CHAPTER – 4

METHODOLOGY

After review of related literature the next step of a research study is the methodology. In this regard review of related literature helps the investigator to form groundwork for the research and to take into account the methods and the results or findings of the other research works. This also provides guidance to assess whether the methodology is appropriate and whether the results seem valid. Reviewing literature of other fields related to the main topic is very important since very often research in the social sciences is multidisciplinary, i.e. knowledge gets generated from many disciplines and needs to be integrated.

Research requires clarity of concepts, a scientific approach to obtain answers, a careful and exhaustive investigation of a phenomenon or events with an objective of advancing knowledge. It can be done through collection of empirically verifiable facts. Research involves observation, experimentation generalization and verification. It may also lead to some prediction of events that can have a cause and effect relationship with some other phenomenon or events.

Research may be defined as “the systematic and objective analysis and recording of controlled observations that may lead to the development of generalizations, principles or theories, resulting in prediction and possibly ultimate control of events.”

A research study must be reliable; it is so when the findings are repeatable and it is valid when its conclusions are true. A good research depends on the methodology – (a) What the investigator wants to find out and
(b) how to do it. Therefore methodology can be termed as a procedure that is to be 'designed' and proper methods and techniques to be adopted in order to study a problem or a phenomenon. Methodology is logic of scientific investigation. Methodology means "description, explanation and justification of methods to obtain valid information to understand a phenomenon" provides a blueprint of the whole study and it limits the boundaries of research.

There are different types of research methods—historical, descriptive, experimental, case-study method, etc.

**Historical Research**

History is a meaningful record of human achievements. It is not merely a list of chronological events but a truthful integrated account of the relationships between persons, events, times, and places. Historically interpreting the past events, for the purpose of standing the past, and try to study the present in the light of past events and developments. However, the historian cannot always generalize on the basis of past events because many of them were unplanned.

**Experimental Research**

Experimental research describes 'what will be' when certain variables are carefully controlled or manipulated. The focus is on variable relationships. Deliberate manipulation is always a part of the experimental method.

**Descriptive Research**

Descriptive research "describes and interprets what is. It is concerned with conditions or relationships that exist, Opinions that are held, processes
that are going on, effects that are evident, or trends that are developing. It enables a researcher to get better understanding of a topic. The main objective of descriptive research is to describe events, phenomena and situations. Since description is made on the basis of scientific observation, it is expected to be more accurate and precise. It may be more analytic as it focuses on particular variables. It operates on the basis of hypotheses and helps to obtain deductions. This research method aims to gather data without any manipulation of the research context. It is non-intrusive and deals with naturally occurring phenomena.

Descriptive survey method emphasizes on “gathering information” about a large number of people by interviewing a few of them”. The importance of descriptive survey research depends upon sampling and the variables and procedures are described as accurately and completely as possible.

Descriptive survey research may focus on individual subjects and go into great depth and detail in describing them. Individual variation is also studied. This approach is called ‘Case study’. Today case studies are considered to be very valid forms of enquiry in descriptive studies. Case study is an intensive study of an individual, a single group, incident or community. Case-study methods involve an in-depth, longitudinal examination of a single instance, individual or event. It provides a scientific way of looking at a particular individual or event, collecting data, analyzing the information and reporting the results.

The present study undertaken aimed at understanding the role of women in environment protection with reference to Kamrup District. For this the descriptive survey method had been followed with few case studies involving particular individuals and organizations to achieve the objectives taken up for the study.
Design of the Study

The term 'design' means 'drawing an outline' or planning the details of the study. It is a plan outlining how information is to be gathered for an assessment or evaluation that includes identifying the data gathering methods, the instruments to be used / created, how the instruments will be administered and how the information will be organized and analysed.

Research design is “a master plan specifying the methods and procedures for collecting and analyzing the needed information”. Martin Bulner defined “research design is the specification of the problem, conceptual definitions derivation of hypotheses to test and defining of population to be studied.” Research design, in short, provides the blue print of the study taken up. To design a study the steps are first of all study (topic) is selected which has social relevance. The purpose of study should dictate what and who to study. (b) Once the problem is selected, it is conceptualized. It means the refinement and specification of abstract concepts. (c) The next step is to break the main concept into sub-concepts by establishing certain measurable indicators. The present study focused on the role of women in the protection of environment. Here the different aspects studied were how human beings particularly women depend on the environment for their everyday needs and what role they can play in managing and protecting the environment. The study also pointed out the importance of education in enhancing the skills and techniques in the protection of environment.

Sample

Sample is a portion of population which is representative of a large population having the same characteristics of the population from which it is
drawn. Since a large population cannot be studied in its entirety for reasons of size, cost, time or inaccessibility sample is taken to reduce these difficulties. In the study the sample had been classified as:

Table – 2
Areawise distribution of sample in the Kamrup District

<table>
<thead>
<tr>
<th>Kamrup (Rural)</th>
<th>Kamrup (Metro)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
<td>No. of sample</td>
</tr>
<tr>
<td>Singra</td>
<td>30</td>
</tr>
<tr>
<td>Boko</td>
<td>40</td>
</tr>
<tr>
<td>Goroimari</td>
<td>30</td>
</tr>
<tr>
<td>Chhaygaon</td>
<td>40</td>
</tr>
<tr>
<td>Kukurmara</td>
<td>30</td>
</tr>
<tr>
<td>Vijaynagar</td>
<td>30</td>
</tr>
<tr>
<td>Rangia</td>
<td>50</td>
</tr>
<tr>
<td>Hajo</td>
<td>30</td>
</tr>
<tr>
<td>Sualkuchi</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
</tr>
</tbody>
</table>

Stratified Random Sample

When a population is divided into a number of strata or sub-groups and a sample is drawn from each stratum and the sub-samples make up the final sample of the study. The method involving division of the sample is based on one or more criteria like age, sex, occupation, educational level etc. Advantages of stratified random sample may be –

(1) Dividing the population into district, independent strata can enable researchers to draw inferences about specific sub-groups that may be lost in a more generalized sample.

(2) Utilizing a stratified sampling method may lead to more efficient statistical estimates if each stratum is proportional to the group's size in the population.
(3) Using a stratified sampling data may be more readily available than aggregating data.

(4) Since each stratum is treated as an independent population, different sampling approaches can be applied to different strata, enabling the researcher to use the approach best suited for each identified subgroup within the population.

For the study a stratified random sample had been taken. Only women of 18-60 years of age were taken and the sample was stratified into different categories. The stratification of the sample had been done as –

**Variables Undertaken for the Study**

For any research work, choosing 'variables' is very crucial, and that is common to a number of individuals, groups, events, objects etc. It may be an object, events, idea, feeling time period or any other type of category that the investigator is trying to measure. Variables can be independent and dependent. Independent variable “is one whose change results in the change in another variable”. It can be manipulated by the investigator. For example, age can be taken as an independent variable.
A dependent variable is something that depends on other factors. An independent variable can cause a change in the dependent variable but not vice versa.

In the present study some of the independent variables taken were age, income, educational qualification of the respondents and the place they lived in – urban, rural, their awareness and 'views' etc. on the environment and its protection will depend on the independent variables. Hence they were dependent variables. The dependent variables were those that the investigator tried to analyze and explain.

**Tools**

The tools used in the study were –

1. Self-structured questionnaire for the literate tribal and non tribal women of both the rural and metro areas of Kamrup district.
2. Interview schedule to support the questionnaire to reach the objectives.
3. Informal group discussions with the women of the different categories.
4. Observations made in natural settings in order to obtain data.
5. Case Study proforma.

**Need and Importance of Questionnaire**

A questionnaire is a research instrument consisting of a series of questions either sent by mail or delivered by hand at home, school, office or in any other setting for the purpose of gathering information from respondents. Questionnaire is often designed for statistical analysis of the responses. The questionnaire was invented by Sir Francis Galton. Questionnaires have certain advantages as they are cheap, and can be administered on a large sample.
Questions must be structured without any bias and the wording should be kept simple so that the meaning of each word is clear. For the study a questionnaire was prepared consisting of unbiased questions in simple language and data was collected through it from the literate tribal and non-tribal sample of rural and metro Kamrup district. The questionnaire consisted of 50 questions both closed and open type.

**Interview**

"Interview schedule" means a set of structured questions to which answers of the respondents are recorded. Interview schedule is for both literate and illiterate sample. Like the questionnaires, interview schedules should have questions which are clear, short and relevant to the topic. Negative or biased questions must be avoided and the questions must be structured in such a way that the respondents are willing to answer. For the study the investigator prepared suitable questions in order to obtain the relevant data to meet the objectives of the study. The responses were recorded for objective analysis and interpretation.

**Observation**

"Observation" means watching and noting of phenomena as they occur with regard to the topic of study. According to Lindzey Gardner, observation is "selection, provocation, recording encoding of that set of behaviours and settings concerning organisms 'in situ' (Naturalistic settings or familiar surroundings) which are consistent with empirical aims." Here, 'selection' means focus in observation, 'provocation/ means that the investigator may make subtle changes in natural settings to increase clarity, 'recording' means that the observed phenomena are recorded for data analysis and 'encoding' involves simplification of records. Observation can be both participant and non participant. In the present study the investigator had made non-participant observation.
Informal Group Discussion

It is a way of collecting data which essentially involves engaging a small number of people in informal group discussion(s), ‘focused’ around a particular topic or set of issues. The discussion is usually based on a series of questions and the researcher generally acts as a ‘moderator’ (or facilitator) for the group posing the questions, keeping the discussion flowing and encouraging the people to participate fully. The moderator facilitates group discussions, actively encouraging group members to interact with each other. In the present study the investigator used informal group discussions to encourage the women to express their views and opinions regarding their dependence on the environment for their various uses and what role they played in protecting it which were very helpful to achieve the objectives of the study.

Case Study

A case study proforma was prepared to extract personal details of individuals and organizations. Variables like age, educational qualifications, area that the respondent lived in (rural, metro) were used and the questions were related to the different aspects of environment protection which helped to achieve the objectives of the study. The data for the case studies of individuals and couples were collected in the natural setting of their homes and for the organizations the data collection was done in the offices.

Data Collection

When the sample has been specified, the next step is data collection. “Data collection” is a term used to describe a process of preparing and collecting data. The purpose of data collection is to obtain information to keep on record, to make decisions about important issues, to pass information to others. Primarily data is collected to provide information regarding a specific topic.
Primary Source of Data

Primary source of data is original ‘records’ which are created at the time an event occurs. An ‘event’ is may be a phenomenon or procedure which has taken place or is still taking place, in a particular time and place. Primary sources are the ‘raw material”, “first hand information” or “original thinking”. Primary sources include relevant records of the event eyewitness accounts, oral histories etc. Primary sources may be collected in written form or non-written form. For the study the primary data was collected through questionnaires, interview, observation, informal group discussions and case study proforma.

Secondary Sources

Secondary sources are accounts of events which were created well after the event occurred. Secondary sources are based on primary sources. Scholars consult secondary sources to determine what others have already reported about a particular research topic. In one’s own research, secondary sources are often compared with one another, for example, to show how many others agreed or disagreed, on a particular point, such as the investigator’s own line of thinking. Secondary sources can be articles in newspapers, or popular magazines, book or movies reviews or articles / reports in scholarly journals that address someone else’s original research. Secondary sources are “second-hand information”, analogous to human conversation.

In the present study the investigator had collected data through both primary and secondary sources to reach the objectives of the study. Different types of secondary sources like books, reports, articles etc. were reviewed to facilitate data collection.
**Statistical Application**

Statistics is a science of making effective use of numerical data relating to groups of individuals or experiments. It deals with not only the collection, analysis and interpretation of data but, sometimes, with also the planning of collection of data, in terms of the design of surveys and experiments. Statistics improve the quality of data, make the presentation visually appealing and also provides tools for prediction and forecasting using data.

Statistical methods can be used to summarize or describe a collection of data, this is called descriptive statistics. This is useful in research. Different types of statistical methods may be applied, the most common being the measures of central tendency (mean, median), measures of dispersion, measures of association or correlation etc. In the present study, mean of different numerical values were computed, together with graphical representation like pie diagram and histogram wherever necessary.

**Analysis and Interpretation**

Data analysis is breaking up the data without constituent parts in order to obtain answers to the questions relevant to the study. The usual analysis approach is to begin with descriptive analysis, to explore the data. The investigator tries to address specific questions to interpret the objectives and support the hypotheses.

The major objectives of analysis of data are –

1. To major evaluate and enhance data quality.
2. To describe the sample and make comparison wherever necessary.
3. To estimate measures strength of associations or effect.
To examine the effects of other relevant factors.

To evaluate impact or importance.

For the study, after the data was collected it was important that the researcher (a) checked out the questionnaires / schedules, (b) sorted out and reduced information to manageable proportions, (c) arranged the data in tabular form, (d) analyzed the data to bring out their salient features, (e) interpreted the obtained result by writing statements to support the hypothesis and (f) presented the report.

First of all, it is important that the data obtained was properly processed for analysis. Information sometimes may vary; so that investigator had to check and edit. All data collection activities must be monitored to ensure adherence to the data collection protocol. Coding of data meant translating answers to numerical values so that statistical applications could be made. After editing, the data were put together, generally, in tabular form. Tables were useful as they (1) presented an overall view of the findings in a simpler way, (2) they identified the trends and (3) they showed relationships between different parts.

After analysis, interpretation of data followed. Interpretation showed how good the data were in order to make the objectives and hypothesis very clear. Through interpretation, results of the data could be compared.