary school students in Nigeria. Two hundred and forty senior students were selected randomly from six secondary schools of Ethiope East and Okpe Local government Areas of Delta State, Nigeria were used as sample for study. It is found that students coming from upper socio-economic background achieve significantly higher in Genetics than students from low socio-economic background. This implies that students from low socio-economic status background probably have a number of inhibiting factors affecting their achievement. Students from upper socio-economic status families in most cases tend to perform well in science subjects than their counterparts from lower social class families. In most cases upper social class parents tend to have enough money and resources
to provide the required academically, stimulating environment that places their children in a better position to do well in schools.

Capraro et al. (2009) in their article investigated the achievement gap in the context of a particular region and the factors associated with student learning in that region. Data were collected over several years from recent administrations of the mathematics section of the Measurement of Academic Progress in Colorado. Black and Hispanic mathematics achievement and growth were compared to White student achievement and growth. The results indicate that gaps exist not only in mathematics achievement but also in mathematics growth. A statistically significant difference in mathematics growth rates between Black and Hispanic students from different economic backgrounds were found; however, a statistically significant difference in mathematics growth rates by gender was only found in Black and Hispanic third grade students. In general, across all analyses, Asian and White students outperformed Black and Hispanic students. Black and Hispanic students have statistically significantly lower mean scores as compared to their Asian and White peers. Black and Hispanic students start each grade throughout elementary school behind their Asian and White peers in regards to their mathematics achievement. Moreover, Black and Hispanic students have mathematics growth rates that are lower than their expected growth rates (i.e., less than 100%) as well as less than their Asian and White peers making it virtually impossible for Black and Hispanic students in this Colorado district to catch their Asian and White counterparts. The results of this study further suggest that socio-economic status has a dramatic affect on the mathematics achievement and growth of Black students. Ewijk and Sleegers (2010) also concluded that socio-economic status is an important determinant of academic achievement.

Chand and Singh (2009) selected a sample of 861 sixth grade students from 34 schools of Himachal Pradesh to ascertain the
relationship of socio-demographic variables with that of language achievement. The results showed that parental and maternal education, occupation, family income and family support in educational matters plays a facilitative role in language achievement of secondary school students. The students with high family income have high achievement. It is also found that urban conditions are more conducive in language achievement of elementary school students.

Akhtar et al. (2011) aimed to explore the effects of socio-economic status (SES) on learning achievement of students. The population was the secondary school students enrolled in four districts of Pakistan. Multistage sampling technique was used to select 1580 students. The SES questionnaire was delivered to sampled students. It was filled by their parents. The five class SES structure was used to categories the students socio-economic status. The obtained scores on Secondary School Certificate (SSC) examination were used as students learning achievement. By the Pearson’s correlation data was analyzed. The findings showed that upper class students are A and B grade achievers. The middle class students showed significant positive relationship with D grade. The lower class students remained low achievers. In this way the study verify the results of different studies in other countries that socio-economic status effects learning achievement. The above discussion showed that the lower middle class is struggling more. They are concerned with their achievement. Their performance is better than other groups. This shows the socio-economic status affects the learning achievement of students. It is concluded that a relationship exists between the socioeconomic status and learning achievement of secondary school students. These findings verify the study of Bond (1981); Kaeley (1990); Mirza (2001); Barry (2005) and Ewijk and Sleegers (2010) but do not support the findings of the study of Verma and Tiku (1990).
Researchers have shown that family's socio-economic status is based on parents' income, education and occupation. Thus, a family with high socio-economic status is often more successful in preparing its young children for school because they typically have access to a wide range of resources to promote and support their development. They are able to provide their young children with high quality child care, books and toys to encourage them in various learning activities at home. This in turn, will affect the students' academic achievement in Mathematics. However, the most important effect of socio-economic pressure is that it generally makes parents less available to support and encourage their children in their schooling. Also, literatures reveal that the home background variables have a great influence on the students' psychological, emotional, social and economic state (Onocha, 1985; Crane, 1993; Rani, 1998; Dubey, 1999; Musgrave, 2000; Grissmer, 2003; Teese, 2004; Sharma, 2004). This means the family background and context of a child affect his/her reaction to life situations and level of performance.

Dev (1959), Tamagine (1969), Thatai (1970), Mathur and Hundal (1972), Mohan (1972), Robert (1974), Pandharipande (1976), Abrol (1977), Khanna (1980), Tripathi (1989), Kumari (1992), Peacock (2000), Kasinath (2003), Maikhuri and Pandey (2003), Kalu and Pyari (2004), Okoye and Okecha (2008) found significant and positive relationship between socio-economic status and achievement. Socio-economic status is considered the best predictor of academic achievement. They concluded that the higher the family income, the higher was the achievement level. On the other hand, Pradhan (1997) and Geis (2005) found that socio-economic status is not effective with regard to scholastic achievement. So, it may be predicted that there are other variables which influence the achievement of students, especially in mathematics.

Summarising the review of related literature on the variable of socio-economic status, it can be concluded that many variables like
intelligence, achievement motivation, self-concept, academic achievement, attitude, study habits etc. are affected by socio-economic status of students.

2.5 CAUSES RELATED TO LOW ACHIEVEMENT

Adaval et al. (1961) tried to find out the possible causes of failure in high school examination and to suggest ways and means to eradicate them. The sample comprised of eighty girls and 116 boys who had failed in the examination conducted by the Board of High School and Intermediate education, Uttar Pradesh. The study revealed that the majority of the students were below average in intelligence.

Rao (1965) investigated the factors related to scholastic achievement. He found that intelligence; study habits and school attitude were significantly related to the prediction of scholastic achievement. The multiple correlations co-efficient between achievement scores of the intelligence, study habits and attitude towards school was quite high. The three independent variables namely intelligence, study habits and school attitude were significantly related to the prediction of scholastic achievement while the socio-economic status was not.

Sinha (1970) investigated the factors associated with success and failure in university education. 185 students securing more than 50% marks were considered as high achievers. The students who had failed in their last examination and also those who had obtained marks less than 47% were considered as low achievers. It was found that the majority of high achievers belonged to categories of very superior intelligence.

Kaur (1974) studied the causes of low achievement of 9th class students. 100 students who were low achievers (boys and girls), 100 parents and 100 teachers were taken as a sample. The study revealed the opinion of the parents, teachers and the students. The main cause of low achievement of 9th class students in order of priority are ill health, lack of interest in studies, lack of facilities at home, shortage
of food, participation in sports and poor educational environment. Low academic achievement is related to home than to the school or any other factors. The male and female teachers do not differ significantly with regard to the causes of low achievement.

Noah and Eckstein (1974) conducted an international study of school achievement. It was concluded that the home background of children as measured by father’s education and occupation, mother’s education and number of books in the home stands out, as an internationally strong variable. Few of the directly school related variables such as sex of teacher, teachers’ experience and training, size of school, quality of home work and type of curriculum come through as important in all the nations tested.

Mishra (1977) studied the educational backwardness in science and mathematics at delta level in Varanasi district. He took a sample of 1060 students of class VIII and found that in all 23.58% students were educationally backward in science and mathematics. The general level of achievement in mathematics is same among boys and girls both in urban and rural areas. Inferior intellectual potential was the important cause of educational backwardness.

Sharma (1978) conducted a critical study of the achievement in Mathematics by pupils of secondary school with particular reference to the state of Assam. The main objective of the study was to find out the achievement in learning school mathematics and the possible reasons for the low achievement in the same. Some factors responsible for low achievement in mathematics were the imparting of limited knowledge, blind use of rules, heavy syllabus, defective text books, lack of natural urge among pupils to learn mathematics, insufficient drill work at the primary stage and absence of methodical approach of the class room teaching.

Some of the factors identified are low socio-economic status of the family, students' attitude, poor family structure, poor study habit, intellectual ability, parents' education, income and occupation as well
as the age of the mother at the birth of the child (Sogbetan, 1981; Hassan, 1983; Maple and Stage, 1991; Steinberg, 1993; Brooks-Gunn and Chase-Lansdale, 2001).

Emeke (1984) has attributed the cause of poor academic performance to a combination of personal and institutional factors. Personal factors relate to the individual's intelligence, knowledge and ability while the institutional factors are family or parental influences, societal influences and school related factors among others.

Lockheed, Bruce, Nyirono (1989) studied the effect of family on students' achievement in Thailand and Malawi. It was found that family background and prior achievement affected students' educational expectations, perceptions of ability, and effort, which in turn influenced subsequent achievement.

Mayuri and Suneeta (1999) designed a study to find out the effect of selected familial factors on the academic achievement of school children. The sample comprised of 120 children of IX and X standards drawn purposively from ten schools, recognised by the State Education Board, Andhra Pradesh and distributed across the different zones of the Hyderabad city. The parents of the children too formed the sample of the study. Interview schedules for the children and separate questionnaire for the parents were developed and administered to the respondents. The results indicated that the parental factors, namely father's occupation and parental contributions were found to have significant effect on academic achievement of children. High achievers generally seem to come from families where there are few children, a nuclear type of family, and average to higher educational qualifications among parents, mothers’ mostly full-time housewives and a middle class socio economic status. Father's occupation was the only factor that showed positive and significant correlation at 5% level of confidence for achievement in English language, the other correlations being either negative or close to zero. None of the family contributing factors including the parental
contributing factors were significant for achievement in Mathematics. However, parental contribution at home as well as father's occupation had a prominent role to play in the achievement in Science subject, with other factors making no relative contribution.

Xin and Klinger (2000) described the effects of school on academic achievement. Hierarchical linear modelling and data from the New Brunswick School Climate Study were used to examine student background, school context, and school climate effects on grade sixth student achievement in mathematics, science, reading and writing. Gender, socio-economic status and native ethnicity were significant predictors of academic achievement. Schools showed the smallest variation in reading and the largest in mathematics.

Hui-Ling (2001) conducted a cross-national study of factors influencing mathematics achievement for eighth grade students. The purpose of the study was to determine the internal factor structure of the six latent variables investigated, including home environment, peer influences, school environment, educational aspirations, and attitudes towards mathematics and study habits and to examine the effects of these variables on mathematics achievement as measured by Third International Mathematics and Science Study. The TIMSS mathematics achievement test and the student background questionnaire for eighth grade students were used to achieve the purposes. 14651 eighth grade students were taken as sample (2920 students from the Republic of South Korea, 4644 students from Singapore and 7087 students from the United States). The study reported different factor structures and different influences on mathematics achievement across the three selected countries. Home environment, attitude towards mathematics and educational aspiration emerged as the more important and consistent predictors of mathematics achievement for the three countries. The other three variables have mixed effects on mathematics achievement.
Poor academic performance according to Aremu (2003) is a performance that is adjudged by the examinee and some other significant as falling below an expected standard. The investigator selected 500 students (250 males and 250 females) from senior secondary schools in Ibadan, Oyo State of Nigeria. Parental involvement was found as a necessary predictor for academic achievement. Aremu and Sokan (2003) submit that the search for the causations of poor academic achievement is unending and some of the factors they put forward are: motivational orientation, self-esteem/self-efficacy, emotional problems, study habits, teacher consultation and poor interpersonal relationships.

Morakinyo (2003) believe that the falling level of academic achievement is attributable to teacher’s non-use of verbal reinforcement strategy. Others found out that the attitude of some teachers to their job is reflected in their poor attendance to lessons, lateness to school, unsavoury comments about student’s performance that could damage their ego, poor method of teaching and the likes affect pupils’ academic performance.

X Ma and Jiangming Xu (2004) aimed to determine the causal ordering between mathematics anxiety and mathematics achievement. Results of structural equation modelling showed that, across the entire junior and senior high school, prior low mathematics achievement significantly related to later high mathematics anxiety, but prior high mathematics anxiety hardly related to later low mathematics achievement. Mathematics achievement was more reliably stable from year to year than mathematics anxiety. There were statistically significant gender differences in the causal ordering between mathematics anxiety and mathematics achievement. Prior low mathematics achievement significantly related to later high mathematics anxiety for boys across the entire junior and senior high school but for girls at critical transition points only. Mathematics
anxiety was more reliably stable from year to year among girls than among boys.

Wachira (2005) studied the factors related to the individual, family and school contexts on the mathematics achievement and attitude of low SES students. These factors were viewed as potential predictors of mathematics achievement and attitude. The set of predictors included demographic, psychological and contextual factors related to school and family. Family factors were represented by perceived parental involvement in the child’s academics and parental aspirations for the child. Psychological factors included self-efficacy beliefs, students’ educational expectations and future aspirations and efforts in mathematics. Mathematics achievement was measured by scores on the NELS standardised achievement test while student attitudes were measured by student interest in mathematics. Study was longitudinal and sample was drawn from students who participated in the first and second up rounds of National Education Longitudinal Study of 1988-2000. Correlational and multiple regression analyses were used to examine the relationship among these factors and students achievement and attitudes in mathematics. The best predictor of mathematics achievement is prior achievement in mathematics. Therefore other predictors that were significant were educational expectations and future aspirations; classroom environment and class achievement level but these explained a notably small proportion of the variance. Significant predictors of students’ attitudes were self-efficacy beliefs, educational expectations and future aspirations and perceived teacher emphasis on the importance of mathematics.

Andile and Moses (2006) studied about the factors that contribute to poor performance in mathematics and physical science by using a non-experimental, exploratory and descriptive method. Learners’ and educators' views were also taken. Participants were purposefully selected from seven schools with poor pass rates in
District 3 of Tshwane North. Focused group interviews with ten Grade 11 learners from each school were used as a means to collect data. In addition, one-on-one semi-structured interviews were conducted with ten educators from the participating schools. Results indicated that two factors were identifiable. The first identified to have a direct influence related to teaching strategies, content knowledge, motivation, laboratory use, and non-completion of the syllabus in a year. The second factor, associated with indirect influences, was attributed to the role played by parents in their children's education, and general language usage together with its understanding in the two subjects.

Maria (2006) studied the low performance of Chilean students in mathematics and science. The low performance of Chile in the TIMSS 1998/99 international study of mathematics and science achievement was a great disappointment for that country. To find out the causes for low achievement in mathematics, this study (1) compared Chile to three countries and one large school system that had similar economic conditions but superior mathematics performance (2) examined how important characteristics of the Chilean educational system could account for poor student achievement in mathematics. The study finds that compared to South Korea, Malaysia, the Slovak Republic and Miami-Dade County public Schools (a) Chilean 8th grade students had parents with fewer years of schooling and fewer educational resources at home. (b) the Chilean mathematics curriculum covered less content and fewer cognitive skills (c) In Chile school assets were unequally distributed across social classes, with schools in socially advantaged area more likely to have their own mathematics curriculum and better prepared teachers who emphasised more advanced mathematics content. Schools with their own curriculum of mathematics and whose teachers covered more advanced content had significantly higher student achievement in mathematics.
Nirmala et al. (2006) conducted a study on factors influencing the achievement in mathematics and selected from in and around Chennai district by giving due representation to the management (11 government schools and 2 corporation schools) Type 10 boys, 17 girls and a co-educational school) and Board of affiliation of the schools (28 schools belonged 18 State Board and 8 to Matriculation). 900 students from Higher Secondary classes to the students related variables such as subject, group, sex, community and parental education. The data was collected in two sessions i.e. the achievement test in mathematics was given in the forenoon session and a booklet consisting of a personal data sheet, three tools were given in the afternoon. Many factors influence the academic achievement of the students in mathematics at higher secondary school level. It is observed that Maths information processing skills, decision making and attitude towards mathematics have made a significant contribution towards the academic achievement in mathematics.

Patel (2006) focussed their research on demographic often static variables such as socio-economic status, family structure, parent education, attainment and children’s grade level. The sample included 197 parents of sixth and seventh and eighth result education students and teachers. Parents response to an 18 –item survey were used to assess parent involvement Responses to a slightly modified form of the Self-Perception Profile for Children were used to measure parents’ and teachers’ perception of students’ ability. Additionally parents and teachers reported how well students should have done in Mathematics and English. Results indicated parental involvement has background effect with respect to mathematics achievement Parents perception of their children’s mathematics and English/Languages Art ability are significantly related to various types of parental involvement with higher perception predicting higher levels of involvements Parents perception of their children ability deviate in a positive or negative direction from teachers’ perception.
Hammed and Tournbeli (2007) highlighted that the academic achievement of any students or society in general does not just emerge but with a combination of prevailing variables. There are numerous factors influencing academic achievement. These include school quality, teacher quality, and poor implementation of policy on education, school environment and provision of resources. Other research findings have shown that individual characteristics such as motivation, orientation self-esteem, self-concept, emotional intelligence, self-efficacy and learning approaches are important factors influencing academic achievement.

Ismail and Awang (2008) examined differences in mathematics achievement among eighth grade students using a secondary analysis of the data the students who are from Malaysia participated in the Trend International Mathematics and Science Study (TIMSS). School, home, demographic and socio-economic variables were used to investigate the differences in the mean student mathematics scores. The data show that gender, the language spoken at home, expected educational level, family background and home educational resources and aids have significant influence on the students level of mathematics achievement.

Karimi and Venkatesan (2009) in their paper have shown the relationship between Mathematics anxiety, Mathematics performance and Academic hardiness in high school students. The sample comprised 284 (144 males and 140 females) 10th grade high school students from Karnataka state. Pearson correlation analysis and two independent samples T-test are used to analyze the data. The results have revealed that mathematics anxiety has significant negative correlation with mathematics performance but no significant correlation is detected with academic hardiness. It is also found that the gender differences in mathematics anxiety are significant, whereas no significant differences are detected between boys and girls in mathematics performance and academic hardiness. Many students
who suffer from mathematics anxiety have little confidence in their ability to do mathematics and tend to take the minimum numbers of required mathematics courses, which has greatly limited their career choice options (Garry 2005). Mathematics anxiety is the outcome of low self-esteem and the fear of failure. It causes problems for processing the incoming information as well as the previously learned information for problem solving. Such students tend to avoid mathematics whenever or wherever possible.

Kitsantas et al. (2010) in their study assessed the role of mathematics self-efficacy on high school student achievement using three different analytical approaches. The data were extracted from the 2003 OECD Program for International Student Assessment (PISA) (OECD, 2005) to examine these relationships. Findings showed that regardless of method of analysis, self-efficacy is an important predictor of math achievement even after controlling for demographic characteristics of students and schools. The sample consists of 5,456 students from 274 schools which are chosen through a multi-stage stratified random sampling procedure. The association of ethnicity with socioeconomic status and math self-efficacy was found to be negative which suggests that White students have relatively high scores on socioeconomic status and math self-efficacy as compared to their Black and Hispanic counterparts. Finally, the positive correlation between socioeconomic status and math self-efficacy suggests that a student with high score on socioeconomic status is likely to have a high score on math self-efficacy and vice versa.

Asikhia (2010) examined the perception of students and teachers on the causes of poor academic performance among secondary school students in Ogun State, Nigeria. Subjects for the study were one hundred and thirty-five (135) students and fifty (50) teachers randomly drawn from five secondary schools in Odogbolu Local Government Area of Ogun State. Questionnaire was used to collect relevant data for the study. Percentages and chi-square were
used to analyse the research questions. Teachers believe that students’ poor academic performance is not influenced by teachers’ qualification while students perceived that teacher’s qualification do affect their academic performance. The difference in their perceptions could be because students have high expectations for teachers that should teach them and therefore believe that any teacher that does not meet up to such expectations will not aid their academic performance.

Ajayi et al. (2011) studied the effect of parents’ education, occupation and real mother’s age on the achievement of students in mathematics at secondary stage. The sample of the study was selected using the multi-stage sampling procedure. Altogether, a total of nine local government areas, 60 schools and 2,400 students were involved in the study. The result reveals that parents’ education has significant influence on the academic achievement of students in Mathematics. This is because parents’ education has highest effect or predicts students’ academic achievement in Mathematics most. This observation provides the evidence that students of educated parents might performed better than students of uneducated parents in Mathematics achievement. The parents’ occupation is next to parents’ education that predicts academic achievement in Mathematics. The result provide evidence that students whose parents belong to the high ranking occupational status might a better grade in Mathematics than their counterparts whose parents belong to the low ranking occupational status. This is because parents with high ranking occupational status might have enough income which can be used to provide the needed materials and support for their children in order to arouse their interest in Mathematics than their counterparts in low ranking occupation whose major obligation is to provide shelter and food for the family.

Harish and Srikantaswamy (2011) highlighted the need for integrating critical thinking skills in mathematics instruction at the
school and college level. Students should be taught to get the habit of thinking mathematically, solving problems scientifically, reasoning historically, seeing artistically, reading critically and communicating clearly.

Kaur and Kaur (2011) studied the effect of concept attainment model of teaching on mathematical achievement of secondary school students. A purposeful sample of 22 students of ninth grade of a school of Ludhiana district was taken and divided into two groups. Out of 22 students 11 students were taught mathematical concepts with the help of concept attainment model and 11 students were taught with traditional method by the investigators. The results indicated that the students achieve a lot after being taught through Bruner’s Concept attainment model. Both the strategies were effective in bringing improvement in the achievement scores at post test level but Bruner’s Concept attainment model was more effective than the traditional method in the teaching of mathematical concepts.

Mahmood and Khatoon (2011) examined the effects of school type, gender and mathematical anxiety on mathematics achievement on 863 males and 789 females from 15 secondary schools of Uttar Pradesh. The results showed that among of three independent variables, school type had the greatest influence on mathematics achievement, mathematics anxiety comes second in order while gender showed no significant influence.

2.5 CONCLUSIONS

1. Intelligence is the main factor influencing the achievement. So it is predicted that the intelligence is the most influential factor. The more intelligent students get more marks academically.

2. Study habits, attitude towards school are also the predictors of achievement. The study habits of the students and their attitude towards school, especially in mathematics influence the academic achievement. The students devoting less time to practice of mathematics will get less mark in mathematics.
3. Socio-economic status, home environment and educational status of parents also affect the achievement. It is concluded that ill health, shortage of food, lack of facilities at home, poor educational environment, parents’ education language spoken at home, etc. are the main causes behind the low achievement in mathematics as well as in other subjects.

4. There may be some factors related to school environment. School related variables like sex of the teacher, teacher’s experience, size of the school, class room environment, quality of the home work, type of curriculum, blind use of rules, heavy syllabus, defective text books, absence of methodical approach, provision of resources and poor implementation of policy on education are also considered the main causes behind the low achievement.

5. There may be some personal factors behind the low achievement in school subjects. Self-efficacy beliefs, students’ educational expectations and future aspirations, self-esteem, self-concept, emotional intelligence, prior achievement, perceptions of ability and efforts, lack of achievement motivation, lack of interest in studies, lack of natural urge to learn any subject have been identified as the causes for low achievement.

So it is concluded that intelligence, academic achievement motivation, socio-economic status of the students, school environment and their attitude towards mathematics and science are the main variables affecting the achievement of the students. But these studies do not give proper direction to causes of low achievement in mathematics. A growing body of literature reveals many research studies on low achievement. But there are a few studies conducted in foreign countries to find out root causes affecting the achievement in mathematics. Improving achievement in mathematics is desirable. So it is necessary to produce more students who can acquire enough mathematics education to carry India to the forefront of scientific and
technological research development in this century. In India such studies are needed to find out the causes of low achievement in mathematics. The investigator could not find many studies in area of the causes of low achievement in mathematics in secondary schools of Punjab. So in depth studies are needed to give proper direction to causes of low achievement in mathematics so that the standard of mathematics can be raised.