# Chapter-3

# Research Procedure

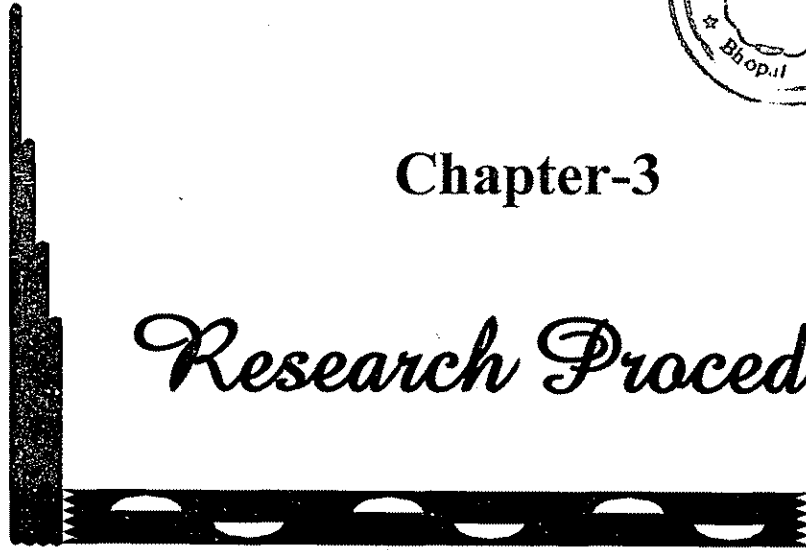# CHAPTER -3

# RESEARCH PROCEDURE

## 3.1  INTRODUCTION

Textbooks play a crucial role in the teaching learning process. They are not a substitute for the teacher; rather they supplement the efforts of the teacher and provide a guideline to him relating to the approach and the depth of the treatment of the subject matter. Therefore a textbook is an asset for the teacher as well as for the learner.

But the writing of a textbook, its planning and presentation is an art. It involves numerous factors and considerations. A bad textbook will always give bad results. At this point a question crops up, how to identify a good textbook ? In the present chapter an attempt has been made to identify the various aspects of textbook analysis. The specific task was to analyze the textbook of science of Class VI prescribed by M.P. Board and published by the M.P. Textbook Corporation, Bhopal.

Research procedure/method used in the research work is described in this chapter. This research is of descriptive type and based on primary data. Research procedure of the study is as follows:

## 3.2  SAMPLE

For the study 15 teachers (from govt and private schools) and 15 parents were selected as sample. Teachers and parents were selected by purposive sampling method. Educated parents were selected for the study. Those parents were selected whom children are studying in Class VI in M.P. Board. Selected teachers were teaching science in Class VI in their respective school. Total 30 samples were selected for this study.

| No.of  Teachers | No. of parents | Total |
|---|---|---|
| 15 | 15 | 30 |

## 3.3    TOOLS

The Selection or development of tools for a particular study depends upon various considerations, such as the objectives of the study, the amount of time available etc. Taking into consideration these factors, the following standardized tools were selected for the task:

I.    *"Quantitative Analysis of Textbooks and Laboratory Manuals"* developed by *William D. Romey*, Syracuse University.

II.   *"Check-List"* according to the guidelines of *NCERT* for the evaluation of General Science Textbook.

## 3.4    DESCRIPTION AND ADMINISTRATION OF THE TOOL

Description and administration of both the tools are as follows:-

### 3.4.1  Quantitative Analysis of Textbooks

This is a standardized test which is developed by William D. Romey, Syracuse University. This tool is mainly used for the quantitative analysis of science textbooks. By this tool text material, figures and diagrams, type of exercise, activities, and chapter summaries are rated and analyzed.

The investigator has taken the science textbook of Class VI prescribed by M.P. Board. For rating and analyzing the text, the investigator selected randomly 10 pages from the textbook.

**Rating The Text:**

(i)   First of all the investigator has randomly selected ten pages from various parts of the book (science for Class VI).

(ii)  Then from each page a block of twenty-five sentences were selected and each sentence was then assigned one of the categories listed below. The block of twenty five sentences was taken from the very same page as far as possible but if the page contained fewer than
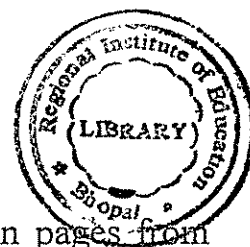
twenty five sentences, the block was completed from the next page. Also the sentences do not include headings, figure captions, summary questions or chapter introductions and each block was begin with new paragraph on the page.

**Rating Categories**

a.  Statements of fact

A statement of fact is defined for our purpose as a simple statement presenting a piece of data or an observation made by someone other than the student. Examples: (i) Red lake is 200 feet deep; (ii) The moon goes through all its phases in twenty-eight days; (iii) A cat eats mice; (iv) when hydrochloric acid is placed on calcite, a reaction takes place in which carbon dioxide is formed; (v) Bees have stingers.

b.  Stated conclusions or generalizations.

A conclusion is defined for our purposes as the author's stated opinion about the meaning of or the relationships between items in a series of facts. Examples; (i) From their physical characteristics we conclude that whales are mammals; (ii) Convection currents in the earth's mantle probably account for the subsidence and uplift a large parts of the earth's crust.

c.  Definitions.

d.  Questions asked but answered immediately by the text.

e.  Questions requiring the student to analyze data.

f.  Statements requiring the student to formulate his own conclusion.

g.  Directions telling the student to perform and analyze some activity. Statements posing problems to be solved by the students.

h.  Questions that are asked to arouse student interest but are not answered immediately by the text.

i. Sentences directing the reader to look at a figure; procedural instructions in activities, sentences not fitting any of the above categories.

j. Rhetorical question.

(iii) The index of student involvement for the text was calculated. Categories i and j have no real bearing on the usefulness of the book in a science course and can thus be eliminated from consideration.

**Rating the figures and diagrams in the text**

(i) Randomly ten figures or diagrams were selected.

(ii) After analyzing each diagram or figure, one of the following categories were assigned to each diagram or figure.

a. Used strictly for illustrative purposes.

b. Requires students to perform some activity or to use data.

c. Illustrates how to set up the apparatus for an activity.

d. Fits none of the categories above.

(iii) The index of student involvement for the figures and diagrams was calculated.
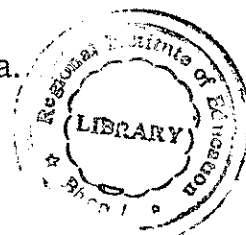
**Rating the exercises at the end of chapters**

(i) Randomly ten questions were selected from the end of ten different chapters.

(ii) Each question was assigned to one of the following categories:

a. Answer can be obtained directly from the text.

b. Definition.

c. Question requires student to apply learnings from the chapter to new situations.

d. Question requires student to solve a problem.

(iii)    The index of student involvement for the question was then derived.

**Determining an activity index for the book**

Randomly ten pages were selected and then the number of proposed activities requires of the students were counted. To get an index number, the number of activities found were divided by the number of pages examined.

**Rating the chapter summaries.**

(i)      The chapter summaries from three different chapters were selected.

(ii)     Two paragraphs of each of the three chapter summaries were read and each sentence was assigned to one of the following categories:

    a.      Repeats the conclusion of the chapters.

    b.      Raises new questions, the answers to which are not available in the text or are subject of current research in science.

(iii)    Then the index of involvement for the summaries was calculated (Appendix –I)

### 3.4.2 'Check-List'

In the check-list physical aspects of the textbook has been divided into four parts- Design, Printing, Get-up and price. Each part has two sub-parts except price (3 parts). Total 36 question are in the check-list on a yes-no scale.

For knowing the suitability of the physical aspect of the textbook, check-list was administered on 15 parents and 15 teachers. Before giving the check-list to teachers and parents some instructions were given to them by the investigator. In instructions it was said that opinion or views given by them must be kept secret and it will be used only for the analysis of the science textbook of Class VI, published by M.P. Textbook Corporation. In

the check-list about the physical aspect of the textbook, investigator recorded observations on those aspects which can be evaluated on yes-no scale (Appendix –II)
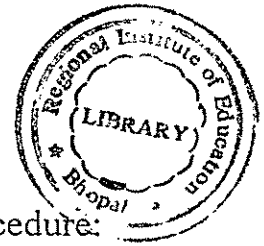
## 3.5 SCORING OF THE DATA

For the scoring researcher follows the following procedure:

### 3.5.1 Scoring of the Quantitative Analysis of Textbooks-

For scoring the text, sentences from the randomly selected pages were categorized into different categories given in description and administration of the tool. The index of student involvement for the text was calculated by the following formula:

$$\text{Index} = \frac{e+f+g+h}{a+b+c+d}$$

For scoring the figures and diagrams in the text, overall index was calculated by the following formula:

$$\text{Index} = \frac{b}{a}$$

Where a and b are the categories of figures and diagrams given in description and administration of the tool.

For scoring the exercise given at the end of text sections and chapters, index was calculated by the following formula:

$$\text{Index} = \frac{c+d}{a+b}$$

a,b,c, and d are the categories of exercise which is given in description and administration of the tool.

For scoring an activity index for the book following formula is used:

$$\text{Index} = \frac{\text{Number of activities}}{\text{Number of pages}}$$

For Scoring chapter summary index of involvement for the summaries was calculated by the following formula: $\dfrac{b}{a}$

### 3.5.2 Scoring of Check-list

The investigator has given 1 marks for yes and 0 marks for no. Analysis related to physical aspect was done on the basis of the answers given by parents and teachers in terms of yes or no.

## 3.6 STATISTICAL PROCEDURE

For the first tool Quantitative Analysis of Textbooks Investigator didn't use any statistics. Interpretation was done on the basis of calculated index.

Under statistical procedure for knowing the physical aspects (Design, Printing, Get-up and Price) of the textbook mean, standard deviation, 't'- test and 'F'- test was taken out.