

CHAPTER- 2

REVIEW OF RELATED

LITERATURE

2.1 Review of Related Literature

The research had recourse to only a limited number of research studies and that too not directly and specifically connected with present problem of research. The related studies are as follows:

Thakur (1974) studied the academic achievement of high school students and the main objective of the study was to find out how far the school had been able to help the boys to keep-up their level of achievement throughout their high school career, and how far the school had been able to help the boys to develop their intellectual capacity as revealed by their ability and aptitude.

97 students from three sections of class VIII (years 1972) from the best higher secondary school in Jorhat town took part in the study Academic achievement was studied through the years 1968, 1969, 1970 and 1971. Performance of students was analysed by six tests. A questionnaire was used to collect personal data and the ability and aptitude of the students for a particular subject. The relationship between the students 'ability & aptitude for school subjects was studied by applying tetra choric correlation and t-test was used to find out the significance of difference between the means and major findings of the study were :

- Progress in mathematics presented an unsatisfactory picture a downward trend of achievement was observed.
- Student who liked a subject, found it easy some found the subject difficult though they liked the subjects.
- There was a positive correlation between aptitude and ability in mathematics.

Grover S. (1979) conducted a study on parental aspiration as related to personality and school achievement of children. The objective of the study was to find out the relationship between parental aspiration certain personality traits and school achievement.

The school achievement of students taken from their aggregate scores attained by them in the previous year examination was the tool taken and the findings were :

- The total samples showed a positive correlation between parents aspiration.
- The high aspiration parents showed significant correlation between fathers' high aspirations and the trait of dominance in boys.
- The low aspiring parents did not show any significant correlation between aspiration of parents and all variables taken for the study.
- There was significant difference between aspiration of father and aspiration of mother and the school achievement of children of low aspiring parents and middle aspiring parents.
- There was significant difference in the trait of guilt proneness of children belonging to the groups of parents where both father and mother were high aspiring and low aspiring.
- There was significant difference between the self concept of children belonging to the group of parents where both father and mother were high aspiring and low aspiring.
- There was significant difference in the school achievement of children belonging to the groups of parents where father was low aspiring and mother was high aspiring and where both father and mother were low aspiring.

Chauhan (1982) evaluated the achievement in algebra of class IX students in Delhi schools with reference to categories of Guilford's SI Model. Major objectives of the study were :

- To construct and standardize tests on eight selected structure of intellect and eight tests on different steps necessary for algebraic problem solving.

- To factor analyze the sixteen tests separately and also all the tests together.
- To conduct regression analysis of tests of structure of intellect ability on tests in algebra.
- To determine the relationship between the results obtained from factor analysis and regression analysis.

For trying out the tests in algebra, 185 students of class X were selected from Delhi Schools and Kuder-Richardson Formula-21 was used to calculate the reliability coefficients of the tests. The validity of the tests in algebra was found out against the school marks in the subject. All the students of class X in 16 (randomly selected) schools of Delhi comprised the samples of 500 students. Thus selected 241 boys and 259 girls and major findings of the study were :

- Each of the achievement test in algebra (T1f0T8) was significantly correlated with each of the SI tests (C1 to C8) for boys and girls separately as well as for the combined sample.
- Factor analysis of the Tests of algebra indicated the existence of only one common factor General Algebraic Reasoning in the case of boys and girls separately and also in the combined sample.
- Factor analysis of the SI tests indicated only one common factor, Education of correlates, characterised by C4 and C2, in the case of and in the case of girls two factors, namely Education of Correlates and Verbal Comprehension. Only one factor was identified for the combined sample, namely Education of Correlates.
- Different SI abilities were found as predictors of achievement in different sub tests of algebra for boys, girls and combined sample respectively.

Vyas C.S. (1983) developed a symbol picture logic programme & studied its effect on mathematics achievement. The objectives of the study were :

- To develop a symbol picture logic programme (SPLP) on the basis of the fundamentals of symbolic logic.
- To study the effectiveness of the SPLP on the achievement in mathematics.
- To identify the effect of the SPLP in the context of variables like intelligence and syllogistic reasoning ability.
- To find the effectiveness of the SPLP in the context of other variables like parent education, sex and the choice of maths course of the S.S.C. level.

The sample of 320 students was selected for study 160 students in each of the experimental and control group were included.

The symbol picture logic programme was developed keeping in mind the basic element of logic to be included, the accept of India Jestron of the centre for Research in thinking and language of Catholic University was kept in mind. Group intelligence test by K.G. Desai was also used for data collection.

Four schools were selected at random from 16 schools of Bayod taluka. Major findings of the study were :

- The students of the experimental group who were given treatment of the SPLP showed better achievement in Mathematics than the control group students.
- The students with high intelligence benefited more by the SPLP by better achievement in Maths than those who possessed low intelligence.
- The student possessing high reasoning ability benefited more by the SPLP by better achievement in Maths than those who possessed low reasoning ability.
- There was no interaction between the treatment and intelligence.
- There was no interaction between the programme and syllogistic reasoning ability.

- There was no interaction effect of intelligence and syllogistic reasoning ability of the students.
- There was no interaction among the programme, intelligence and syllogistic reasoning ability.
- The students of control group possessing low general ability and low syllogistic reasoning were inferior to the students of the rest of the group.
- There was no interaction between the programme and the choice of course.
- There was no interaction effect between the programme and parents education.

LALL R. (1984) conducted a study on- Child rearing attitudes, personal problems and personality factors as correlates of academic achievement. Objectives of this study were :

- To investigate the relationship among child rearing attitudes of parents (termed as parental attitude) Youth problems and personality factors such as locus of central, reinforcement, anxiety, extraversion and neuroticism.
- To study their relation with academic achievement.

Academic achievement was determined by marks obtained by students in the annual examination. The major findings of the study were.

- Restrictive and protecting attitudes of parents were positively and significantly related to youth problems and anxiety.
- Restrictive attitudes of parents were negatively and significantly related to interval locus of control and extraversion where as they were positively and significantly related with powerful others, locus of control and neuroticism. Protecting attitude of parents were positively and significantly related to academic success of boys.

- Loving attitudes of parents were positively and significantly related to powerful others, locus of control, extraversion and neuroticism
- Academic success was negatively and significantly related to personal problems and sensitivity anxiety and neuroticism Internal, Powerful others and locus of control of reinforcement were not significantly related to academic success.
- Boys more internally oriented and neurotic than girls, while girls were subjected to more restriction by parents and were more anxious than boys.

Verma (1985) conducted a study on- factors affecting academic achievement. A cross cultural study of tribal students at Junior High School level in Uttar Pradesh. The objective of the study was to find out whether students from the scheduled tribes differed from the students belonging to scheduled castes with respect to academic achievement, attitude towards school, attitudes towards medium of instruction, socio-economic status. Self concept and adjustment in school.

Aggregate marks in the junior high school examination were taken as the criterion of academic achievement. The findings of the study were :

- The mean achievement of the scheduled caste students was significantly lower than that of tribal students and students from the other castes. However there was no significant difference in the mean achievement of students belonging to the scheduled tribes and those belonging to other castes.
- Students from higher castes had a more favourable attitudes towards the school when compared to students from the scheduled tribes and scheduled castes.
- Students from higher castes had a more favourable attitude towards the medium of instruction when compared to student from the scheduled tribes and SC

- Students from the ST had a higher SES when compared to students from the SC & other castes.
- There was no significant difference between tribal and other caste student as regards self concept.
- The mean school adjustment score of the tribal group was significantly poorer than that of the non-tribal group. However there was no significant difference between the mean adjustment scorer of the ST student and other groups.

Singh (1986) studied some possible contributing factors to high and low achievement in mathematics of the high school students of Orissa. Major objectives of the study were :

- To study the relationship between achievement in mathematics and some possible contributing factors.
- To study the significant difference between high and low achiever groups in mathematics with respect to variables in the above objective.
- The sample, consisted of 370 Students of class XI from Central, Western and Southern Zone of Orissa. Achievement Text developed by investigator, Cattell's Culture Fair-Intelligence Test, scale 3 (form A+form B), Samal's Vocational Interest Inventory (VII), Samal's SES Scale, Minnesota Counselling Inventory and Survey of Study Habits and Attitudes (form H), were used for data collection. The data were analysed with the help of correlation and multiple regression analysis. The major findings of the study were.
- Achievement in mathematics was positively significantly related with intelligence, SES and study attitudes.
- Regression analysis revealed that study habits and interest in agriculture significantly correlated with achievement in mathematics.

- High achievers scored high in the study attitudes survey while low achievers scored low; high achievers were more intelligent than the low achievers, and high achievers in general were of higher SES than the low achievers.

Kapoor and Rita (1987) conducted a study on factors responsible for high and low achievement at the Junior High School level. The objective of the study was to find out the factors related to high and low academic achievement of the junior high school level and the findings of the study were :

- Among both boys and girls the high achievers tended to show a higher level of intelligence as compared to the average and the low achievers.
- A majority of the high achievers belonged to high SES group and a larger numbers of low achievers belonged to the low SES groups.
- The high achievers had better home health, social, emotional and school adjustment. The overall adjustment scores of high achievers were also significantly higher than the over all adjustment scores of the other two groups.
- Among boys and girls, the high achievers had better study habits as compared to the average and the low achievers. The high achievers tended to plan their studies properly, had proper reading habits, could concentrate on their studies and prepared for the examination in a better planned manner.

Narashimhan, G. and Pillai, Swaminatha S. (1988) attempts study of the relationship between medium of instruction and achievement of students. The objective of the study were :

- To find out the mean achievement of students in the secondary school and final diploma in commercial and computer practice (DCCP) examination and
- To identify the degree of relationship between their secondary school and polytechnic achievements.

A total of 128 students- 64 each who passes the DCCP course in two different years from the central institute of commerce, Secanderabad were taken of those, 61 (48%) did their course in Telgu medium and the remaining 67(52%) in English medium. the major findings of the study were :

- Both in the school final and polytechnic diploma examination the English medium students performed better as compare to their Telgu medium counterparts.
- The correlation coefficient between their scores in school final and diploma examination were significant.
- The obtained value of correlation coefficient for Telgu medium students of the two different batches was significant.
- For the second batch it was not significant.

Jayaraman (1989) studied some correlates of students' achievement in mathematics at standard X level in Devakottai educational district. The major objectives of the study were :

- To identify relationship between attitude and achievement in mathematics.
- To identify, relationship between attitude towards learning mathematics and hindrances for learning mathematics.
- To identify the relationship between achievement in mathematics and hindrances for bearing mathematics.

The sample size was limited to 383 students from 16 high schools. A likert type five point scale developed by Quilter was used to measure the students' attitude towards mathematics. Hindrances for Achievement in Mathematics scale was used. Achievement test was used to measure the level of achievement. Mean, SD, t-test and chi-square test were used to analyse data. The major findings of the study were :

- There was an association between attitude towards mathematics and achievement in mathematics
- There was a negative association between hindrances for students' learning mathematics and their attitude towards mathematics.
- There was a negative association between hindrances for students' learning mathematics and their achievement in mathematics.

Nagailankim (1991) Conducted a study of selected variables associated with achievement in mathematics. The major objectives of the study were :

To find out the association between

- Attitude towards mathematics and achievement in mathematics.
- Educational and occupational aspiration and achievement in mathematics.
- Numerical ability, abstract reasoning, space relations and achievement in mathematics.
- The various personality factors and achievement in mathematics.

303 class-X students from central schools of Nagaland, Meghalaya and Manipur (163 boys and 140 girls) were selected as samples. The tools used were, Achievement test in Mathematics, Attitude Scale to measure attitude towards Mathematics, Educational Aspiration scale of Sharma and Gupta, Occupational Aspiration Scale of Garewal, Differential Aptitude test, and Cattell's 14 HSPQ. Descriptive statistical techniques together with chi-square test and contingency coefficient were used to treat data. The major findings of the study were :

- (A) There was a significant association between achievement in mathematics and
- Attitude towards mathematics
 - Numerical ability
 - Educational aspiration
 - Abstract reasoning
 - Personality factor A and
 - Personality factor G.

(B) None of the other variable studied showed association with achievement in mathematics.

Rangappa, K.T. (1992) studied the relationship between self-concept, Reading Ability and Achievement in Mathematics. The objectives of the study were :

- To study self-concept and reading ability in relation to achievement in Mathematics of students of standard VII.
- To identify the gender and local difference in the achievement in Mathematics study.

A Sample of 1,000 students of Std. V drawn from 25 Schools of Bangalore rural and urban districts using stratified random sampling of these 600 were from urban schools.

A Self-concept inventory developed by the researcher, a standardized reading test by Deve Gowda and Shivananda an Achievement test in mathematics. These tests were used for data collection. The major findings of the study were :

- There was no significant difference in the achievement of students having different levels of self-concepts.
- There was significant difference in the achievement in mathematics of students having different levels of reading ability.
- There was a significant difference in the performance of the students of Std. VII in Mathematics studying in rural and urban schools.
- There was no significant difference between boys and girls of std. VII in their achievement in Mathematics.
- There was a significant interaction of self-concept and reading ability on achievement of schools.

Patel (1996) investigated general anxiety, defensiveness and the achievement in mathematics of the secondary school students. The objectives of the study were :

- To study the effect of general anxiety on the achievement in mathematics of secondary school students.
- To study the effect of general defensiveness on the achievement in mathematics of secondary school students.
- To study the sex difference in achievement in mathematics of secondary school students.
- To study the interaction effect of general anxiety, general defensiveness and sex on achievement in maths of secondary school students.

The sample of the study comprised 293 secondary school students studying in class IX from Kaira district in Gujarat. They were selected through cluster sampling technique, tools used to collect the data were General anxiety scale by Wallach, achievement test in mathematics developed by the investigator and interview schedule prepared by the investigator, the collect data were analyzed statistically with mean, SD and ANOVA the major findings of the study were :

- The effect of general anxiety on the achievement in mathematics was found to be significant.
- The effect of general defensiveness on the achievement in mathematics was found to be significant.
- The sex difference on the achievement in mathematics was found to be significant.
- There was no significant interaction effect of anxiety, defensiveness and sex on the achievement in mathematics.

Mathur (2003) studied influence of learner- learner interaction on mathematics achievement of class V students and found that :

- Learner- Learner interaction strategy is more effective than traditional teaching method.
- It had same effect on boys and girls of class V.
- Improvement in achievement of students through Learner - Learner interaction strategy is high.

Garala (2006) studied effectiveness of Alternative Instructional Material on Arithmetic Achievement of class V students. Following objectives were kept in view :

- To measure the intelligence level of class V students.
- To study the arithmetic achievements of class V students.
- To develop Alternative-Instruction Material (AIM) on the basis of fundamental arithmetic for students of class V.
- To test the effectiveness of AIM in classroom teaching for class V students.
- To identify the effect of AIM in the context of variables like gender, locale and intelligence level.

Raven's CPM, Researcher made Achievement test for Pre-test and Post-test were used as tools. The findings of the study were :

- Teaching & learning through AIM could definitely help students.
- There was a significant increase in the post-tests scores of both girls and boys.
- The 'intensity of improvement' in achievement was same in boys and girls.

- The 'intensity of improvement' of rural students due to the intervention of AIM was found better than that of urban students.
- AIM improved arithmetic achievement among students of different intelligence level.
- AIM was found more beneficial to below average Intelligence student.

2.2 An Overall View

The researcher has presented a brief review of the related studies done in the field of achievement in mathematics. The researcher found some gaps and deficiencies after thorough study of the past research studies. An overall view of the review reveals the fact that even though there is a lot of research conducted in the field of mathematics achievements but most of them are in relation to personality traits, alternative teaching methods, Socio-economic status and medium of instruction. No study was conducted to find out the mathematics achievement in relation to ability in fundamental operations at elementary stage. It is also clear from the review that studies finding mathematics achievement influencing mathematical concepts are at a decrease. There is a wide scope for the further research.