CHAPTER II
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REVIEW OF THE RELATED RESEARCH WORK

In the present study an attempt has been made to assess the failure and achievement in mathematics in HSCLC examination on the tribal student of Karbi Anglong district of Assam.

In the present times mathematics occupies an important place in school curriculum. It is a core subject in the school curriculum. It has a great educational values and makes a major contribution in achieving the aims of education.

The researcher has gone through the various studies about the relevant works done by different researchers. After studies the researcher found the following relevant works done by different scholars.

Western Review :

A few studies tried out microteaching techniques in developing instructional competence in mathematics teachers and skills in teaching modern mathematics. Gor (1992), Yadav (1984), Srivastava (1992), Bailker’s (1983) study revealed that a self-instructional remedial micro-teaching course improved the instructional competence of the teacher in respect of some selected skills, the course also had a lasting effect.

Lucock, Surrey, in the year 1988 investigated whether pupils held personal beliefs and attitudes towards mathematics, which could affect their performance in mathematics in such a way as to either facilitate or impede learning.

The basis of comparison of the study group pupils was the pupils’ mathematical setting and their position in yearly examination. The main findings of the investigation were :-
i) Beliefs and attitudes do affect mathematics performance, but that the effect was not the same for high and low settings.

ii) Problem solving ability co-related poorly with setting.

Murray in the year 1988 studied about “a teaching approach in mathematics for low ability pupils”.

The study was initiated as a result of the authors observation that pupils of low ability were failing to assimilate the mathematical concepts being taught in a mixed ability class room. The investigator observed that to co-operative teaching taking place in the mixed ability class room was not achieving its potential as an effective teaching strategy for low ability pupils. The low ability group showed higher degree of performance when taught in new technique devised by the author in practical and oral work related to the topics taught.

Pinkrah's, in the year 1989 studied about pupils “Attitude towards understanding mathematics” and revealed that, enjoyment with mathematics and liking of mathematics were stronger determinants for learning the subject with less difficulty.

Van Bobbie dean Norris, in the year 1992 investigated, “how the mathematics anxiety : parental anxiety as it relates to anxiety in children”. The study revealed that mathematics anxiety levels of mothers and the gender and ability level of the student could be used to identify students who might be at risk for developing mathematics anxiety.

Witherspoon, in the year 1992 studied “the beliefs about mathematics of number of pupils of the secondary school stage.” He observed that students generally regarded mathematics as a static domain centering on the following numbers of factors : i) numbers, ii) computation, iii) Algorithematic problem solving.

Lawson, Valaric Johnson, in the year 1993 again investigated “the impact of mathematics anxiety, test anxiety and instructional method on the achievement in mathematics of the pupils of ages 13-14 in a developmental mathematics class”. The study concluded that mathematics anxiety and test anxiety were inversely
related to mathematics achievement and the direct method of instruction was found to be more successful.

**Armstrong, in the year 1993** conducted a descriptive study of the “inter-relationship of parent, teacher and student attitude towards mathematics and school achievement of selected eight grade students in the Inglewood Unified School District.” A significant relationship was found between attitude towards mathematics of students and parents, but not of students and their mathematics teachers.

**Jarrel, Ranald Howard, in the year 1993** studied, “the relationship among parents and children’s perceptions of the children’s mathematics abilities and the children’s actual performance in mathematics.” According to the findings the parents of girls believed that their daughters were significantly less able in mathematics and had to work significantly harder. Parents enrolled sons in significantly more mathematics enrichment classes.

**Kim, Lori Yonkung, in the year 1993** investigated “the factors affecting school level (grade 8) student’s learning outcome.” He identified the student’s characteristics and behaviour have greatest impact on achievement in mathematics.

**Cherian, Verghese, in the year 1993** investigated about “gender, socio-economic status and mathematics achievement of students of age group 13-17” and he found that socio-economic status as differentiating factors of achievement of both the sexes such as:

i) at low socio-economic status, girls achieved significantly higher than boys

ii) at middle and high status level, boys achieved significantly higher than girls.

**Randhawa, Bikker and Randhawa, Jason, in the year 1993** investigated to understand sex differences in the components of mathematical achievement of grade 10 pupils.

**Preston, Vera Alma, in the year 1994** investigated about “the relation between the performance in mathematics and the way of teaching mathematics giving emphasis on mathematical concepts.” No difference in achievement was
found between the groups taught with an emphasis on concepts and definitions and the control group.

Norwood, Karen, in the year 1994 studied “the effect of instructional approach on mathematics anxiety and pupil’s achievement in mathematics.”

The study confirmed a significant difference in pupil’s mathematics achievement of the two groups taught by rule oriented and concept oriented methods.

Ulrich Schefele and Mihaly Csikszentmihalyi, in the year 1995 conducted a study to examine “relationship among interest, achievement, motivation, mathematical ability, quality of experience when doing mathematics taking dependant and independent variables as follows:

Dependent variable:

1) Quality of experience in mathematics (Components: potency, affect, concentration, intrinsic motivation, self esteem, importance, perceived skills)

2) Mathematical achievement (grades and course level).

Independent variables:

1) Interest in mathematics
2) Achievement motivation in the classroom
3) Mathematical ability

The study clearly indicated that interest was the strongest predictor of quality of experience in mathematics class; and pupils’ achievement in mathematics, specially interest, showed significant relations to potency, intrinsic motivation, self esteem, importance and the perception of skill, level of mathematical ability was most strongly related to achievement. Achievements motivation exhibited positive relations to all dimensions of experience.

Indian Review:

Jan, S.L. and Burad, G.L., in the year 1988 study about the “Low results in mathematics at secondary examinations in Rajasthan”. The main findings of the investigation were:
i) Non-availability of mathematics teachers due to late appointment and frequent transfers, lack of appropriate class room, black boards and other physical facilities, irregular attendance of students, teacher’s habit of leaving the headquarters daily, and lack of residential facilities in some difficult areas were the administrative causes.

ii) A low standard in the lower classes, non availability of text books, lack of timely correction of home work, an overburdened and un-interesting curriculum, lack of child centred teaching, overcrowd class rooms, lack of sufficient periods for the subject, use of ‘pass books’ and ‘guide books’ by most of the students, scarcity of teaching material for mathematics, and lack of proper super supervision were the academic causes [JCV 1558].

Pal, A, in the year 1989 considered “the dependence of achievement in mathematics on four variables of the effective dimension viz. i) self concept, ii) anxiety, iii) attitude and iv) academic motivation”.

He formulated 56 hypothesises with these variables and classified the students into urban, semi-urban and rural and male and females groups. He found the regression equation to predict the performance in mathematics as a linear combination of the four affective variables.

Chel in the year 1990 in his study examined “the problem of under-achievement in compulsory mathematics in Madhyamic Examination of West Bengal.” He found the following causes responsible for under-achievement:

i) gaps in knowledge of mathematical concepts.
ii) difficulties in understanding mathematical language.
iii) lack of openness and flexibility in teaching.
iv) difficulties in mathematisation of verbal problems and interpretation of mathematical results.
v) abstract nature of mathematics.
vi) fear and anxiety on the part of the students.

The study suggests greater motivation of the students for learning mathematics, removal of fear of mathematics and clearer presentation of the subject.
Sarala, in the year 1990 analysed “the conceptual errors of secondary school students in learning selected areas in modern mathematics” and found that the number of errors in modern mathematics are quite large and these errors are influenced by sex, locality of the school, management of the school, intelligence, study habits, and socio-economic status.

Mishra, in the year 1991 has shown that with appropriate teaching strategies even mentally disabled children can learn addition and subtraction. However such improved techniques have to be developed by painstaking research.

Kasat, B.S., in the year 1991 had studied on “the causes of the large failures in mathematics at SSC examination of Marathi medium high school students in Palghar Tahsil.” The major findings were: i) low intelligence, poor numerical ability, poor comprehension and recall ability, no interest in mathematics and poor study habits were the causes of the large failures of boys and girls.

ii) It was found that techniques like the Dalton plan and group work were not followed by the teachers while teaching.

iii) The teachers found that the mathematical curriculum was not child centred. Topics such as percentage and shares were difficult in arithmetic; the circle, circle-arc and area, similarity, were difficult to teach in geometry.

iv) Percentage, rational algebraic expression, variations, probability and statistics were difficult topics in mathematics.

v) The parents being illiterate could not help the children at home. There were no finances for audio-visual aids in the schools. [ASB 0034].

Prabha, in the year 1992 has found that programmed learning of mathematics is superior to conventional learning of mathematics, that mother and father’s education as well as mother’s profession significantly affects programmed learning. Even parents’ income affects significantly the learning of mathematics.

Bhgat, in the year 1992 has prepared a “package of divergent production type problems in mathematics” and has found that the use of this package
significantly helps in the development of divergent thinking abilities in both boys and girls. This appears to be a useful effort for the development of creativity among school children.

**Setia, in the year 1992** has found that the rapid average and slow learners differ significantly in their intellectual and socio-economic status levels and that the intelligence socio-economic status personally and adjustment of rapid average and slow learner cluster together with achievement in modern mathematics. The study suggests to carry on a comparative study of actual co-relation of achievement of students in mathematics with intelligence, socio-economic status and personality factors.

**Renappa, in the year 1992** through his study on “self concept and reading ability in relation to achievement of mathematics of standard VI students” identified the following factors which may affect mathematics performance.

i) Reading ability

ii) Self concept

iii) Location of school

iv) Gender

**Rosaly, A., in the year 1992** had studied on “the relationship between attitude of students towards mathematics and achievement.” The investigator showed the following major findings:

i) The attitude of high-school students towards learning mathematics and their achievement in mathematics were related.

ii) Urban girls had a more positive attitude towards mathematics. Similarly, urban boys had a more positive attitude towards mathematics than rural boys.

iii) Girls were higher than boys in their achievement in mathematics.

iv) Urban girls were higher than rural girls in mathematics [MKU 1085].

**Singh, R.D. and Verma, S.C., in the year 1992** studied on “the attitudes of high school students towards mathematics as a function of some individual characteristics like sex, age and intelligence.” The findings were:

1) The students
of high intelligence and average intelligence had a more favourable attitude towards mathematics than the students of low intelligence.

   ii) Attitude towards mathematics was independent of sex.

   iii) Students of the age 13+ showed a more favourable attitude towards mathematics in comparison to students of the ages 14+ and 15+, but the students of 14+ did not have a more favourable attitude towards mathematics than students of 15+ [Spr 1891].

   Dandapani, C., in the year 1992 had studied on the “dimensions of effective teaching of mathematics.” The following findings were got on this thesis:

   i) Female teachers had a significantly higher perception than the male teachers.

   ii) Teachers perception had been found to vary with their years of experience. This variation was found to exist on all the eleven aspects of effective teaching.

   iii) The perception of teachers did not differ because of their qualifications (both academic and professional), place of work, viz. rural and urban, type of management, type of school and number of periods/week of teaching mathematics.

   iv) Factorial analysis had revealed the existence of two factors accounting for 50% of the variance. Factor 1 consisted of the five aspects of effective teaching of mathematics. There were six aspects in Factor 11 of the effective teaching of mathematics.

   v) Teacher’s perception had been significantly related to their head master’s evaluation, and, consequently, to their characteristics (Chi-square).

   vi) There had been 57 effective and 52 in effective teachers.

   vii) The effective teachers differed significantly from the ineffective teachers on all the eleven aspects of teaching [MDa 1376].

   Hariharan, D., in the year 1992 studied on “the attitudes of high school students towards home work and their achievement in mathematics.”

   The following findings were showed in his thesis:
i) Girls were higher than boys in their attitude towards home work.

ii) Urban students were higher than rural students in their attitude towards home work.

iii) Private school students were higher than the government school students in their attitude towards home work.

iv) The attitude of high school students towards home work were related to their achievement level in mathematics [MKU 1087]

Seegers's and Bockaert's, in the year 1996 observed that gender and complexity of the mathematics problem are significantly related. They pointed out that the items of lowest complexity did not differentiate between boys and girls.

North East Review:

Sarma, A.K., in the year 1978 studied about “a critical study of the achievement of mathematics by pupils of secondary schools with particular reforms to the state of Assam.”

In this thesis he had given the following findings:

i) The class-room teaching of mathematics is done by chalk and talk method extending up to the higher classes. Since the number of mathematics trained teachers are significantly low, the methodical teaching of mathematics is found to be not prevalent.

ii) The objective type and essay type of questions are supposed to set in the examination, but essay type of question are more favourable to pupils.

iii) Pupils find difficulty in working out exercises which are not properly graded and teachers have to do more sums on the black board. There by text books fail to attract pupils, which is the one of the causes of dislike towards mathematics.

Mishra, D.D., in the year 1996 studies on “testing the effective of new instructional methods in attaining better achievement in mathematics at the secondary schools in Arunachal Pradesh” showed the following findings:

i) The step by step sequential approach of teaching mathematics in the class
room teaching is needed.

ii) The mathematics teachers of secondary schools of Arunachal Pradesh have to labour hard to teach mathematics in class with proper methods of teaching.

iii) The teacher's training in mathematics in the new methods of teaching is urgently necessary for better teaching in mathematics.

**Choudhury, R., in the year 1999** had studied on “some problems of learning mathematics at secondary stage with relation to high schools in greater Guwahati.”

In her thesis, the following findings were showed:

i) Mathematical literacy is indispensable for a person to be regarded as educated. Every body needs mathematics, in one form or another, since it is no longer, just a tool for physical science but a language for all disciplines.

ii) The factors, arithmetical ability, interest in mathematics, I.Q. and sex of the pupils are significantly co-related with their achievement in mathematics.

iii) Pupils achievement in mathematics is affected significantly by their interest in mathematics.

iv) I.Q. is a highly influential factor in relation to pupils’ performance in mathematics.