

Chapter - 3

Research Methodology

3.1 Introduction

Research is a voyage of discovery, a movement from known to the unknown that comprehends defining of problem, formulating a hypothesis, collecting, organizing and analyzing of data and reaching a conclusion. It is because of research that existing knowledge develops, as well as, new knowledge is created.

The methodology is the science of methods. It is a bunch of systematic steps and techniques needed for the accomplishment of an activity. The research methodology is a way that depicts the knowledge of how to do research. It confers the skills that help a researcher to investigate a research problem every efficiently and scientifically without wasting time. Research methodology helps a researcher to find out the hidden truth following the techniques of collection, organization, analysis, and evaluation of data. Ignorance of methodology not only can delay the research activity but also can confuse the researcher to reach his goal (Kothari; Ohdedar).

3.2 General Objectives

The general objectives of the study are to investigate the overall present status of the school library system in West Bengal and as well as to find out the district-wise scenario of secondary and higher secondary schools libraries in West Bengal. The assessment of both investigations allows the researcher to formulate a standard for school libraries in West Bengal.

3.3 Specific Objectives

The specific objectives of this study are given below:

1. To investigate the status of the infrastructure, procurement policy, organization and service rendered by the school libraries in West Bengal.
2. To investigate the district-wise status of school libraries in West Bengal.
3. To find out the barriers that effect in the smooth running of school libraries in West Bengal.
4. To design a standard for the school library in West Bengal.

3.4 Methodology Adopted

The following steps have been adopted to conduct the present study (Figure 3.1).

3.4.1 Step 1: Review of Literature

An endeavor towards a comprehensive literature search had been carried out at the initial stage, to identify and locate available information, relevant and pertinent to the problem of this research work, scattered in various information sources like journal articles, conference papers, theses and dissertations, research reports, books, electronic information sources, even in Internet resources. To get access to such sources, document surrogates like bibliographies, indexes, library catalogues, booksellers' catalogues, and guide books had been used. However, a major portion of data had been collected from pioneer databases, like LISA, ILSA, ISA, Dissertation Abstracts International, Indian Dissertation Abstracts, Bibliography of Doctoral Dissertations, University News, and IASLIC Newsletter. Besides that, the standard and policies related to school libraries of different countries are also being consulted. The data collected in such a manner had been analyzed, classified and represented under suitable headings, keeping consistency with the intention of the research work.

3.4.2 Step 2: Experimental Design

The data collection process undergoes the following steps mentioned below (Figure 3.1):

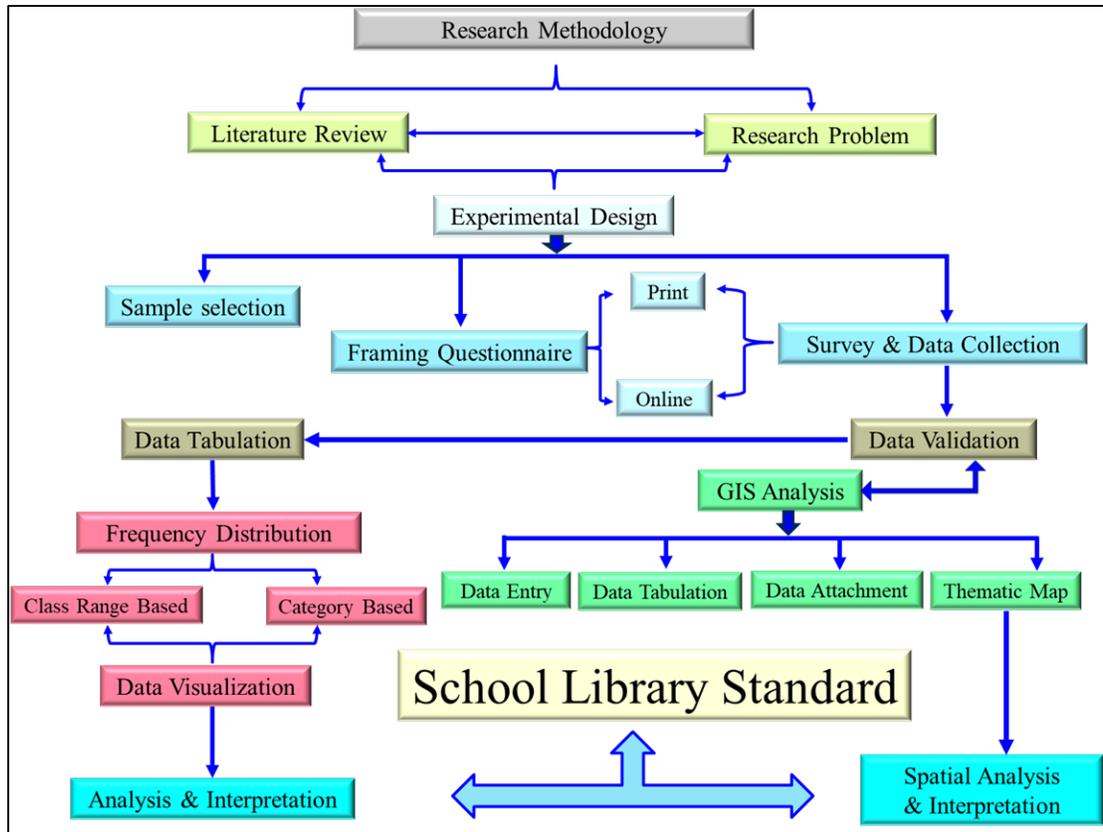


Figure 3.1 Flow chart of the research methodology adopted for this research.

3.4.2.1 Selection of Sample

The present study attempts to design a standard for the school libraries in West Bengal and to fulfill the intension the existing conditions of school libraries in West Bengal have been analyzed first. With regard to the population of this study, all the schools of West Bengal should come under consideration. But it was not convenient and possible to cover such a large population for the study. Total 400 schools from 19 districts have been taken as the sample. Twenty schools from each district are being considered (Figure 3.2). Table 3.1 showing the list of districts considered for the survey of the present study. The researcher used the nomenclature of the district as per the Census of India. As the district, Darjiling covers both hilly region and plain land, twenty schools from both region, i.e., forty schools have been surveyed (Table 3.1). The schools have been selected through random sampling. Only Secondary and Higher Secondary Govt. Aided schools are being considered for the study. The data was collected in 2013. Then

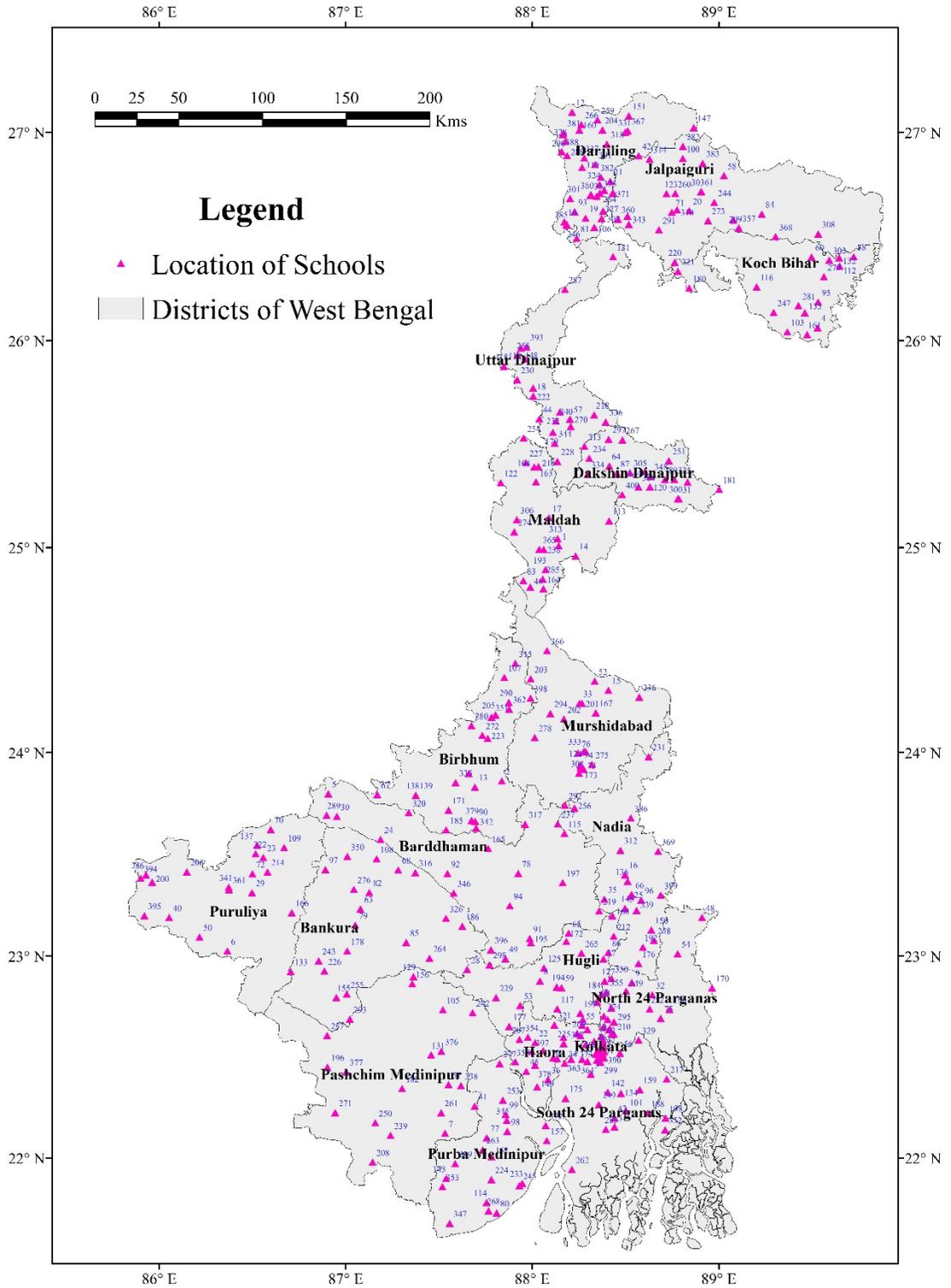


Figure 3.2 Location of the schools taken as samples for the present research.

Table 3.1 Nomenclature of the districts and the number of schools surveyed from each district.

Sl. No.	Name of the District (According to Census of India) (http://www.dataforall.org/)	Name of the District (According to West Bengal Official Website) (https://wb.gov.in)	No. of schools surveyed
1	Bankura	Bankura	20
2	Barddhaman	Burdwan	20
3	Birbhum	Birbhum	20
4	Koch Bihar	Cooch Bihar	20
5	Dakshin Dinajpur	Dakshin Dinajpur	20
6	Darjiling	Darjeeling	40
7	Hugli	Hooghly	20
8	Haora	Howrah	20
9	Jalpaiguri	Jalpaiguri	20
10	Kolkata	Kolkata	20
11	Maldah	Malda	20
12	Murshidabad	Murshidabad	20
13	Nadia	Nadia	20
14	North 24 Parganas	North 24 Parganas	20
15	Pachim Medinipur	Pachim Medinipur	20
16	Purba Medinipur	Purba Medinipur	20
17	Puruliya	Purulia	20
18	South 24 Parganas	South 24 Parganas	20
19	Uttar Dinajpur	Uttar Dinajpur	20

West Bengal was divided into 19 districts. But in 25th June 2014, Alipurduar was carved out from Jalpaiguri, on 4th April 2017 Jhargram was carved out from Paschim Medinipur, 14th February 2017 Kalimpong was carved out from Darjiling and Barddhaman was divided in Purba Barddhaman and Paschim Barddhaman in 2017. In this study, the survey was done on 19 districts (Figure 3.2 and Table 3.1).

3.4.2.2 Designing of Questionnaire

A structured questionnaire comprises both open and closed questions, was framed to collect the required data. Data were collected from the selected sample using a combination of both questionnaire and interview. Along with the print questionnaire (Appendix - 1), an online questionnaire was also framed with the help of Google Form for the convenience of this study. The link of the Google Form is '<https://goo.gl/8oqnKx>'.

3.4.2.3 Survey and Data Collection

The questionnaires were sent to the librarians/ library-in-charge of school libraries covering 19 districts in West Bengal. Total 556 online and 52 print questionnaires were sent. Out of 608 questionnaires, 413 responses have come. As it was previously decided to survey 20 schools from each district, except Darjiling (20 schools from plain land and 20 schools from the hilly area), 400 schools have been taken (Table 1 in Appendix - 2). And the response of 400 school librarians is taken into account for the fulfillment of the study (Figure 3.1).

3.4.3 Step 3: Validation of Data

The validation of the primary data, i.e., data collected from the survey was being done by randomly cross-checking the data over the telephone. Total 60 schools (15%), three schools from each district, except Darjiling, where total six schools (3 schools from plain land and 3 schools from the hilly area), were taken randomly for the purpose (Figure 3.1).

3.4.4 Step 4: Tabulation and Visualization of Data

After the validation, the raw data was being tabulated using Microsoft Excel spreadsheet. Tabulation is considered as the first stage before the data is used for visualization and interpretation. In this step, the frequency distribution was performed in order to record the number of observations within a given interval for a certain

attribute. The interval size was fixed after thoroughly observing the data being analyzed and also on the basis of the goals of the analyst and central objective of the research. Data gathering was done in such a way that the class intervals used during the frequency distribution must not overlap and every class must not leave blank or zero frequency. Four different types of graphs were plotted e.g. histogram, frequency curve, bar graph, and pie graph to visualize the data (Figure 3.1).

3.4.5 Step 6: Data Analysis

In the last step, on the basis of the tabulated dataset as well as the corresponding cartographic representation, the scenario of the school library status have been analyzed and interpreted accordingly (Figure 3.1).

3.4.6 GIS Analysis

Geographic Information System or GIS is defined as a computer-based system framework which is capable of capturing, storing, analyzing and visualizing geospatial data and information in order to support decision making. In the early-mid 1960s, GIS was considered essentially as a mere tool for spatial analysis. However, with the passage of time, GIS has evolved drastically from being a simple tool of data management and thematic mapping into a sophisticated spatial analysis and modeling technology and, very recently, into geographic information science and technology (GIS&T) (Bishop and Mandel). The basic principle of GIS is to handle both the spatial and attribute data that can interpret the geographical phenomenon. Spatial data explains the location and shape of the geographical features, whereas attribute data deals with the characteristics of the spatial data. According to Konecny, a GIS can provide numerous benefits which are as follows (Konecny):

- geospatial data can be managed in a better way using a standard format
- datasets can be easily revised and updated.
- geospatial data and information become easier to search, analyze and visualize.
- several value-added products are the resultant output
- geospatial data can be shared and exchanged

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- overall productivity is improved without compromising the time and cost
- Effective for problem-solving and decision making

Now a days various subjects such as Geography, Geology, Botany, Sociology and many others are using GIS tool for research purpose because of its capability not only as a displaying tool but also allowing user to execute spatial analyses and also to examine the Spatio-temporal trend for the prediction of future scenarios (Michalec and Welsh; DeCandido and GraceAnne). In the last decade, the application of GIS for Library Science related research is steadily increasing because it allows the user to explore new types of information in a scientific as well as a straight forward way. The emergence of GIS in Library and Information Science (LIS) related research is due to its multiplicity of application which includes preparations of thematic maps to convey better information than tables and text alone and also allowing users to modeling spatial variations of library-related aspects and services (Xia, “Using GIS to Measure In-Library Book-Use Behavior”; Xia, “Locating Library Items by GIS Technology”). Both the GIS and LIS shares common aspects of information administration and metadata organization (cataloguing system), archival of information and management (data gathering and collection), data access and data distribution, and finally data preservations in the form of information systems (Boxall). Hence, GIS can be considered as a potential tool for improving library services (Clark; Dorman).

In this present research, an attempt has been made to apply GIS tool for identifying the district-wise variations of different school library-related aspects and also to explore the findings for designing and development of West Bengal school library standard (Figure 3.1). The GIS software used here is ARC GIS 10.1 and the District map was procured from Census of India 2011. The GIS analysis in this research has been divided into four major parts. The first part, the data entry, is also considered as the data input and processing stage.

In this stage, first of all, the West Bengal district map was collected and georeferenced and then manual digitization was performed to extract the district boundaries. After

that topological editing was done to prepare the GIS-ready version of the West Bengal district boundaries (Figure 3.1).

The second stage is considered as the data tabulation and data management where the validated datasets as collected from the questionnaire survey were archived and updated as per the attributes of the already generated vector file of the West Bengal district boundary (Figure 3.1).

The third stage was dealt with the data attachment and spatial analysis function. In this stage, the updated archived datasets from the previous step were attached with the district vector file using the common attributes as defined respectively in both the attribute tables. Again, in this stage, query assessment, a preliminary classification of the attached datasets and few overlay operations of various attributes of school libraries considered herewith in this research were performed to understand the inherent variabilities that need to be mapped using GIS (Figure 3.1).

In the final stage, map projection was defined and then the thematic maps attributed to different library aspects with different graphical representations were prepared with the help of the symbology function embedded in the GIS environment. The map layout tool was used for final map production (Figure 3.1).