

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

The present chapter deals with the research methodology used for arriving at certain conclusion. It includes research design, population, sample and tools used for the study. This chapter also includes procedure for construction of tools and data collection.

3.2 RESEARCH TYPE

The present research is experimental in nature.

3.3 RESEARCH DESIGN

The experimental study is conducted by employing pre-experimental design.

3.4 POPULATION OF THE STUDY

The population of the study comprised of all the students of class 4, in Anand District of Academic year 2013-14 having GSEB board.

3.5 SAMPLE AND SAMPLING OF THE STUDY

In the present study the sample comprised of class 4 students of the Shree Jalsan High school Jalsan in Anand district of Academic year 2013-14 having GSEB board.

The sample for the present research was selected through convenient sampling method. Selection of students was done by cluster sampling.

3.6 TOOLS OF THE STUDY

- 1) Pre-test:- To know the students' knowledge of Arithmetic.
- 2) Post-test:- After the researcher implemented the programme,
Post-test was administered to test achievement of the students
- 3) Reaction scale:-Reaction scale was administered to study reactions of students towards number game.

3.7 PROCEDURE FOR CONSTRUCTION OF TOOLS

Research tools play a vital role in any worthwhile study, as it is the significant factor in procuring the sound data which in turn helps in arriving at database conclusion about the study in hand. For this research, Achievement Test and Reaction Scale form were used as tools for the purpose of data collection.

Table 3.1- Tools for data collection.

No.	Tools	Purpose
1.	Achievement test (pre-test)	To assess the students' ability to solve mathematical problem.
2.	Achievement test (post- test)	To check the effectiveness of number games to teach Arithmetic at class 4 level.
3.	Reaction scale	To get the response of the students about the program.

Stage 1: The researcher first found out course for Std. IV students. The researcher also talked with teachers and experts then the researcher has made program of number games to teach arithmetic at primary level. This program is for 8 days and each one activity take time of 30 minutes. After making this program, the researcher shown to experts and do modification which is suggested by experts.

Stage 2: The researcher consulted journal, syllabus, and textbook of Std. IV of G.S.E.B. The researcher also consulted teachers and other experts after that the researcher prepared pre-test. After preparing pre-test the researcher has shown it to experts. The researcher in corporate modification suggested by the experts. The pre-test is of 30 minutes and 25 marks; in this test 3 questions are included.

Stage 3: In the third stage, the researcher constructed post-test. After preparing post-test the researcher has shown it to experts. The researcher in corporate modification suggested by the experts. The post-test is of 30 minutes and 25 marks; in this test 3 questions are included.

Stage 4: The researcher has made Reaction Scale. In this 8 statements are included. After preparing Reaction Scale, the researcher has shown it to experts. The researcher

in corporate modification suggested by the experts. The main purpose of the Reaction Scale is to know response of the students about the program.

3.8 RESEARCH PROCEDURE

Table 3.2- Procedure of data collection.

Day & Date	Duration	Purpose	Procedure	Outcome
Day 1.	Pre-test 30 minutes	To assess the students' ability to solve mathematical problem.	Gave pre-test paper to individual students. Gave clear instruction to the students.	Students were able to answers the questions.
Day 2.	Session 1. 30 minutes	To develop ability to multiply two digit number with more speed and accuracy.	The teacher solved some examples of multiplication. Then students were given examples of same method to solve.	Students were able to understand the method of multiplication. Also they developed skills of multiplication of two digit with more speed and accuracy.
	Session 2 30 minutes	To develop ability to multiply two digit number with more speed and accuracy.	The teacher solved some examples of multiplication. Then students were given examples of same method to solve.	Students were able to understand the method of multiplication . Also they developed skills of multiplication of two digit with more speed and accuracy.

Day 3.	Session 3 30 minutes	To develop ability to multiply 11 with two digit number with more speed and accuracy.	The teacher solved some examples of multiplication of 11 with two digits numbers. Then students were given examples of same method to solve	The Students were able to understand the method of multiplication of 11 with two digit numbers. Also they developed skills of multiplication of 11 with two digit numbers.
	Session 4 30 minutes	To develop ability to multiply 11 with any number with more speed and accuracy.	The teacher solved some examples of multiplication of 11 with some numbers. Then students were given examples of same method to solve.	The Students were able to understand the method of multiplication of 11 with any numbers. Also they developed skills of multiplication of 11 with any numbers.
Day 4.	Session 5 30 minutes	To develop ability to multiply 12 with any number with more speed and accuracy.	The teacher solved some examples of multiplication of 12 with some numbers. Then students were given examples of same method to solve	the Students were able to understand the method of multiplication of 12 with any numbers. Also they developed skills of multiplication of 12 with any numbers.

	Session 6 30 minutes	To develop ability to multiply 13 with any number with more speed and accuracy.	The teacher solved some examples of multiplication of 13 with some numbers. Then students were given examples of same method to solve.	the Students were able to understand the method of multiplication of 13 with any numbers. Also they developed skills of multiplication of 13 with any numbers.
Day 5.	Session 7 Post-test 30 minutes	To check the effectiveness of number games to teach arithmetic at primary level.	Gave test papers to individual. Gave clear instruction to the students.	Students were able to give answers.
	Session 8 Reaction Scale 15 minutes		The teacher gave Reaction Scale form to the students. Students gave their views in the form.	Students view about the program were revealed.

3.9 TECHNIQUES OF DATA ANALYSIS

First the researcher collected data and then data analysis was done. To analyze achievement tests the researcher used 't-test'. Reaction scale was analyzed employing χ^2 .

The researcher calculated the scores of the pre-test and post-test. Then employed 't-test'. After that the researcher used chi-square for analysis of Reaction Scale.

3.10 CONCLUSION

This chapter included all main aspects about the research: the method, design, all main components of the research.