CHAPTER III

RESEARCH METHODOLOGY

In this chapter, methodology adopted for the study has been discussed in detail. Methodology is the procedure or technique adopted in a research study. The methodology occupies a very important position in research. It lays out the way that formal research is to be carried out and outline the detailed description of the research variables and procedure. In an investigation requiring use of the quantitative method, statements should be made of the number of kinds of subject used, the instruments employed and other kind of information.

Methodology of research refers to the plan of action to examine the research problem from various possible angles, so that objectives of the study could be accomplished. The meaning of methodology is the set of methods used in a particular area of activity. It may be understood as a science of study how the research is undertaken based on logically derived empirical evidences from the environment.

The prime necessity of the research is not only to follow all the steps of research methods or techniques but also to consider its methodology carefully. Thus the research methodology includes research design and statistical design. The present chapter has given the resume to either proof or disproof the hypotheses framed, the sample selected the details of the tools chosen for the investigation and the procedure followed for the study.
In order to take any problem, proper methods should be selected in advance. The decision about the method depends on the nature of the problem selected and the kind of data necessary for its solution (Sukhla, 1960).

The methodology part of the present study consists of the following headings:

1. Statement of the Problem.
2. Objectives of the Study
3. Operational Definitions.
4. Variables of the Study.
5. Statement of Hypotheses.
7. Tools used for the study.
8. Collection of Data
9. Statistical Techniques used to analyze the data.

3.1: STATEMENT OF THE PROBLEM

The problem undertaken for research is-----

A Study of Adolescents of Kamrup Districts of Assam on the effects of Internet Use on their Academic Achievement
3.2: OBJECTIVES OF THE STUDY

The objectives of the study are as follows-

(a) To find out the frequency of internet usage by the adolescents,

(b) To find out the correlation of internet usage and academic achievement of those adolescents,

(c) To find out the correlation of internet usage and anxiety level of the adolescents,

(d) To identify the gender differences in internet usage amongst adolescents,

(e) To find out the academic score differences among adolescents of Kamrup Districts of Assam.

3.3: OPERATIONAL DEFINITIONS:

The methodology is never complete without determining the definitions of the Concepts involved in the study as they operate in the total research framework.
1. Academic Achievement:

According to Cosmo Dictionary of Education, “Achievement is a performance in school or college on standardized series of education tests. The term is used more generally to describe performance in the subjects of the curriculum”.

Academic achievement can be defined as excellence in all academic disciplines, in class as well as extracurricular activities. It includes excellence in sporting, behaviour, confidence, communication skills, punctuality, assertiveness, arts, culture, and the like.

Based on past literature, there were numerous definitions of academic achievement. Generally speaking academic achievement was defined as “a student’s academic performance in school” (Chen 2007).

In the current research, Academic Achievement is defined as the scores obtained by male and female adolescents of classes XI and XII of Arts, Science and Commerce Stream in all the subjects obtained by them in previous final examination.

2. Socio-Economic Status

Status is a term used to designate the comparative amount of prestige difference or respect accorded to persons who have been assigned different roles in a group or community. In order to indicate the influence of present education, occupation and
income on the immediate welfare of creative people, an analysis of the parental sources of livelihood is made in terms of--

(a) Educational background of the parent/guardian.

(b) Occupational status.

(c) Income of the parent/Guardian.

Hence, socio-economic status is the status of the parents as determined by the three accepted factor namely-

Educational background of the parent/guardian: It is the position one occupies in society in terms of the educational qualification.

Occupational status: It is the position one occupies in society in terms of the nature of job he is employed.

Income status: It is the position one occupies in the society by virtue of his income.

The total score on these three areas determines the socio-economic status of parents of secondary School students. In the present study socio-economic status of the students are defined by the scores gained by the student through the composite scores received by them according to the parent’s income, education and occupation.
3.4 VARIABLES OF THE STUDY:

The variables considered for the present study are as follows-

**Dependent Variable:**

1. *Academic Achievement*

**Independent Variable:**

1. *Sex*
2. *Type of Family*
3. *Size of Family*
4. *Internet Use*
5. *Anxiety*

1. **Sex:**

   It has been included in order to find out how for girls and boys differ in their academic achievement whether sex is significantly relates towards their academic achievement, thus sex was considered as one of the background variable.
2. **Type of Family:**

Type of family refers to

- **Nuclear Family:** It is a small family consists of parents and only their children.
- **Joint Family:** It is a large family, which consists of parents, grandparents, children’s, aunts and uncles.

In the present study students coming from nuclear and joint families were included to examine the effect of type of family on the academic achievement of students.

3. **Size of Family:**

In this study size of family refers to number of persons living in the family depending upon the number of persons the size of the family has been categorized under three headings:

1. **Small Family:** 2-4 members
2. **Medium Family:** 5-6 members
3. **Large Family:** Above 7 members

In the present study students belonging to small, medium and large size family were included to examine the effect of size of family on the academic achievement of students.
4. **Internet Use:**

Here internet use has been used to find out the effects of internet use on the academic achievement of the adolescents. Internet use is gaining its popularity amongst every individual starting from school going student to an adult for various purposes. Adolescents are found to be more prone to internet usage starting from gathering information for academics to social networking and other purposes.

5. **Anxiety:**

Anxiety is a feeling present in every individual. Anxiety is a normal part of the adolescent and teen years as these are some of the most stressful times in a person’s life. Some anxieties are normal reactions to stressful situations. It helps individuals to deal with tricky situation and maintain focus on an important task. Here anxiety has been used as a variable to find out its relation with internet use.

3.5: **STATEMENT OF HYPOTHESES:**

Based on the above issues raised and assumptions made, research hypotheses were formulated, but for the purpose of testing, they were converted to null form. The hypotheses are stated in null form are opened for verification. Keeping various variables involved in the study the following hypotheses were formulated in the null form. The present study attempts to test the following hypotheses:

The hypotheses under this study are as follows-
(i) There is no significant difference among the adolescent boys and girls in Kamrup rural areas in the usage of internet.

(ii) There is no significant difference among the adolescent boys and girls in Kamrup metro areas in the usage of internet.

(iii) There is no significant difference of academic scores among the adolescent boys and girls in Kamrup rural area.

(iv) There is no significant difference of academic scores among the adolescent boys and girls in Kamrup metro area.

(v) There is no significant difference of anxiety scores among the adolescent boys and girls in Kamrup rural area.

(vi) There is no significant difference of anxiety scores among the adolescent boys and girls in Kamrup metro area.
3.6: SAMPLING PROCEDURE:

The researcher used the simple random sampling method for drawing the sample. This is a technique designed to ensure the representative sample and avoid bias by the use of random selection within each subgroups. The population comprises of the tribals of secondary schools students from Kamrup Districts. A sample of 600 adolescent students was chosen from Government and Private schools giving representation to sex.

The sample selection on type of institution wise is presented in Table-3.1 and 3.2 and Fig.3.1 and 3.2

Table 3.1: Table depicting the number of students selected from Private Schools of Kamrup Districts-

<table>
<thead>
<tr>
<th>SERIAL NO</th>
<th>TYPE OF INSTITUTION</th>
<th>MALE</th>
<th>FEMALE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PRIVATE SCHOOL</td>
<td>240</td>
<td>240</td>
<td>480</td>
</tr>
<tr>
<td>2</td>
<td>GOVERNMENT SCHOOL</td>
<td>60</td>
<td>60</td>
<td>120</td>
</tr>
</tbody>
</table>
Table 3.2: Table depicting the number of students selected as a sample from Urban and Rural areas of Kamrup Districts-

<table>
<thead>
<tr>
<th>SL NO.</th>
<th>SEX</th>
<th>MALE ADOLESCENTS</th>
<th>FEMALE ADOLESCENTS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>KAMRUP METRO</td>
<td>150</td>
<td>150</td>
<td>300</td>
</tr>
<tr>
<td>2</td>
<td>KAMRUP RURAL</td>
<td>150</td>
<td>150</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>150</td>
<td>150</td>
<td>300</td>
</tr>
</tbody>
</table>
Fig 3.1: Bar diagram showing the number of students selected as a sample from Government and Private schools of Kamrup Districts
Fig 3.2: Bar diagram showing the number of students selected as a sample from Urban and Rural schools of Kamrup Districts
3.7: TOOLS USED FOR THE STUDY:

For the collection of research data, the following tools were used-

(a) Sinha’s Comprehensive Anxiety Test

(b) Internet Use Questionnaire

(c) Cumulative Academic Score.

3.8: COLLECTION OF DATA:

The data was collected by the researcher herself by personally visiting the schools. The tools were administered on XI and XII standard students under normal conditions. The students have been told to respond to the items of the questionnaires freely and frankly. The students included in the sample were told to furnish the details required from them also to give the information on their Socio Economic Status and other areas along with personal proforma.

3.9: Statistical Techniques used to analyze the data-

<table>
<thead>
<tr>
<th>SL NO</th>
<th>Statistical Techniques Used</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>t test Analysis</td>
<td>To examine the significant differences between groups.</td>
</tr>
<tr>
<td>2</td>
<td>Correlation</td>
<td>To find out significant relationship between variables</td>
</tr>
</tbody>
</table>
RESEARCH DESIGN

A research design may be regarded as the blueprint of the detailed procedures of testing the hypotheses and analysing the obtained data. It is the detailed plan of the investigation. Research design helps the researcher in testing the hypotheses by reaching valid and objective conclusions regarding the relationship between independent and dependent variables. Research Methodology aims at solving the research problem scientifically.

The researcher is expected to know which of the research methods are relevant and which are not. It has many dimensions, but also the logic behind the use of particular research method. Research Methodology explains why a research problem has been undertaken for investigation, why the hypothesis has been formulated, why a particular research design has been selected, why a particular psychological test has been selected for investigation, why a statistical technique has been used in the analysis of data and why a particular conclusion has been drawn.

Purpose of Research design:

1. A research design helps the investigator to obtain answers to research problem and issues involved in the research since it is the outline of entire research process.
2. Design also tells us how to collect data, what observation are to be carry out, how to make them how to analyze the data.

3. Design also guides investigator about statistical techniques to be used for analysis.

4. Design also guides to control certain variables in experimental research.

   Thus, design guides the investigator to, carry out research step by step in an efficient way. The design section is said to be compete/adequate if investigator could carry out his research by following the steps described in design.

   Present investigation is based on ex post facto research design. Ex post facto is a Latin word that literally means something that occurs after the fact. It is a type of descriptive research since it describes conditions that already exist. It is a form of investigation in which researcher has no direct control on independent variables as its expression has already occurred or because they are essentially non-manipulable. The investigators attempt to trace an effect which has already caused to its probable cause. The effect becomes the dependent variable and the probable cause becomes the independent variable. Here it was planned to study the adolescents of Kamrup Districts of Assam on the effects of internet use on their Academic Achievement.
Research methodology has many dimensions and research design and methods constitute a part of the research methodology. The scope of research methodology is wider than that of the research methods. The research methodology involves not only the research methods but also the logic behind the methods used in the research work. It explains why a particular method or statistical technique is used in the research work. It assists in evaluating the results also. (Kothari, 1990).
Ex Post Facto Research is an empirical investigation in which the investigator draws the inference regarding the relationship between the variables on the basis of such independent variables whose manifestation has already occurred. In this type of research, the investigator cannot control the independent variables because they occur much prior to producing their effects (Singh, 1986). Here it was planned to study the relationship between internet use and academic achievement on the basis of Ex Post Facto Research.

Methods which are used in studying a research problem are termed as research methods which involve the following (A) Sample, (B) Tool and (C) Procedure.

(A) Sample - Sampling problems are a major concern of statistics which help in drawing inferences from the sample to the population, that is, from particular to the general. Statistical methods help in making wise decisions in the face of uncertainty. Since such decisions are usually based on partial rather than complete information, there is naturally a risk of making wrong decisions. Statistics provides techniques through which the uncertainty of inductive inferences can be minimized and evaluated.
Here Purposive Sampling has been used for research. According to Connor and Morrell (1957) the principle of sampling is that a set of objectives taken at random from a large group tends to reproduce the characteristics of that large group. This is what is called the Law of Statistical Regularity. By comparing the accuracy of sample, estimates can be assessed. If it’s too small, a sample would not give reliable results. The greater the size of the sample, the more closely it’ll tend to resemble the population from which it is taken.

Purposive sampling is one of the commonest methods of sample selection used by statisticians. The method can be illustrated through an example. It is supposed that one person wishes to draw a sample of 4 individuals from a list of 100 individuals. The first step is to number the individuals from 1 to 100. Then in the second step one individual is to be selected at random from those numbered 1 to 25. Here the selection at random gives an equal probability of inclusion to all individuals. It is assumed that the 10th individual happens to be selected out of the first group with the serial number 1 to 25. The sample of individuals would comprise the individuals numbered 10, (10+25=) 35, (35+25=) 60 and (60+25=) 85. The number 10 is called the random start and 25 is known as the interval (Yates, 1965).

In the present investigation, purposive sampling was used for selecting samples of 600 adolescents. 300 male and 300 female adolescents were selected from the institutional attendance registers bearing even roll number 2, 4, 6, 8 so on and so forth. By administering the internet use questionnaire to 300 male (150 from Kamrup
metro and 150 from Kamrup rural) and 300 female adolescents (300 from Kamrup metro and Kamrup rural, they were numbered sexwise.

Two categories, each having equal number of male and female were taken and stratified into four strata such as-Kamrup rural adolescents (male), Kamrup rural adolescents (female), Kamrup metro adolescents (male) and Kamrup metro (female) as noted in the following table, Table 3.1.

The sample consisted of 600 adolescents from Kamrup Districts (both Kamrup rural and Kamrup metro). They were chosen randomly from classes XI and XII (Arts, Science and Commerce stream) of several CBSE Schools of the districts.

Inclusion Criteria:

(a) Students of Co-educational institution under CBSE.

(b) Students using internet on a regular basis.

(c) Age: 16-18 years.

(d) Students of classes XI and classes XII.
Table 3.3: Table depicting the sample classification of Male and Female Adolescents of Kamrup Districts-

<table>
<thead>
<tr>
<th>SAMPLE</th>
<th>KAMRUP METRO</th>
<th>KAMRUP RURAL</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MALE</td>
<td>150</td>
<td>150</td>
<td>300</td>
</tr>
<tr>
<td>FEMALE</td>
<td>150</td>
<td>150</td>
<td>300</td>
</tr>
<tr>
<td>TOTAL</td>
<td>300</td>
<td>300</td>
<td>600</td>
</tr>
</tbody>
</table>

(B) Tools-

Table 3.4: Details of the Tools used for study

<table>
<thead>
<tr>
<th>TOOLS</th>
<th>VARIABLES MEASURED</th>
<th>CLASSIFICATION OF THE VARIABLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sinha’s Comprehensive Anxiety Test</td>
<td>Anxiety</td>
<td>Independent Variable</td>
</tr>
<tr>
<td>Internet Use Questionnaire</td>
<td>Internet Usage by Adolescents</td>
<td>Independent Variable</td>
</tr>
<tr>
<td>Cumulative Academic Score</td>
<td>Academic Scores</td>
<td>Dependent Variable</td>
</tr>
</tbody>
</table>
In order to collect data and to test the hypothesis following tools were used in the present research work. They are as follows-

(i) **Sinha’s Comprehensive Anxiety Test (SCAT)**

This test constructed by A.K.P. Sinha & L.N.K. Sinha, was used for determining comprehensive Anxiety. The items of the test were largely constructed on the basis of the symptoms of anxiety reported by those who visited the Institute of Psychological Research and Service, Patna University for psychological assistance. A few items from the existing tests of anxiety were also incorporated after such modifications as were considered necessary. Thus initially 315 items were prepared in Hindi. These items were given to five judges (all engaged in counseling and psychological testing work) for examining the merit of each item for inclusion in the test of anxiety. They were also asked to score out those items, which they thought were redundant. On the basis of 100% agreement among the judges, 70 out of 315 items were eliminated. For the item analysis of 245 items, the point biserial correlations were computed. Consequently, those 90 items which fulfilled the criterion constituted the test in its final form.

**Reliability**. The coefficient of reliability was determined by using the product moment correlation was 0.85 and by using Spearman Brown formula was 0.92. Both the values ensure a high reliability of the test.

**Validity**: The coefficient of validity was 0.62, which is significant beyond 0.01 level of confidence.
**Time** : No time limit is fixed for completing the test. However, usually an individual takes 15 to 20 minutes in completing the test.

**Scoring** : The inventory can be scored accurately by hand and no scoring key or stencil is provided. For any response indicated as ‘Yes’, the testee should be awarded the score of one, and zero for 'No'. The sum of all the positive or yes responses would be the total anxiety score of the individual.

**Rationale for Selecting Sinha’s Comprehensive Anxiety Test**

1. This test provides ample opportunity to study individual’s reactions to different situations.

2. The tool is having a fair standard and relevant in its use for intermediate classes. 3. It can be conveniently used by Hindi knowing students.

4. The tool is easy to administer. It can be administered in individual or group settings.

(ii) **Internet Use Questionnaire**

This self devised questionnaire was prepared to find out the various ways of the usage of internet v.i.z. academic oriented information, information oriented to games and usage of social networking sites. It is mainly meant for the age group of 16-18 years of
A pilot study has been conducted prior to standardization. The reliability of the questionnaire is found to be .752. This questionnaire is found to highly reliable and valid.

(iii) Cumulative Academic score-

The cumulative Academic Score of the subject has been taken into account to find out the overall academic performance of the adolescents.

Procedure-

i) Selection of the Schools

At first, the investigator collected the list of co-educational high schools of Kamrup Districts from the CBSE office in Guwahati. Schools were chosen randomly from different areas of Kamrup metro and Kamrup rural areas. Thereafter, the School Principals were contacted to finalise and keep the students prepared for the session.

The lists of the areas covered are given below:

Table No: 3.5- List of Areas covered for CBSE schools-

<table>
<thead>
<tr>
<th></th>
<th>Lakhra</th>
<th>6</th>
<th>Silpukhuri</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Basistha</td>
<td>7</td>
<td>Beltola</td>
</tr>
<tr>
<td>3</td>
<td>Majgaon</td>
<td>8</td>
<td>Dispur</td>
</tr>
<tr>
<td>4</td>
<td>Digaru</td>
<td>9</td>
<td>Amingaon</td>
</tr>
<tr>
<td>5</td>
<td>Chayygaon</td>
<td>10</td>
<td>Maligaon</td>
</tr>
</tbody>
</table>
Fig No 3.4: Map of Kamrup District (Metro and Rural)
The sample size of the study is of 600 adolescents (male and female) of Secondary Schools; therefore the investigator collected data of 300 subjects from Kamrup metro and 300 subjects from rural respectively. Among the 300 subjects, 150 subjects were male and 150 subjects were female from Kamrup rural.

In the same way, 150 subjects were male and 150 subjects were female from Kamrup metro. Day and times for data collection were fixed up in consultation with the principals.

(ii) Data Collection

Data collection was done during the school hours. The tests were administered to groups of students, as no test used in the study was an individual test. The students were given general instructions regarding the questionnaires. Then tests were administered after giving the proper instructions of the concerned tests.

(iii) Administration of the Tests

After the instructions, tests were administered one by one – Internet Use questionnaire and Sinha’s Comprehensive Anxiety Test. The duration of SCAT was about twenty minutes. Thereafter, the internet use questionnaire was provided which had no time limit. Some time was also needed for instructions and collecting the questionnaires. Hence the principals were requested to spare the students for an hour. The academic scores were collected from the school authorities.
(iv) **Scoring**

After the collection of the filled in questionnaires, scoring was done and data was analysed.

(v) **Data Analysis**

The data collected were analysed and processed by computer in accordance with the requirement of hypotheses formulated earlier; however treatment of data was done by a simple calculator. The data have been presented in the next chapter.

Invariably, data were treated for Means, SD’s, and Significance of Differences employing t-values.

1. **Levels:** In the present study the scores of the independent variables were categorised as low & high level on the basis of their mean. The score which is less than mean value is categorised as low level and the score which is equal and higher than the mean value is considered as high level.

2. **Co-efficient of Correlation:** This statistical technique has been employed to verify hypotheses pertaining to co relational studies It has been used to estimate the significance of the relationship between the independent variables (i.e., Anxiety and Internet Use) and the dependent variable (i.e., Academic Achievement).
3. **t-Values**: This technique of statistics has been employed to estimate the level of significance of differences between two means.

The results arrived at by employing these statistical methods have been presented in the next chapter.