CHAPTER –II

Review Of The Related Literature

2.0 Introduction

Research takes advantage of the knowledge which has accumulated in the past. It can never be undertaken in isolation of the work that has already been done on the problems which are directly or indirectly related to a study proposed by a researcher.

The essential aspect of a research project is the review of related research literature before taking up the research project. It helps the researcher in many ways in conducting study with full insight. Review of related literature is must for any research, which helps like a map by which a scholar can identify the track or route to the destination.

Any investigation / research whatever the scale, will involve reading about what other people have done about their area of interest gathering evidences to support or refuse their arguments and finally drawing their conclusion on the basis of available evidences.

Therefore the purpose of the reviewing of literature is to build up the content and background as well as to provide a basis for

formulation of hypothesis / research questions since a good research is based upon the relevant evidences that are known in the area of research for comprehensiveness. It is essential that the new work be based and built on what has already been accomplished.

The review of research literature helps the researcher to delimit and define his /her problem avoiding duplicating well – established findings. It gives the investigator an insight into the problem and research methodology.

2.1 Related studies

- *Das, R.C And Barua, A.P (1968)* :- Effect of remedial teaching in arithmetic, a study with grade IV pupils.

    The main aim of the study was to determine the affect of remedial teaching in arithmetic in grade IV.

    The major conclusion of the study was that remedial teaching had definitely improved significantly the achievements in arithmetic.

- *Sinha, B.(1971)* :- Construction of a diagnostic test of arithmetic vocabulary for grades VI, VII and VIII the bureau of educational and psychological research, Govt. of west Bengal.

The main aim of the study was to construct a diagnostic test of arithmetic vocabulary for grades VI, VII and VIII.

Consequent on an analysis of syllabi in arithmetic for classes VI, VII, and VIII, the test was constructed with a view to detecting pupils difficulties in the subject and to ascertain the nature, extent and causes of errors committed by them in respect of the concepts involved. The sample (N=214) was drawn from six schools in Calcutta .

Analysis of the backwardness levels revealed how some of the concepts got less importance in the curriculum of the class. Power of grasping the concepts and understanding the meaning of arithmetic terms were found to grow with maturation .

- *Chauhan (1982)* :- Evaluated the achievement in algebra of class IX students in Delhi schools with reference to categories of Guilford's S I 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 (T1foT8) was significantly correlated with each of the S1 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 S I tests indicated only one common factor, education of correlates, characterised by C4 and C2, in the case of boys 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.

• *Rastogi, S. (1983)* :- diagnosis of weaknesses in arithmetic as related to the basic arithmetic skills and their remedial measures.

Objective:- (i) To establish a relationship between achievement in mathematics and command over basic arithmetic skills. (ii) To develop a diagnostic test to determine specific weaknesses of students backward in basic arithmetic skills. (iii) To develop a suitable programme for remedial work in basic arithmetic skills. (iv) To investigate other causes of backwardness in mathematics and their treatment.

Major Findings: - (i) Attitudes were closely linked with achievement. (ii) These were no significant sex differences in either attitude towards mathematics or achievement in mathematics. (iii) The course of self-help in basic arithmetic skills was equally effective with either sex.

- *Mondkar, S.M., (1984)* – Factor analysis of some tests in number systems in the mathematics syllabus prescribed from June 1972 for std. VIII in the state of Maharashtra.

The objectives of the study were:-(i) To find factors underlying the ability required to learn number systems. (ii) To prepare tests based on these factors, and (iii) To analyse the tests factorially .

The hypothesis of the study was :

The ability to learn number systems is composed of three factors- General intelligence (g), Number (N) and Perception (P.)

The main conclusions of the study were:-(i) The ability to learn number systems was chiefly composed three factors, viz. General intelligence (g), Number factor (N) and Perceptual factor (P).(ii) In case of tests in number systems, boys showed higher performance than girls. (iii) The locality factor did not affect the pupil's test performance in number systems. (iv) The age factor did not affect the pupils performance in tests based on number systems.

- *Patel. N.R.,(1984)* :- An investigation into the mathematical ability of pupils of classes IX and X in the context of some cognitive and affective variables.

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The objectives of the study were: (i) to provide a standard and valid tool to measure mathematical ability of pupils of classes IX and X, (ii) to establish norms of a mathematical ability test for classes IX and X, (iii) to study mathematical ability grade – wise, sex wise and area wise.

- *Nagar, Nirmal. (1988) :-* Effectiveness of computers in teaching mathematics in schools.

  Objectives:- (i) To examine the usefulness of the computer in teaching mathematics. (ii) To examine areas / aspects of mathematics which can be more effectively taught with the help of computers, and (iii) To examine the trends regarding the use of computer aided teaching of mathematics.

  Major Findings: (i) Computer assisted teaching (CAT) of mathematics benefited both the teacher and the learner. (ii) CAT encouraged individualisation and practice without burdening the teacher with repetitive and monotonous activity. (iii) CAT helped the learners to use their creativity by exploring new areas not covered by the syllabus. (iv) Computer awareness was not sufficient in schools for CAT.

- *Raman, J. (1989):-* Impact of remedial teaching programmes for the common errors committed by students of standard IX in calculus .

  Objective:- (i) To identify the errors committed by the students under four categories, entry behaviour, perceptual, conceptual and computational, in the different divisions of calculus at standard XI level.(ii) To identify the percentage of error under each category of errors.(iii) To design some suitable remedial teaching programmes for the students of the standard XI to minimise these errors in calculus .

  Major Findings :-(i) Students committed more conceptual errors, followed by computational errors, entry behaviors errors and perceptual errors . (ii) The control group students achievement in the post-test did not differ significantly with the pre-test.(iii) The experimental group students achievement in the post-test was significant, and they were able to score more marks in the post-test. (iv) Students of both the experimental group and the control group differed significantly in the scores in the post-test.

- *Sensarma, Aloke. (1989)* – The evaluation method: A new teaching strategy for secondary school mathematics.

  Objective:- To compare the relative effectiveness of the evaluation method and the traditional method, in respect of

students achievement in the traditional achievement test and a high mental ability test (HMAT) of mathematics.

Major Findings:- (i) The adijusted GAT mean of group A was significantly greater than that of group B and group C. (ii) The mean score on HMAT of experimental group A was significantly greater than the mean scores of the control groups B and C on HMAT. (iii) The evaluation method of instruction in mathematics was significantly better than the traditional method.

- *Dutta, Anima. (1990) :* Learning disabilities in the reasoning power of the students in geometry-diagnosis and prevention.

Objectives :-

(i) To diagnose the major patterns of disabilities in a specific area of geometry with help of tools specially developed for the purpose, and (ii) To try out experimentally teaching methods which would prevent development of learning disabilities in the area under study.

Major Findings :- (i)The experimental group taught by audio visual materials and techniques achieved significantly more then the control group taught by the conventional method.(ii) Learning though audio-visual materials caused more prolonged retention then through the conventional method.

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(iii) The experimental group showed more interest in the lesson then the control group.

- *Gurusamy,s. (1990) :-* A diagnostic study of the errors committed by students of standard IX in solving problems in geometry.

  The objectives of the study are : (1) To identify and categories the errors committed by the students of standard IX in solving problems in geometry. (2) To design some suitable remedial teaching programmes for the students of standard IX in solving problems in geometry ,& (3) To implement the remedial teaching programmes with the students of standard IX in order to minimize these errors in solving problems in geometry.

The Major Findings :- (i) It was found that the students' mean achievement scores were increased and the errors were considerably reduced in the post test . (ii) The level of performance of the students in the post test was found to be high after the implementation of the remedial programme.

- *Krishnan, Navaneetha J. (1990):* Identification of problem solving strategies in mathematics among high school students in Devakottai Educational District.

  Objectives :- (i) to identify and categories problem solving strategies, (ii) to identify how far these problem–solving

strategies are applied by the students, (iii) to identify their achievement of problem- solving in mathematics, and (iv) to find out the relationship between identification of problem - solving strategies (IPSS) and achievement of problem solving in mathematics (APSM).

Major Findings :-(i)   There was no significant relationship between the IPSS and the APSS of students. (ii) There was no significant relationship between the IPSS and the APSM of students. (iii)   The correlation between APSS and achievement of problem –solving in mathematics was significant. (iv)   The test of relationship between the scores of the algebraically sum and APSS provided a significant 'r' value. (v)   The correlation between the scores of the sum in application and APSS was significant.

- *Sarala, S. (1990)* : Conceptual errors of secondary school pupils in learning select areas in modern mathematics.

  Objectives:- (i) To study the general nature of the errors scores of secondary school pupils in modern mathematics. (ii)   To find out whether there in any sex difference in committing errors in each concept in sets, trigonometry and statistics.

  Major Findings: - (i)   The number of conceptual errors committed by secondary school pupils in the areas selected

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for study was very high. (ii) Conceptual errors in mathematics were seen to be influenced by sex, locality of school, management of school, intelligence, study habits, socio-economic status and caste . (iii) The relationship between errors in mathematics and intelligence, and study habits, was seem to be negative and significant. (iv) Interest in mathematics was seen to have no influence on errors.

- *Kasat, B.S. (1991):-* In-depth study of the causes of the large failures in mathematics at S.S.C. examination of Marathi medium high school students in Palghar Tahsil.

  Objectives:- (i) To find out whether low intelligence and poor numerical ability are the reasons for failures in mathematics, and (ii) To finding out the student-related, teacher- related, subject related, parents- related and school related reasons for the failures in mathematics.

  Major Findings: - (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.

- *Wagh, S.K. (1991):* Development of multimedia in situational system for remedial measures in fractional numbers.

Objectives:- (i) To develop a multi media instructional system for remedial measures in fractional numbers, according to the multi-media instructional system for developing computation skills, and (ii) to compare the results of this approach to those of the traditional approach of remedial teaching and thus to find the difficulty levels of skills experienced by the students in fractional numbers.

Major findings :- (1) In fractional numbers and their operations, students were found to commit common errors in the basic process, cross- multiplication, the terms used, and in mixed operations in addition, subtraction, multiplication and division. (2) The facilities, resources and raw material, for the instructional material were available but were not used in schools. (3) A multi-Media instructional system (MIS) was designed and constructed.

- *Bhatia, Kusum. (1992)* :- Identification and remedy of difficulties in learning fractions with Programmed instructional material.

Objectives :(i) To develop programmed instructional material on fractions for students of class V, (ii) to use programmed instructional material as a remedial tool. (iii) to test the effectiveness of programmed instructional material in class room teaching for students of class V &, (iv) to test

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the significance of difference between the traditional method of teaching and teaching through programmed instructional material.

Major Findings:- (i) Teaching and learning through programmed instruction could definitely help both students and teachers. (ii) students receiving the programmed instruction material did better in post test as compared to the other group. (iii) students receiving the Programmed instructional material not only helped the students to learn better but also helped the teacher to know how the students learn better.(iv) The programmed instructional material worked affectively as a remedial tool.

- *Lalitha Bai, T.K. (1992) :-* A comparative study of the cognitive factor structures of the high, average and low-achievers in secondary school mathematics.

Objectives :- (i) To identify the pattern of clustering of the 31 cognitive variables for the total sample in terms of the resulting cognitive factor structure for the total sample, (ii) to identify the cognitive factor structures (obtained in terms of the 31 cognitive variables) for the there achievement levels in mathematics (HA, AA, LA).

Major Findings:- (i) The 31 cognitive variables for the total sample were reduced to a single factor, ' Numerical Ability',

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when analysed. (ii)   For the high mathematics achievers, the 31 cognitive variables were reduced to three cognitive factors, 'Abstract- Reasoning' 'Numerical- spatial facility,' and 'Non-language reasoning' .

- *Prabha, Rashmi. (1992)* :- An investigation into the effectiveness of programmed mathematics in relation to some socio-academic variables.

  Objectives:- (i) To compare learning through programmed text in mathematics and through traditional teaching, (ii) to see whether the mother's education affects achievement event through programmed text, (iii) to see whether the father's education affects learning through programmed text, (iv) to see whether parental profession affects achievement through programmed text, (v) to compare previous achievement and achievement through programmed text.

  Major Findings:- (i) The programmed text group performed significantly better than the traditional method group. (ii) The programmed text group were found to be significantly better than the traditional method group.

- *Rosaly, A. (1992)* :- The relationship between attitude of students towards mathematics and achievement .

  Objective:- (i)   To construct an attitude scale to measure the attitude of high school students towards learning of

mathematics, (ii) to construct an achievement test in mathematics, and (iii) to find out the relationship between attitude and achievement in mathematics .

Major Finding :- (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 than rural girls.

(iii) Similarly, urban boys had a more positive attitude towards mathematics than rural boys.(iv) Girls were higher than boys in their achievement in mathematics. (v) Urban girls were higher than rural girls in mathematics.

Summary

The researcher has presented a brief review of the related studies done in the field of achievement in remedial teaching.

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 remedial teaching on achievement but most of them are in relation to personality traits, alternative teaching methods, socio-economic status and medium of instruction. It also in arithmetic, algebra and geometry for primary level. No study was conducted to find out the remedial teaching on achievement in solving polynomials at secondary stage. The investigator felt that there is a wide scope for the further research in this area.

CHAPTER- III

Methodology

3.0   Introduction

The purpose of the educational research cannot be completed without detailed design of investigation. This chapter deals with the methodology employed to achieve the objectives of the study mentioned in chapter under the following headings

- ➤ Research design

- ➤ Sample

- ➤ Tool

- ➤ Variable

- ➤ Procedure of the study

3.1 Research Design

According to *Borg And Gall (1983)*, "Research design refers to procedure used by the researcher to explore relationship between variable to from subject in to groups, administer the measure apply treatment conditions and analyse the data."

This study used experimental research design, the researchers used single group pre- test post test design to study

the effectiveness of remedial teaching on achievement of IXth standard student in solving problem of polynomials .

Table No. 3.1 The design of the study is specified in table below:

Characteristics	Experimental Group
Entry Status	Pretest
Treatment	Remedial Teaching
Terminal Status	Post Test

3.2. Sample

Data collection is an important part of the research. Data is collected from a selected sample and the sample is the representation of population.

According to *Borg And Gall (1983)*, " The larger group we wish to learn is called population, where as the smaller group we actually study is called sample. " Thus sample is a portion of the population which represents the population.

A good sample must be as nearly the representative of the entire population as possible and ideally it must provide the whole of the information about the population as from which the sample has been drawn.

The sample school which the investigator had selected have two sections of class IX and each section has the strength of 30 students. The researcher has taken some criteria (students who scored 25 and below in the pre- test) for selecting the final sample for the study by adopting **purposive sampling technique.** So the sample consisted of 40 students.

3.2.1 Classification Of The Sample

Thus the total sample of 40 students was classified into sub-sample on the basis of criterion variable such as gender. The resultant classification of the final sample is summarized in table below:

Table: 3.1 Classification of the Final sample into sub- sample (N=40)

Criterion Variables	Sub-Sample	No. of Students	Total
Gender	Boys	23	40
	Girls	17	

3.3 Variables:-

The essential feature of experimental research is that the researcher can deliberately manipulates controls or observes the condition or characteristics which determine the events in which

researcher is interested. These condition or characteristics are called "Variables."

> **Independent Variables:-** The independent variable are the conditions or characteristics that the researcher deliberately, manipulates and control to determine the events in which researcher is interested and its relationship to an observed phenomenon.

> **Dependent Variables:-** The dependent variable is that factor which is observed and measured to determine the effect of independent variable i.e. the factor that appears, disappears or varies, as the experimenter introduces removes or varies the independent variable.

> **Background Variables:-** The scores/ results of the study analyzed or interpreted through background variables. In this study,

Independent Variables:- Remedial teaching

Dependent Variables:- Achievement in polynomials

Background Variables:- Gender

3.4. Tools:

For the study " *The effectiveness of remedial teaching on achievement of IXth standard students in solving problems of polynomials- A study*", the following tools were developed by the investigator herself and then administered on students of class XIth of the selected sample.

Pre- Test- For finding the error committed by students in solving problems of polynomials .

Post- Test- For finding the achievement of students in solving problems of polynomials.

The researcher has taken pre test for finding the error on the basis of some criteria. Therefore , pre test is a diagnostic test also, and post test was conducted for minimizing the errors on the basis of the given remedial teaching. Therefore, post test is an achievement test also. Both these test were based on parallel test.

3.4.1 Administration Of Tools:

After developing the tool, the researcher personally met the principal of the school and got acquainted with the teachers concerned and established rapport with the students. Prior to the administration of tools, the students were explained about the pre test that they were supposed to attempt.

The significance of test and necessary instructions were given to them. The students were made clear that this test is designed to help them and is not for grading and the whole process had nothing to do with their school achievement. After this the researcher administered the test on the students.

After the administration of pre test, those students who scored 25 and below were selected and they were given remedial classes. Following this, post test were conducted for these students.

Table 3.3 Showing the duration of administration of tools

S. No.	Days	Treatment
1-	First	Pre-test
2	Second	Activity
3	Third	Activity
4	Fourth	Activity
5	Fifth	Activity
6	Sixth	Activity
7	Seventh	Post- test

Thus, efforts were made to reduced the error committed by the students. There was fixed time limit for the test i.e.60 min were given for each test.