CHAPTER - 2
REVIEW OF RELATED LITERATURE

2.1 REVIEW OF RELATED LITERATURE

A researcher before taking up any research primarily needs to study the past literature available in the concerned field. Awareness of the past literature enlightens the researcher with the sources that are available in the field, their worthiness and inability.

For any investigation, a review of the related literature in the field of research is of greater help to the investigator. It enables the researcher to define the limits of his field. The knowledge of related literature brings the researcher up-to-date on the work which others have done. It helps the researcher to avoid unfruitful and useless problem areas. It helps the researcher to know about the tools and instruments proved to be useful and promising in the previous studies. It also provides insight into the statistical methods through which validity of results is to be established.

Thus, the investigator has attempted to comb the literature available in the field of her research and in related areas. These studies are as follows:

2.1.1 Academic Achievement and Achievement Motivation

Vimla (1985) in her study selected a sample consisted of 430 male secondary athletes who were expected to participate in zonal and inter-zonal competitions of a school athletic meet of Delhi state. Statistical Techniques like t-test & co-efficient of correlation was used. The findings of the study were: (i) There was a significant and negative relationship between socio-economic status scores and performance scores in track events (ii) There was a significant difference in the mean track performance scores of high socio-economic status and low socio-economic status track athletes (iii) There was a highly significant and positive relationship between achievement motivation scores of track athletes and performance scores (iv) There was significant difference in performance in track events between athletes having high and low achievement motivation (v) There was a high and positive significant relationship between school adjustment and performance in track events (vi) Socio-economic status, achievement
motivation and school adjustment factors played a significant role in determining the performance in track events of athletes

Harikrishan (1992) in his study selected a random sample comprised of three hundred students. For data analysis ‘t’ test and coefficient of correlation were used and revealed that (1) girls obtained a higher mean in achievement than boys. (2) Achievement was not related to achievement motivation.

Beth (1993) in his study selected a sample of eighty four sixth grade students (39 males, 45 females) from a suburban Wisconsin community. Subjects were given a motivational assessment to determine their current level of motivation for learning, both prior to and after treatment. Subjects were placed in a simulated classroom learning environment and taught both a Mathematics concept (Introductory correlations) and an advanced vocabulary lesson on two separate occasions. Results showed no significant difference in academic performance. Motivation results indicated that changes in pre-treatment versus post-treatment motivational scores occurred among students whose cognitive styles were matched with preferred methods of instructions.

John (1994) in his study selected two groups of ninth-graders, 151 Asians and 372 non-Asians. t-test and regression analysis strongly supported that (i) Asian students reflect different motivational behaviour when controlling for verbal ability and English class level. Results were found for the relationship between culture and beliefs. (ii) Asians' showed higher levels of attributing effort as the cause of performance whereas non-Asians reported higher level of self-efficacy. (iii) Asians' beliefs regarding learning were equal or better predictors of achievement than were self-efficacy. Asians simultaneously possess a high motive to succeed and to avoid failure.

Lori (1994) selected a sample of 328 public and private high school students on the Island of O'ahu, Hawaii, enrolled in (i) Geometry or Algebra (ii) Mathematics class. General Linear Model (GLM) and Linear Structural Relations (LISREL) data analyses revealed need for achievement significantly influenced locus of control (P<0.0006). Prior mathematical achievement and need for mathematical achievement were found to significantly influenced mathematical performance (P<0.0001). Prior mathematical achievement did not significantly affect locus of control in the GLM analysis, nor did
general need for achievement significantly affect mathematics performance. Written instructions were found to be not effective in altering participants' locus of control or mathematics test performance in either analysis, nor were need for achievement or prior mathematics achievement effective in influencing the impact of written instruction on locus of control or mathematics performance.

Frank (1994) selected a sample of 420 students from college classes at three post secondary institutions located in the state of Michigan and included the discipline of Biology, English and Social Science. The results of this study indicated that (i) better performing students entered their course with more awareness of cognitive learning strategies than the remainder of their classmates. (ii) Higher achieving students were also better able to select cognitive-strategies that were the most effective for academic success (iii) the results supported the positive role of meta cognitive strategies in the classroom as the most successful learners reported the greatest use of these techniques.

Fortier et al. (1995) stated that it was found that perceived academic competence was positively related to intrinsic motivation. It seems that students who feel competent and self determined in the school context; develop an autonomous motivational profile towards education, which in turn leads them to obtain higher school grades. Perceived academic competence and perceived academic self determination positively influenced autonomous academic motivation, which in turn had a positive impact on school performance.

Niebuhr (1995) examined relationship between several variables and students' academic achievement. The study included an investigation of the relationship of individual motivation and its effects on academic achievement. Findings indicated that students' motivation showed no significant effect on the relationship with academic achievement. Findings suggested that the elements of both school climate and family environment have a stronger and direct impact on academic achievement.

Dhunna (2000) in his investigation selected a sample of 10th class 600 students studying in different schools having syllabus of the P.S.E.B. Mohali. Statistical techniques ‘t’ test and correlation were used. The major findings were (1) Intelligence affects the achievement of students in Algebraic concepts at both levels i. e. – high and
low level. (2) ‘t’ ratio shows the superiority of high intelligence group over low intelligence group in their Academic achievement in algebraic concept. (3) Achievement of students in Algebraic concepts is not affected by their achievement motivation. (4) There is a significant interaction between intelligence and achievement motivation. (5) There is no significant interaction between intelligence and locus of control. Significant interaction is found between achievement motivation and locus of control.

Alam (2001) in his study used simple product moment coefficient of correction, t-test and skewness through computer. Major findings of this study were (i) significant positive relationship has been witnessed between socio-economic status and academic achievement. (ii) Negative relationship exists between anxiety and academic achievement. (iii) Positive relationship between achievement motivation and academic achievement of Muslim and Non-Muslim children. (iv) Both Muslim and Non-Muslim children have significant inverse relationship between socio-economic status and anxiety. (v) Socio-economic status goes along with higher achievement motivation. (vi) The academic achievement of Non-Muslim children have been found superior in comparison to their Muslim counterparts. The Non-Muslim children have less anxiety in comparison to Muslim children. (vii) On the measure of achievement motivation, non-Muslim children are found to be superior to Muslim children.

Chhabra (2001) in her study selected a random sample consisted of 150 students of +2 class taken from schools and colleges of Abohar and Malout. Statistical techniques used were mean, S.D., t-value and coefficient of correlation. Major findings of the study were (1) High Achievement Group, Average Achievement group and Low Achievement group differ significantly in their achievement in Hindi (2) High Achievement group, Average Achievement group and Low Achievement group do not differ significantly in their Achievement Motivation in Hindi (3) High achievement group, Average Achievement group and Low Achievement group differ significantly in their attitude towards Hindi (4) There is positive but insignificant correlation between these variables.

EllekaKumar and Elankathiresan (2001) in their study employed Descriptive-Normative survey method. The sample was taken of 530 students studying in Physics in the second year of higher secondary school in Cuddalore district in Tamil
Nadu, using probability sampling method for the study. Mean, S.D., t-test and correlation was used as statistical techniques. Major findings of this study were (i) The mean scores of achievement motivation was higher for girls than boys (ii) There was no significant difference between the students studying in Tamil Medium and the students studying in English Medium. (iii) There was no significant difference in achievement mean scores in Physics between (a) boys and girls (b) A group and B group (c) Tamil Medium and English Medium (iv) The positive correlations were found between the achievement motivation and achievement marks in Physics in respect of (a) girls (b) students studying in Tamil Medium.

Singh et al. (2002) designed this study to examine the effects of 3 school related constructs motivation, attitude and academic engagement on 8th grade students’ achievement in Mathematics and Science. The authors used the nationally representative sample of 8th graders drawn from the National Education longitudinal study 1988. They used Structural Education Model to estimate and test the hypothesized relationships of two motivational factors. (i) Attitude factor and (ii) Academic engagement factor on achievement in Mathematics and Science. Results supported the positive effects of the two motivational factors, attitude and academic time on Mathematics and Science achievement. The strongest effects were those of academic time spent on home work.

Kiamanesh (2005) in the study obtained data from population 2 (eighth grade Iranian students who were mostly thirteen years old) in TIMSS 99. A number of 5301 Iranian students participated in TIMSS 99. Statistical techniques used were Pearson Product Moment Correlation Coefficient and Research Evidence. Results revealed that school climate was not a predictor for Iranian students’ Mathematics achievement. External motivation had a significant effect on the performance of total sample as well as girls’ Mathematics achievement. It has not affected boys’ Mathematics achievement. There was no significant difference between boys and girls regarding external motivation. (t=0.995,P=0.325), there is a lot of practical evidence which shows that girls are more motivated than boys in learning school subjects. It is worth mentioning that the Self-concept Standardized Regression coefficient (Beta) for the total sample, girls and boys were 0.241,0.242 and 0.245, respectively. In addition, the home background Standardized Regression coefficients for the above mentioned groups were 0.233, 0.264 and 0.21
respectively. Standardized Regression coefficients for teaching and attribution factors were negative for the above mentioned groups.

**Sidhu (2005)** in his investigation used a normative testing survey method and cross-sectional approach for collection of data. 32 teachers and 680 students of X standard were selected from the KendriyaVidyalayas of five zones of district Saharnpur through stratified random sampling technique. Mean, S.D., t-ratio and correlation was used to analyze the data. Major findings of this study were (i) Both male and female teachers were found to possess average or above average level of motivation to work. (ii) Most students displayed average and above average adjustment with school environment. The girls displayed superior adjustment as compared to boys (iii) The girls were found to have more liking for their teachers than boys (iv) No significant difference was found in the achievement of boys and girls. (v) Low positive correlation were found between students liking for their teachers and school adjustment (vi) Better liking for teachers contributed to better achievement of boys.

**SatyaandPatnaik (2005)** in their study selected 200 students from 3 schools of Tumkur town of Karnataka. Out of them 100 students were treated as experimental and 100 students as Control group. The students of both the groups were matched by pairing their intelligence and Achievement in Biology. Findings of this study were (i) There was positive effect of co-operative learning on Achievement Motivation. (ii) Co-operative learning has a positive effect on Achievement in Biology in terms of knowledge, understanding and application objectives as well as total achievement.

**Kizilgunes (2009)** in his study selected a sample consisted of 1041 students studying in 6th grade. Results of path analysis suggested that students who believed knowledge to be evolving (i.e. development) and handed down by authority (i.e. source) were more likely to be self efficacious in their learning and were found to have higher levels of learning and performance goal orientations. In addition, although learning goal was positively related to meaningful learning, performance goal and self-efficiency were negatively related to the learning approaches. The direction of the relation between learning approaches and Achievement was positive.
Ali (2011) in his study checked the impact of motivation on students' academic achievement in problem based learning environment in the Mathematic elementary level. The study was experimental in nature and pre-test-post test design was used in 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, project, 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.

Ergene (2011) in this study examined the relationships among study habits, test anxiety, achievement, motivation, and academic success in a Turkish tenth grade high school sample consisting of 510 participants, 267(52.4%) of whom were females and 243 (47.6%) were males. Pearson’s Correlation and step up multiple regression was used as statistical techniques. Small but significant correlation were found between the worry subscale of TAI scores and academic success ($r=-0.18$, $p<0.01$), and between the study Habits Scale scores and academic success level ($r=0.15$, $p<0.01$). A positive relationship between study habits scores and achievement motivation level ($r=0.39$, $p<0.01$) was found. Gender, worry subscale of Test Anxiety Inventory (TAI) and study habits predicted academic success in general. No correlation was observed between achievement motivation and academic success. Test anxiety and study habits were associated positively with academic success and there was no association with achievement motivation. Females were significantly higher in test anxiety scores as consistent with the literature.


2.1.2 Academic Achievement & Home Environment

Jagannathan (1986) revealed that high home environmental groups achieved greater success than middle and low home environmental groups. It has also been reported that punishment aspect of Home Environment has negative impact on achievement among girls; other aspects of home environment viz. permissiveness, control, protectiveness, conformity, deprivation of privileges, nurturance and reward were not significantly related to achievement. He concluded that if proper system of reward and punishment is followed, children shall certainly perform well in school.

Cassidy and Lynn (1991) included a specific factor of the family's socio-economic status, 'crowding', as an indicator of how being disadvantage affects educational attainment. They found that a less physically crowd environment, along with motivation and parental support, were associated with higher educational levels of children. He explored how family environment impacts motivation and achievement. This means that motivation served as a mediating variable between home background, personal characteristics and educational attainment.

Golbabai (1994) in his study collected data from 87 families of Hispanic background in two cluster sites in South West Idaho. Statistical Analysis indicated that among the eight Home Environmental variables considered in this study, parents aspiration for the child, concern for the use of language, parents reinforcement of aspirations, knowledge of the child's educational progress, family environment in educational activities, and independence given to children by allowing them to make decisions to be significantly related to children's Academic Intrinsic Motivation. Statistically significant relations were found between children's Academic Intrinsic Motivation scores and children's school grades. No significant gender differences were found with regard to either children's Academic Intrinsic Motivation scores or Home
Environmental variables. Children's school grades showed a statistically significant difference in social studies and overall grades in favour of female children.

**Rolando (1994)** selected 42 bilingual preschoolers from Head start and urban kinder garden who performed at or above a minimal level of proficiency in both Spanish and English on a sentence imitation task. A common factor analysis (CFA) appropriate for small samples and other parametric and non-parametric statistical procedures were used to describe data. Measures of English performance were associated with measures of cognitive performance, Intensity of exposure to reading in the Home, age and language dominance. On the other hand, measures of Spanish performance were related to measures of bi-linguist of exposure in interpersonal situations of the home, and language dominance. It was concluded that bilingual preschoolers sampled in a natural bilingual community were probably using and acquiring English in context that are fostered their cognitive development, such as the school. At the same time, the children appeared to be using Spanish primarily to interact verbally with others in the home.

**Abdullah (1999)** in his investigation selected 6 secondary schools in district of Pasir. The major findings were (i) independent variable had considerable influence on the dependent variable. (ii) The study also revealed that the three Home environmental variables combined, explained 66.6% of the total variance in English achievement. The best single predictor of English achievement was parental attitude, expectations and support.

**Kiamanesh&Kheirieh (2001)** in their preliminary investigations of the TIMSS data in Iran indicated that there is a positive relationship between students' achievement in mathematics and home background variables such as parents' level of education, number of books at home, and possessing dictionary, computer and study desk. However, Iranian students who come from a family with the highest level of education of either parents' (8% of the students), possess all the three educational aids (5% of the students), and have more than 200 books at home (9% of the students) score much lower than the international average score.

**Liew (2004)** in this study attempted to identify some important influences on grade eight Mathematics and Science achievement using data from the Third
International Mathematics and Sciences Study Repeat Project (TIMMS-R) conducted in 1999. T-test and co-efficient of co-relation analyses showed that non-Malay natives performed significantly better in Mathematics achievement than Malay natives. Male students performed significantly better in Mathematics and Science achievement than female students. Students' educational expectations, perceived usefulness and reasons for doing well in the subject were significant predictors of mathematics and science achievement. Parents' education and family structure were significant predictors of Mathematics achievement. Mother and peers perceived usefulness of the subject were significant predictors of Science achievement. There is some evidence that engagement in extra classes outside formal schooling is associated with science achievement when controls for school characteristics were added. All school characteristics are significantly related to Mathematics and Science achievement. The impact is positive for the type of school community and the number of full time teachers and negative for the severity of absenteeism.

**Majoribanks (2005)** used longitudinal data in this follow up study from young Australian Adults (4397 men, 4703 Women) to investigate relationships among earlier academic achievement, family influences and academic attainment. From multiple regression and commonality analysis the findings indicated that earlier achievement and family influences were important as separate variables in explaining differences in later academic attainment (18.6% and 14.8% respectively for men; 14.5% and 11.5% respectively for women). In addition, earlier achievement and family influences reinforced each other to account for additional shared variance (9.1 % for men; 6.3% for women) in young Australian Adults' academic attainment.

**Rani and Latha (2005)** in their study selected a sample consisted of 106 adolescent boys and 86 adolescent girls. Mean S.D. and Multiple regression was used for statistical analysis. Results of this study were (i) Family Environment appeared to influence home adjustment as well as Academic performance. The majority of the sample perceived their family as cohesive, organized, achievement oriented and emphasizing on moral-religious issue with minimal conflict, cohesion, control, intellectual culture orientation and independence in the family environment that influence home adjustment.
Academic Performance was significantly related to independence and conflict domains of family environment. Boys and girls differed in perception of home environment.

**Saini (2005)** conducted a study on a sample of 415 adolescents selected from the government and private senior secondary schools of the U.T. Chandigarh within the age group of 14-17 years. Stratified Random sampling method was used for the selection of the sample. The statistical techniques used were Mean, S.D. and t-test for data analysis. Major findings of this study were (i) The family environment of Adolescent children of working and non-working mothers were significantly different, (ii) In respect of Academic Achievement also children of working mothers were much better than the adolescent children of non-working mothers.

**WEAC (2005)** attempted to reveal the relationship between motivation, family environment, students’ characteristics and academic achievement. Results showed that the higher achieving students plan to continue their education after graduation from high school, participate extensively in extracurricular activities, have a few absences each school year, more likely to engage in recreational reading and to check books out of the school or public library on a regular basis, watch less T.V., spend more time each evening doing their home work, have friends who have positive attitudes towards school and who rarely cut classes or skip school, have positive feelings about their teachers and about specific courses they take.

**Halawah (2006)** selected a sample of 388 high school students (193 males and 195 females) from Abu Dhabi District, United Arab Emirates. Descriptive Statistics Mean, S.D, t-ratio and correlation were calculated. Results of this study were (i) students’ mean level of motivation was less than the means of parental influence and students’ characteristics (ii) No gender differences were observed on the variables measured by the Instrument. Correlations between each of motivation, family environment and students’ characteristics and academic achievement were small and practically not significant. (iii) Remarkable high correlation value was observed between motivation and students’ characteristics. (iv) Highest correlation value was observed between family environment and students' characteristics.
Sunitha and Khadi (2006) in their study selected a sample consisted of 240 students of 8 co-educational high school in Dharwad City, Karnataka state. The results were (i) students of unaided schools had significantly better school learning environment, they involve better in school activities. (ii) With respect to home learning environment, they had better physical facilities in home, received more parental guidance and support than students of aided schools. (iii) The S.E.S. of the family exhibited positive and significant influence on home learning environment on students of both aided and unaided schools. Students of both aided and unaided schools were similar in academic achievement.

Tirishla (2006) in her study selected a random sample of 515 students of XI class (females = 238 and males = 277) Studying Biology in govt. and private Sr. Sec. Schools of Punjab. Descriptive statistics mean S.D., Pearson’s product moment correlation, step-up regression equations and t-ratio were used. Findings of this study were (i) Intelligence was found to be significantly and positively correlated with the achievement in Biology (ii) Emotional Intelligence and achievement in Biology was found to be positive and significant at .01 level. (iii) Positive and Significant correlation was found between creativity and achievement in Biology. (iv) Problem solving ability, study habits were found to be significantly and positively correlated with achievement in Biology. (v) Significant positive correlation was obtained between the six measures of Home environment (protectiveness, conformity, social Isolation, rewards, Deprivation of privileges and Rejection) and students’ achievement in Biology.

Meena (2008) in her study selected a sample consisted of 120 students drawn from senior secondary schools of Panipat. Mean, S.D. and t-test was used for data analysis. The data revealed that boys of high home environment group achieved significantly greater mean score than the boys falling in the group of low home environment. The impact of home environment has also been observed in the mean values of scholastic achievement of girls belonging to high, medium and low home environment groups. But the difference was not significant at 0.05 level of significance. Results also showed that good quality of home environment had significant positive correlation with high level of scholastic achievement in boys than among girls. It was
found that as the quality of home environment gets deteriorated, the level of scholastic achievement also decline in boys.

Tandon (2008) in his study selected a sample of 56 candidates (37 Net appeared and 19 Net qualified). He collected two types of data i.e., quantitative and qualitative. Quantitative data were collected by using the three standardized tests in the investigation. The data from interview were in the form of qualitative data. Major findings of this study were (1) No significant difference was found between the study habits and family environment of NET qualified and NET appeared candidates. But in case of intelligence, a very high significant difference was found. The NET qualified candidates were found to be more intelligent than NET appeared candidates. This might be the reason for their success.

Kaur et al. (2009) in their study selected a sample of 300 adolescents. Mean, S.D., T-test and co-efficient of correlation was used for data analysis. The results of this study revealed that (i) self-concept to be positively correlated with academic Achievement, though not significantly. (ii) A significant positive relationship of home environment components of protectiveness, conformity, reward and nurturance with self-concept is revealed, thereby meaning that use of rewards and nurturance from Parents should be done for positive self-concept development among adolescents. (iii) Correlation of social isolation, deprivation of privileges and rejection components of home environment is significantly negative with self-concept among adolescents indicating that for positive self-concept development among adolescents; there should be less or no use of social isolation, deprivation of privileges and rejection.

Khatoon and Sharma (2010) in their research explored the relationship between students' personal factors (gender, religion, family background, extracurricular activities, computer and internet access) and institutional factors (schools having computers, and co-educational schools) with their Science achievement. The focus population for this study was 15 years old students from a specific geographical location of Western Uttar Pradesh. Coefficient of correlation was used to analyze the data. The results revealed that a number of variables like family background, extracurricular activities, computer and internet access, schools having computers and co-educational schools were found to be
positively correlated with Science achievement, but variables like gender, religion and single sex-schools have no correlation with Science achievement.

**Muola (2010)** in this study selected a random sample of 235 (118 boys, 117 girls) standard eight Kenyan pupils from six urban and rural primary school from Machakos district. Their age ranged between 13 and 17 years. Coefficient of correlation was used for analyses of data. A significant (p<0.05) positive relationship was found between six of the home environmental factors, that is fathers' occupation (r=0.22), mothers' occupation (r=0.26), father's education (r=0.15), mothers' education (r=0.14), family size (r=0.26) and learning facilities at home (r=0.23) and academic achievement motivation. Parental encouragement was the only factor that was not significantly (r=0.03) related to academic achievement motivation. Although these correlations are low, they showed that pupils' motivation to do well in academic work is to some extent dependent on the nature of their home environment.

**Khosa (2011)** in her study selected a random sample of 500 students of mathematics of class XI. Statistical techniques mean, S.D., Pearson Product Moment Method of Correlation, step up regression equations were used to analyze the data. Results of the study were as:

i) There exists significant and positive relationship between academic performance in Mathematics and Intelligence, Test Anxiety, measures of Adjustment i.e. home, school/college and social adjustment.

ii) There exists no significant relationship between academic performance in Mathematics and achievement motivation, study habits, health and emotional adjustment, measures of home environment i.e. Control, Protectiveness, Punishment, Conformity, Social Isolation, Reward, Deprivation of Privileges, nurturance, rejection, permissiveness and total Home Environment.

iii) Significant difference was found in the academic performance in Mathematics due to high and low level of Intelligence, Test Anxiety, Study Habits and Measures of adjustments.
iv) Insignificant difference was found in the academic performance in mathematics due to high and low level of Achievement Motivation.

v) Significant difference was found in the academic performance in mathematics due to high and low level of three dimensions of Home Environment viz. conformity, deprivation of privileges and rejection.

From the above studies, we can conclude that Home Environment enhances the achievement of an individual. Studies done by Abdullah (1999), Kiamanesh and Kheirieh (2001), Majoribank (2005), Halawah (2006), Tirishla (2006), Meena (2008), Khatoon and Sharma (2010) showed positive correlation between Achievement and Home Environment. Studies of Jagannathan (1986), Tandon (2008) and Khosa (2011) showed no correlation between these variables.

2.1.3 Academic Achievement and Attitude Towards School Subjects

Frazier-Kouassi (1999) selected a sample of (140) one hundred and forty female students in Cote’dlvoire. Results of the study were that high achieving female students report less anxious, more positive attitudes towards problem solving (efficacy motivation) and more positive attitudes towards the usefulness of mathematics than low achieving students. In conclusion, this study discusses future research and investigation strategies to positively affect mathematics attitudes and achievement for female Ivorian students.

Mogari (2000) in this study investigated the relationship between the attitude of a sample of grade ten pupils working in a rural environment towards Euclidean geometry and their achievement in Euclidean geometry. According to the South African Education system, every pupil has to take Mathematics up to grade nine; thereafter one has an option of either continuing or discontinuing with Mathematics. Further, more pupils electing to continue with Mathematics are normally those who have shown some aptitude for mathematics. Four dimensions of attitude namely: enjoyment, motivation, perception of the importance of geometry and freedom from fear of geometry are looked at in the study. Analysis of data was done using SAS. Two dimensions of the attitude scale, namely, enjoyment and importance showed no significant relationship to achievement. A weak but significant relationship was shown between motivation and achievement,
whereas negative relationship was obtained between freedom from fear and achievement. In general these pupils showed a better attitude towards Euclidean geometry than one would expect from their performance.

Gunnarson (2001) in this study compared the students taking the newly developed Statistics course online with the students taking the course in a traditional classroom. The participants were 42 graduate students in their first year of the MBA program. Achievement along with three mediating variables was investigated. The three mediating variables included prior computer experience, prior Mathematics knowledge and experience, and attitude towards the subject Statistics. Students’ attitude towards the subject of Statistics and prior computer experience, however, no casual relationship in achievement was detected. Students who learned in an online environment achieved more in comparison to students learning in a traditional classroom.

Melensen and Faith (2001) in their study selected a sample of 1300 students in grades five, six, seven and eight; the middle school grades, in a variety of locations within a single school district in the Intermountain West. Results indicated that during the middle school years there is no significant difference between males and females in Physical Science achievement on the topic of sound energy. Results additionally indicated that throughout the middle school years female attitude responses were significantly more positive than male attitude responses. Overall attitude correlates with knowledge. When positive attitude towards learning about sound diminishes, incremental knowledge about sound diminishes.

Kesamang and Talwo (2002) in their study used correlation technique and reported significant negative relationship between the students’ socio-cultural background and their attitude towards school science on one hand and their achievement in school science on the other hand.

Nicolaidon and Philippou (2002) in their study aimed to explore relationships between students’ attitude towards Mathematics, self efficacy beliefs in problem solving and achievement. They selected a random sample of 238 fifth grade pupils. The possibility of attitude and self efficacy to predict problem solving performance was also examined. The analysis of the data indicated significant relationship between attitude and
achievement and a stronger relationship between self efficacy and achievement. Attitude and self efficacy were also correlated and both predicted achievement in problem solving. However, self-efficacy was a more powerful predictor than attitudes. No gender difference was found in any of the examined variables.

Wingenbach (2002) in his study selected a purposive sample of 45 agriculture collegiate students. Students had their computing application skills tested through traditional (Paper and Pencil) and Electronic (e-mail) methods. Significant, moderately positive associations resulted between Academic Achievement and exam delivery method for the quiz exam scores. Agriculture students who took the quiz using paper and pencil had significantly higher scores than students who took the quiz through an electric version. A significant moderate relationship existed between Academic Achievement and Learning style for the quiz. Field independent students achieved significantly higher quiz scores than field dependent learners. No significant associations were found between Academic Achievement and student’s Attitude towards Computer, Computing Anxiety levels, Attitudes towards Electronic Exams, or gender. The variable of time may have a significant impact upon Academic Achievement for students involved in computerized testing situations.

Mehera (2004) in his investigation used coefficient of correlation and t-test and concluded that (i) Achievement in Mathematics was significantly related to major learning environment, attitude towards subject Mathematics (ii) Urban students showed significantly higher achievement in Mathematics, better learning environment and better attitude towards Mathematics than their rural counterparts.

Sinha (2006) selected a sample consisted of 96 students of B.Ed course studying in St. Xavier’s college of Education, Patna, Bihar. They were graduates/ Post Graduates. Achievement scores in History were taken into consideration from their performance in the 1st semester examination of the college held in Dec 2004. These scores were arranged in accordance with the attitude scores yielding two groups- high attitude group and low attitude group. The mean, S.D and t-ratio were calculated for the scores obtained. The obtained t-ratio = 11.76 appeared to be significant beyond 0.01. This leads to reject the null hypothesis that there is no difference in achievement in History between high and
low attitude groups. Thus, the higher the attitude towards History, the higher is the achievement in History. Hence attitude affects achievement.

Anakkodi (2007) in his study selected a sample consisted of 400 higher secondary students selected from twelve schools of Coimbatore district by random sampling technique. Statistical techniques used were Mean, S.D., t-value and ANOVA. The major findings were (i) It was found that there was a significant difference in the scientific attitude of students based on their gender. (ii) It was observed that there was a high positive significant difference in the scientific attitude of students of rural and urban locality. (iii) It was found that there was a high significant difference in the scientific attitude of score of students based on their type of school. The corporation school students show a high mean value in their scientific attitude, when compared to Government and Government Aided schools. (iv) It was noted that there was a positive significant difference in the scientific attitude of students in relation to their achievement in science. The above average students scored a high mean value in their scientific attitude when compared to the average and below average.

Subrata (2007) in her investigation selected a random sample of 200 subjects from 6 govt. aided Bengali medium primary schools selected from the district of 24 Parganas (North) of West Bengal. Subjects included boys and girls reading in 4th class. Statistical techniques used were Mean, S.D., t-ratio. Major results of this study were (i) Boys and girls differed significantly on all three measures under consideration. Boys performed significantly better than their counterparts on all the variables. (ii) The field independent boys excelled over the field dependent boys significantly in their Achievement in Mathematics. Similarly, field independent girls also excelled over the field dependent girls significantly. (iii) The component of Attitude is favourable in direction of learning Mathematics. Learning Mathematics is a significant contributor to the success in the Mathematical Achievement of both boys and girls. Boys showed more favourable attitude towards Mathematics than girls.

Umoren (2007) in his study selected a random sample of 1000 students from five faculties constituting 200 students per faculty. An Ex-post-facto design was used for this study. Data collected were subjected to statistical analysis using independent t-test,
Pearson product moment correlation and one way Analysis of variance. The results showed that field independent students out performed field dependent students in introduction to computer. Students' attitude towards computer was positive and related to their performance. Students' faculty influenced their Attitude and Achievement.

**Akpinar et al.(2008)** examined differences by gender and grade level in primary school students' attitudes towards science and technology and to explore relationship between students' attitude toward science and technology and academic achievement. The participants of the study were 658 primary (6th, 7th, and 8th grade) students. The sample was approximately 50% may female (n=333) and 44% male (n=325). Mean, S.D., t-ratio and coefficient of correlation was used to analyze the data. The finding of the study showed that there were significant differences between female and male students in terms of "interest in science" in favor of female. However, there were no significant gender differences in terms of other factor "enjoyment of science", "anxiety", "enjoyment of science experiment" respectively. There were significant differences among students' grade levels towards science and technology in terms of four factors. Besides, significant positive correlations were found between ASST and academic achievement.

**Bidin et al.(2009)** described the relationship between the students motivation and attitude and their English Language performance. The subjects were the part two students from three UITM campuses in the Northern Region. The main scores analysis of the motivation and performance revealed that the students were more extrinsically than intrinsically motivated when learning English. One way ANOVA test showed that there is no significant difference. To test the students' attitudes and their performance, the Spearman Rho Rank-Order Correlation Coefficient was used and the analysis revealed a significant correlation between attitude and achievement. The one way ANOVA also showed that there is a significant difference. The mean scores were used to find out whether there is any difference between the respondents of different gender and their attitude in learning English. The result showed the existence of significant difference.

**Yara (2009)** in his study selected a random sample of 1542 senior secondary school students from 2 schools each of the senatorial districts from 6 states in Southwestern part of Nigeria. He adopted descriptive survey design using simple
frequency and percentages in analyzing the data. The results showed that students' attitude towards Mathematics was positive and showed significant positive relationship with achievement in Mathematics and that many of them believed that Mathematics is a worthwhile and necessary subject which can help them in their future career.

Bakar (2010) in this research design employed a descriptive co-relational data consisted of 1484 students from local university. (1102 females and 382 males). Results indicated a positive significant correlation between students' attitude towards learning and achievement motivation (r=0.53, p<.001) and between students' attitude towards academic achievement (r=0.16, P<.001), However, a negative and low correlation (r=-.038,P>.05) was observed between students' achievement motivation (n ach) and their academic achievement.

Fakeye (2010) designed this study to find out the relationship between students personal variables such as attitude and academic ability and their achievement in English language. Analysis was done on the variables and their annual scores in English and t-test calculated. The results showed (i) there was a positive relationship between students' attitude and their academic achievement in English language. (ii) Significant difference was there in academic ability of male and female students with male students having higher academic ability mean scores.

Kinniard (2010) in his study selected 13 high school students receiving special education services and gather information about students' feelings and attitudes towards their academic setting. Surveys of students receiving services and an analysis of their academic performance in the classroom were used to determine if a relationship existed between these two variables. Research findings indicated no clear relationship between a student having a positive attitude towards his/her academic setting and achieving academic success in the classroom, as thirteen of sixteen students surveyed demonstrated a positive attitude towards the respective class and only three of the sixteen students were achieving academic success.

Yee (2010) in this study investigated students’ attitude towards Mathematics and its relationship with achievement. The data was consisted of 984 junior college students. Results indicated that students had positive attitude towards Mathematics but lacked
intrinsic motivation to do Mathematics. Students were extrinsically motivated to study Mathematics; but the relationship between extrinsic motivation and achievement was weak. However, there was a positive correlation between intrinsic motivation and achievement. This is contrary to the beliefs of many educators and parents in Singapore who believe in extrinsic rewards and punishments to encourage better achievement.

Philip et al. (2011) aimed to investigate the effects of CAI on students' attitude and achievement in matrices transformations between students who received instruction using CAI module or conventional instruction methods. Six classes selected at random with 205 students participated in the study. The pretest- post test control group experimental research design was used. Results of this study indicated higher achievement and positive attitude with CAI treatment groups. Making correlations between the goals of Mathematics education and CAI offer a valuable means for improving Mathematical knowledge and skills and hence performance in Mathematics.

It can be concluded from the review of these research studies that there exists relationship between Achievement and Attitude. The findings of these studies revealed that some studies like Nicolaidon and Philippou (2002), Mehera (2004), Sinha (2006), Subrata (2007), Umoren (2007), Akpinar et al. (2008), Bidin et al. (2009), Yara (2009), Bakar (2010), Fakeye (2010) and Philip et al. (2011) have explored positive relationship between these variables. Some studies like Gunnarson (2001), Kesamang and Talwo (2002) and Wingenbach (2002) have shown negative relationship between these variables.

2.2 HYPOTHESES

i. There will be no significant difference in Academic Achievement in Hindi of students with high and low level Achievement Motivation.

ii. There will be no significant difference in Academic Achievement in Hindi of students from good and poor Home Environment.

iii. There will be no significant difference in Academic Achievement in Hindi of students having high and low level Attitude towards Hindi.
iv. (a) There will be no significant difference in Academic Achievement in Hindi of male and female students having high level Achievement Motivation.
iv. (b) There will be no significant difference in Academic Achievement in Hindi of male and female students having low level Achievement Motivation.

v. (a) There will be no significant difference in Academic Achievement in Hindi of male and female students having good Home Environment.

v. (b) There will be no significant difference in Academic Achievement in Hindi of male and female students having poor Home Environment.

vi (a) There will be no significant difference in Academic Achievement in Hindi of male and female students having high level Attitude towards Hindi.

vi (b) There will be no significant difference in Academic Achievement in Hindi of male and female students having low level Attitude towards Hindi.

vii. There will be no significant relationship between Academic Achievement in Hindi and Achievement Motivation of students.

viii. There will be no significant relationship between Academic Achievement in Hindi and Home environment of students.

ix. There will be no significant relationship between Academic Achievement in Hindi and Attitude of students towards Hindi.

x. Conjoint prediction of Academic Achievement in Hindi on the basis of Achievement Motivation, Home Environment and Attitude Towards Hindi is not significantly more as compared to their separate prediction.