CHAPTER-2

REVIEW OF RELATED LITERATURE

Chapter 2

Review of Related Literature

2.1 Introduction

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

The phrase 'Review of Literature' consists of two words, viz., Review and Literature. The term 'Review' means to "Look Again" or to organize the knowledge of specific area of research, to involve an edifice of knowledge to show that study would be an addition to this field. The term "Literature" in research methodology refers to the knowledge of a particular area of investigation of a discipline, which includes theoretical, practical and its research studies or literature as the mirror that reflects the past view and presents the future perspective.

In a systematic research study, review of literature has an active role. Any research study is born out of the consolidation of a host of knowledge, already gathered by various researchers in the particular field. Familiarity with the studies in the area of research and available literature is also essential for making new grounds and for the proper planning and designing of the study. Review of related literature helps in the selection of the problem and to gather up-to date information about what has been done in the particular area in which a researcher intends to make his study.

2.2 Importance of Review of Related Literature

A brief summary of previous research and the writings of recognized experts provide evidence that the researcher is familiar with what is already known and with what is still unknown and untested. Since effective research must be based upon the past knowledge, this step helps to eliminate the duplication of what has been done before. The first task of the investigator is to decide on a specific problem for investigation. After the selection of a problem for the study, related literature helps to define and delimit the problem.

Review of related literature leads the investigator into the formulation of a hypothesis. The theoretical framework of the entire study is developed using related literature. It helps the investigator to identify the dependent and independent variables. Through a review of related literature the investigator is able to select appropriate tools to be employed in the collection of data and the proper methods for the interpretation of results.

Review of related literature means to locate, to read and to evaluate the past as well as current literature of the research concerned with the planned investigation. Such literature provides the researcher with the footprints of earlier travellers gone ahead on the same route. The time spent in survey of related literature is invariably a wise investment. It is a crucial step, which minimizes the risk of dead ends, wasted efforts, rejected topics and even more important errorless findings based on a faulty research design. Review of literature also makes a researcher aware of the nature, kind and magnitude of the work done in the field and indicates the direction of further studies on the subject.

Sometime, from such reviews of the relevant literature, the probable and possible topics of research may also emerge. To conceptualize the research problem explicitly 0and meaningfully, there lies the significance of review of related literature done by the researcher. Keeping in mind the stated arguments, the researcher has reviewed the relevant literature, followed by a systematic analysis of studies, ideas, concepts and views of different researches.

Review of related literature is indispensable as it provides helpful suggestions for further research work. Without a review of related literature, it will not be possible to proceed with the research work with a firm ground and justification. With this motive in view, a review of previous studies in the relevant area of the present study has been attempted and presented in this chapter.

2.3 Some Reviews

1. Panchalingappa, Shahapur Nagappa (1995)

Title: "Causes of Under Achievements in Secondary School Mathematics" (Ph.D.)

Objectives:

- To identify the causes of Under achievement in Secondary School mathematics
- To offer suggestions for the improvement of achievement of Underachievers in mathematics in the light of identified causes of Under achievements.

Sample and tools:

A sample of 501 students studying in class 9th split up by using stratified random sample technique into groups of 300 and 201 as normal and under achievers of Kannada medium secondary school students of Mysore city were included in the study.

Raven`s standard progressive Matrix, numerical reasoning test, numerical ability test and achievement test in mathematics constructed by the investigator were employed for the data collection.

Major findings:

It is found that attitude towards mathematics is the main cause of under achievement in mathematics. Examination anxiety is also the cause of under achievement in mathematics.

Lack of educational adjustment who were study habits and low achievement motivation are also contributed to under achievement in mathematics.

2. Nalayini S.(1991)

Title: "Effectiveness Using number games to teach automatic at primary level"

Objectives

- To find the effectiveness number game on primary school children in doing mathematical operation.
- To study the relationship between their family background including the economic and educational level of parents.

Major findings

Out of 8 comparisons, five comparisons showed significance improvement due to the supplementation of ordinary teaching by number games, in other 3 comparison through the difference was not significant the means of the experimental group were higher than the control group mean

3. Kasat,B.S.(1991)

Title: "Study of the causes of large failure in mathematics at SSC examination of Marathi medium High School students in Palghar tehsil"

Objectives:

- To find out whether low intelligence and poor numerical ability are reasons for failure in mathematics.
- To find out the student related, teacher related, subject related, parent reaction related and school related reasons for the failure in mathematics.

Findings:

Low intelligence, poor numerical ability, over comprehensions and recall ability, no interest in mathematics and poor study habits are the causes of large failure of boys and girls in mathematics. Teaching like Dalton plan and group work were not followed by the teachers while teaching.

4. Jain(1994)

Title: "Effectiveness of activity base teaching learning strategies using OB science kit".

Objectives:

- To design activity based strategies using OB kit

- To study the effectiveness of activity based classroom strategies using OB kit

Sample:

The sample included 46 boys and 42 girls of grade 4 for various purpose of a study the tools were used standard progressive matrices and achievement test in EVS constructed by the investigator.

Major findings:

- The activity based teaching learning strategies are far more effective than traditional method.
- The oral responses of the students at primary stages are better than their written responses.

5. Dash(1996)

Title: "Effect of instructions using innovative self learning activity sheet on the problem solving behaviours of class 3 children needing to 3 level performance"

Major findings:

The remedial intervention in solving different type of problems on multiplication and division was found to be effective.

The average performance of children after remedial instruction was significantly higher than those before instruction. While they took significantly less time to complete problems after the median instruction as compared to before.

Instructions through self learning activity sheets using heuristic search strategies not only developed the problem solving ability of class 3 children but also increased the tendency of these children to be engaged more deeply in their general mathematical activities.

6. Mishra (1996)

Title: "To Study the traditional versus competency-based teaching in environmental studies."

It attempts to compare the differences between the outcomes of pupils who have undergone the teaching in traditional approach and competency based approaches.

Findings:

Competency based teaching approach along with child centred learning and activity based teaching showed a significant effect in achieving the game scores on teacher made test than that of traditional practice teaching.

Pupils through competency based teaching exhibited significant games which showed their change of behaviour in learning outcomes.

Competency based teaching strategy was proved to be the best for classroom transaction.

7. Panda(1996)

Title: " A study on effect of Activity Based teaching cum evaluation strategy on child achievement and retention.

Objective:

- To study the effect of systematic activity based teaching come evaluation strategy on attainment of learning materials in mathematical concepts
- To compare the effect of systematic activity based teaching versus traditional method on achievement of mathematical concept
- To find out the effect of systematic activity based teaching come evaluation strategy on detention of learning material in mathematical concept

Sample:

The sample of study comprise all grade 1 students in 1993- 94 and 1994- 95 session from the BP DM school in Bhubaneswar city of Orissa 5 Criterion reference unit test was used to collect the data.

Major findings:

The experimental group performed better than the control group in every unit as well as overall performance.

Systematic activity based teaching come evaluation strategy was found a better method as compared to the traditional method in developing mathematical concept.

Retention of learning materials was better in experimental group then in control group.

8. Chopra(1998)

Title: "A case study on activity based classroom transaction".

Objectives:

- Acquisition of basic concept in the area of maths and English.
- Performance of the child in comparison with the norms.
- Specific Areas where the child leg behind and link between the problem area and the child performance in the class.

Major Outcomes :

- Slow learners who had withdrawn themselves into a shell gained a lot of self confidence as they could not only understand but see relationships
- More than 90% of the students had mastered the required skills and ability.
- Learning has become more meaningful interesting and joyful.

9. IYER,K.K. (1977)

Title: "To study factors related to underachievement in mathematics of secondary school students".

Sample

The study was conducted on a representative sample of 862 subjects selected form a representative educational level-std-IX-of the secondary schools of the Trivandrum district of Kerala.

Tools

The tool had two aptitudinal criteria, a verbal group test of intelligence, a non verbal group test of intelligence and a standardized test of mathematics were administered to the subjects.

Findings

The findings were, there was significantly a greater number of over achievers among the high intelligence group than 60 among the low intelligence group. Out of the 11 non-personality variables 5 variables, Sex, age, caste, parental profession and parental education were associated with all the three achievement levels.

10. KOUL.L., (1978)

Title: "The personality needs of high and low achievers in mathematics". The study was designed to make a comparison between low and high achievers in mathematics.

Sample

The initial number of 1,030 students was selected from six randomly chosen boys higher secondary schools of Ajmer.

Findings

The major findings of the study were

- The high achievers in mathematics differed significantly form low achievers on eight of Murray's needs.
- ii).The low achievers in mathematics were more exhibitory, heterosexual and aggressive.

11. GADGIL.A.V., (1979)

Title: "The causes of large failures in mathematics at the S.S.C. Examination (Std.X) of March 1977."

Sample

Sample is 27,990 pupils for algebra and 19,869 for geometry out of the total sample, 2,56,940.

Tools

The tool used was a questionnaire meant for schools. The sources of data were the marks sheets of S.S.C. Examination, and a sample of randomly selected answer scripts.

Findings

The findings were, results in algebra and geometry were comparable and it could not be concluded that more failures were due to more failures in algebra or in geometry. Reasons for failure in mathematics were inadequate coverage of the syllabus, inadequate attention paid to some difficult topics, inadequate motivation for study and inadequate guidance provided to pupils for study.

12. WELLS (1981)

Title: "The processes involved in the activities of computer programming and mathematical problem solving",

Findings: He found that there is a significant correlation between mathematical problem solving success and computer programming problem solving success.

13. RAO.T.G. (1983)

Title: "A comparative study of programmed learning and conventional learning methods in the instruction of mathematics – A Psychological approach."

Sample

A sample of 300 students from grade-V and 296 students from grade (X) was taken. Equal number of students were assigned to the programmed learning group and conventional learning group in both the grades.

Tools:

The tools employed for data collection were the Hyderabad State Bureau of Education Group Test of Intelligence (1980), an interview schedule to know the attitude of students, and achievement tests in mathematics for students of grade V and Grade X.

Findings:

- The mean performance scores of the programmed learning group and conventional group on the achievement test 63 were less than the normative means of the test.
- The mean performance scores of all the programmed learning groups were higher than those of the corresponding conventional learning groups.
- The performance of urban subjects was superior to the performance of rural subjects under the programmed learning method irrespective of grade.

14. VYAS.C.S. (1983)

Title: "The development of symbol picture logic programme to study its effect on Mathematical achievement".

Sample:

Four schools were selected at random from 16 schools of Bayad Taluka. The equivalent group technique was adopted. There were 160 students in the experimental group and 160 in the control group.

Tools:

The other tool, that was used for collecting data was the group test of intelligence by K.G. Desai. The 2x2x2 factorial design was adopted for studying the SPLP in relation to achievement, parents' education and sex.

Findings:

- The students with high intelligence benefited more by the SPLP by better achievement in mathematics than those who possessed low intelligence.
- The students possessing high reasoning ability benefited more by the SPLP by better achievement in mathematics than those who possessed low reasoning ability.
- There was no interaction among the programme, intelligence and syllogistic reasoning ability. This showed that the achievement in mathematics was independent of these variables.

15. RAO. L.N. (1985)

Title: "To study the factors influencing the effective use of audio visual equipment and materials in class room teaching".

Sample:

The study was conducted on a sample of eight schools.

Tools:

Questionnaire on the availability of audio visual equipment and a questionnaire on the availability of audio visual materials were used.

Findings:

- There was no positive association between the effective or ineffective use of audio-visual equipment in class room teaching and the type of management.
- There was no significant relationship between the effective use of audio-visual equipment in class room teaching and the locality of the schools.
- There was no relationship between the effective use of audio-visual equipment in class room teaching and the strength of the schools.

16. BHALWANKAR, A.G., Ph.D. (1986)

Title: "Effects of Expository and Guided Discovery Methods of Teaching Mathematics", on the achievements of students of different levels of intelligence.

The basic design of the experiment was 2 X 3 factorial design, One factor was method at two levels expository and guided discovery method.

Findings:

- Guided discovery and expository methods were equally effective on knowledge and comprehension objectives with respect to both immediate posttest as well as retention test.
- The expository method was more effective than the guided discovery method on the criterion of scores on application objectives with respect to students of high intelligence.

- The guided discovery method was more effective than the expository method on the criterion of percentage of retention scores on the application objective in the 66 case of students of low intelligence.
- The guided discovery method was more effective than the expository method on the criterion of percentage of retention scores with respect to total achievement of the students of middle intelligence.

17. KOTHARI, R.G., (1987)

He did an investigation into efficiency of different instructional media in the teaching of mathematics to the pupils of class IX in relation to certain variables.

Sample:

The experiment was carried out in two schools. Four groups of class IX pupils having 30pupils in each group were selected for implementing the instructional media while the other four groups were treated as control groups.

Tools:

The pre-test and post-test control group design was adopted for the purpose of studying the efficiency of different media. The Junior Index Motivation (JIM Scale) and test of reasoning ability were used for collecting necessary information about the variables under study.

Findings:

The major findings were

- Visual projection, activities and experiment were equally effective for unit – I, while visual projection was superior to the activities and experiment approach for Unit-II.
- The approach of media, activities and experiment was superior to programmed learning material for Unit-I but they were equally effective for Unit-II.
- Visual projection was superior to 67 programmed learning material for Unit-I, while they were equally effective for Unit – II.

17. CHITKARA.M. (1988)

Title:"Effectiveness of different strategies of teaching on achievement in mathematics in relation to intelligence, sex and personality".

Sample:

A sample of 300 students was randomly selected form grade IX students of four schools of Chandigarh.

Tools

Tools were the mathematics achievement test, the Jalota group test of mental ability (1972) and, The Eysenk personality inventory (1964).

Findings

The major findings of the study are the following.

- 1. All the three strategies namely (a) Lecture-discussion (b) Inductive –drill and, (c) Auto-instruction group discussion. were found to be equally effective in terms of in mathematics disregarding levels of intelligenc sex, and personality type.
- 2. Boys and girls of superior ability did not show any significant difference between their mean scores on achievement in mathematics. The strategy of lecture discussion was found to be equally effective with the above. Extraverts of high ability, average ability and below average ability scored equally well when taught through strategies.

18. SUMANGALA, V. (1997)

Title: "The effect of attitude towards math."

Sample:

The study was conducted on a representative sample of 862 subjects selected form a representative educational level-std-IX-of the secondary schools of the Trivandrum district of Kerala.

Tools:

The tool was two aptitudinal criteria, a verbal group test of intelligence, a non verbal group test of intelligence and a standardized test of mathematics were administered to the subjects.

Findings:

- The findings were, there was significantly a greater number of over achievers among the high intelligence group than 60 among the low intelligence group. Out of the 11 non personality variables 5 variables, Sex, age, caste, parental profession and parental education were associated with all the three achievement levels significantly related to their mathematical performance.
- Creativity was significantly related to mathematical 61 achievement.
- The boys and girls were equally benefited by mathematical learning experience.

19. Prabha Hariharan (2010)

Title: "Effectiveness of Activity – Based – Learning Methodology for Elementary School Education"

The Sarva Shiksha Abhiyan (SSA) has brought about numerous innovative methods to bring about changes in the educational practices. In the state of Tamil Nadu, the elementary schools have started using the methodology called as activity based learning (ABL) through the SSA.

This study investigated the educational experiences and attainment of learning outcomes of students in class IV who have gone through the ABL methodology. Classroom observations showed that a good deal of student time is spent on non learning related activities for a majority of students. Certain social, emotional and psychological aspects of classroom behaviour have been seen to be positive in ABL classes although certain problems were also seen consistently. Students with disabilities who are

included in the regular classes have shown improvements in communication and certain life skills but not in cognitive skills.

Various aspects of the methodology have explored to analyze how the activities in the methodology address the issue of individual differences in learner needs and the cognitive needs of the age group of elementary school. Learning achievements seen to be moderate for basic language and mathematical skills and low for advanced language and mathematical skills. Further the levels of learning outcomes of public school students was found to be significantly lower than that of private school students even at basic levels of skills. A set of recommendations arising out of the study has been presented.

2.4 Conclusion

An overall review of the related studies reveal that various studies have been undertaken to explore the possibilities of improving the status of Mathematics. These studies aim at making a comparison of the different methods, devices, principles and techniques in the teaching of Mathematics, finding out problem areas in the teaching and learning of mathematics, testing the results in terms of student achievement, and bringing out suggestions for remedial measures to be followed in Indian classroom situations.

The findings of the above studies reveal that a scientific attitude, a perspective attitude, and participatory learning by the pupils should be included from the primary stage of the pupils. To gain this, the teachers of mathematics should aim at professional excellence by planning their teaching strategies. This will help them to overcome the pitfalls and hurdles of the curriculum and the existing method of teaching and learning.

Laying proper foundation in mathematics at the elementary level is the vital job of a teacher. The current trend of mathematics education shows a strong need for teacher generated learning activities, learning by doing, discovering and experimenting by the pupils, developing individual, group and whole class work, using the local environment and creating an interesting class- room. The present study is an earnest attempt to find out the effectiveness of activity based teaching strategies in enhancing the level of achievement in mathematics at elementary level. The above review clearly indicates that there is a need for designing activity based teaching strategies with special reference to the knowledge, understanding and application level of educational objectives. Moreover, studies of this type will be of an immense use to improve the quality education in Mathematics.

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