CHAPTER NO. : 3
RESEARCH DESIGN AND
ITS BASES

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3.1 INTRODUCTION :

Having reviewed the available literature related to the problem in hand, the researcher designed the study. For the purpose, the researcher selected an appropriate research method and design; developed an attitude scale as per Likert method and decided the plan for collecting and analyzing the data.

The Methodology followed in carrying out the present research has been described in the present chapter. The details with respect to the sample, the design, the tools, the procedure followed for collection of data and the nature of the data constitute the chapter.

3.2 ORIGIN OF THE SUBJECT:

The importance of attitude is very great. They permeate our whole life and our self concept is essentially the sum total of attitudes by which we live. Attitudes are considered as important motivators of behavior and affect all human values.

Attitude play an important role in education. From the point of view of learning, attitudes are important in as much as they facilitate further learning. The attitude of the teacher, of the parent, of the student or of a group leader is important. Each should display the kind of objective but understanding attitude that will be a good attitude for the child to imitate.

William James of Harvard University :"The greatest discovery of my generation is that human beings can alter their lives by altering their attitudes of mind." [1]

By constructing an attitude scale researcher has decided to know students attitudes towards an important subject of statistics.

3.3   POPULATION :

The term 'Universe' refers to the total of the items or units in any field in inquiry, whereas the term 'population' refers to the total of items about which information is described. [2]

Population is a group of Individual persons or objects from which samples are taken for measurement. For example, a population of presidents or professors, books or students. [3]

Population is the group consisting of all people to whom a researcher   wish to apply for his/her findings. A population comprises all the possible cases (persons, objects, events that constitute a known whole. [4]

Populations means the entire mass of observations, which is the parent group from which a representative sample is chosen for the collection of data and for whom the researcher derives on the findings. [5]

In the present study an attitude scale has been constructed by researcher for the students of 12th commerce both Gujarati and English medium. The common features of these students are :

1:     The students study in Higher secondary schools affiliated by Gujarat Higher Secondary Education Board, Gandhinagar.

2:     The students of government granted and self-finance schools are taken into consideration.

3:     The students of 12th commerce are taken into consideration

Information regarding school of all Gujarat was difficult to gain. Only stray information could be gained regarding the schools of a district.

3.4   SAMPLE :

Selection of a sample is a very important step in conducting a research study. The "goodness" of the sample determines the generalizability of the results. Since conducting a study generally requires a great deal of time and energy, non generalizable results are extremely wasteful; if all the results were true only for the group on which they were based educators could never benefit from anyone else's work and each and every study would have to be replicated an almost infinite number of times.

According to Freeman, "The author of the test must decide at the outset with which group or segment of the population his instrument is to be used. Then he must.....(select) hat is stratified according to relevant factors and within each stratum, the selection of cases should be adequate in number.

There are four basic sampling techniques or procedures :

Random Sampling :

Random sampling is the process of selecting a sample in such a way that all individuals in the defined population have an equal and independent chance of being selected for the sample. It is the best single way to obtain a representative sample. It involves defining the

population, identifying each member of the population, and selecting individuals for the sample on a completely chance basis.

Stratified Sampling :

Stratified sampling is the process of selecting a sample in such a way that identified sub groups in the population are represented in the sample in the same proportion that they exist in the population. It can also be used to select equal sized samples from each of a number of sub groups, if sub group comparisons are desired. The steps in stratified sampling are very similar to those in random sampling except that selection is from sub group in the populations rather than the population as a whole.

Cluster Sampling :

Cluster Sampling is samplig in which groups, not individuals, are randomly selected. Any intact group of similar characteristics is a cluster. The steps in cluster sampling are similar to those in random sampling except that the random selection of groups (clusters) is involved, not individuals.

Systematic Sampling :

Systematic sampling is a sampling in which individuals are selected from a list by taking ever K^{th} name, where K equals the number of individuals on the list divided by the number of subjects desired for the sample. Even though choices are not independent, a systematic sample can be considered a random sample if the list of the population is randomly ordered.

There are four steps for sampling as below : [6]

1:     Identify the target population.

2:     Identify the Accessible population.

3:     Determine the size of sample.

4:      Select the sample.

L.R. Gay suggests 10% of large populations and 20% of small populations as minimum. An adequate sample of southern Baptists 36,000 pastors would be a random sample of 1% or 360 pastors. [7]

The selection of the sample and the size of the sample are based on the design or type of the study and size of the population.

The present study was a survey type research. Researcher collect wanted to higher secondary school data from sample keeping in mind some variables like gender, types of school, area, medium of learning, educational achievement and parents education.

3.5   SELECTION OF PRESENT SAMPLE :

For the present investigation the procedure adopted for the selection of sample was stratified clustered sampling. This technique resembles the stratified sampling method to a large extent.

The investigator had to be careful about the stratification, as gender group-boys and girls area group-urban and rural, medium of learning group- English and Gujarati, types of school government, granted and self finance for 12th standard commerce students.

Thus the sample was selected according to the following strata :

a)   Gender wise distribution of students

b)   Medium wise distribution of students

c)   Area wise distribution of students

d)   Types of school wise distribution of students

e)   Parents education wise distribution of students

f)   Educational achievement wise distribution of students

The following points were taken into consideration at the time of selecting the sample,

1) District of a state represented various groups.

2) Rural area students who studying in Rajkot proper but stay in villages are taken into consideration.

3) Generally students are regular in the classes.

4) The syllabus of statistics is sample for the both English and Gujarati medium students of 12th commerce affiliated by Gujarat Higher Secondary Education Board, Gandhinagar.

5) Sometimes the heads of the schools do not like to break the grades.

6) Educational achievement is taking into consideration as per student's result of 11th standard.

7) Some of the students hesitate to take the test.

8) Because of easiness in getting data, Rajkot city is selected.

The sample was selected for final tool administration, as presented in Table : 3.1

TABLE : 3.1

Gujarati Medium school of Higher Secondary in Rajkot city

Sr. No.	Name of School	Type of Management
1	Shri Mohandas Gandhi Vidyalaya	Government
2	Shri Karansinhji High School	Government
3	Shri Bai saheba girls high School	Government
4	Shri Murlidhar high School	Private
5	Shri G.K. Bharad high School	Private
6	Shri Krishna high School	private
7	Shri Vivekanand Vidyalaya	Private
8	Shri Maruti Vidyalaya	Private
9	Shri P.V. Modi high School	Private
10	Shri Amrut high School	private
11	Shri G.K. Dholakiya high School	Private
12	Shri Shakti high School	Private
13	Shri Navjivan high School	Private
14	Shri Nachiketa high School	Private
15	Shri Jalaram high School	Private
16	Shri Sadhu Vasvani high School	Private
17	Shri Pathak School	Private
18	Shri Bharatiya Vidyalaya	Private
19	Shri Lalbahadur Shstri Vidyalaya	Granted
20	Shri Saurashtra High School	Granted
21	Shri Kadavibai Virani Kanya Vidyalaya	Granted
22	Shri G.T. Sheth high School	Granted
23	Shri Kapinjal high School	Granted
24	Shri Saraswati Vidya Mandir	Granted
25	Shri A.S. Chawdhary high School	Granted

TABLE : 3.2

English Medium school of Higher Secondary in Rajkot city

Sr. No.	Name of School	Type of Management
1	Shri G.T. Sheth Vidyalaya	Private
2	Shri New Era English School	Private
3	Shri Matrumandir English Medium School	Private
4	Shri Bhushan high school	Private
5	Shri Sun flower English School	Private
6	Shri Nirmala Convent School	Private
7	Shri Amrut higher secondary School	Private
8	Shri P.V. Modi high school	Private

There were no English medium higher secondary School which is managed by government. There weren't any granted school also. So only self-finance schools were selected for sample. All the schools were selected randomly and purposively.

3.6   CLASSIFICATION OF SELECTED SAMPLE :

From above 25 schools of Gujarati medium and 8 schools of English medium schools about 2950 subject are selected. Their distribution as per variables are as under :

Sample distribution as per Gender, Type of School and medium of learning

Type of school Medium	Government		Granted		Self-finance		Total
	Boys	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**	
Gujarati	70	80	350	450	700	800	**2450**
English	--	--	--	--	270	230	**500**
Total	**70**	**80**	**350**	**450**	**970**	**1030**	2950

We can see from table 3.3 that there are 500 students selected from English medium schools from which 270 boys and 230 girls. From Gujarati medium schools 2450 students are selected from which 1120 boys and 1330 girls. It also shows classification as per type of school. As per table 3.3 150 students are from government schools, 800 students are from granted schools and 2000 student are selected from private schools.
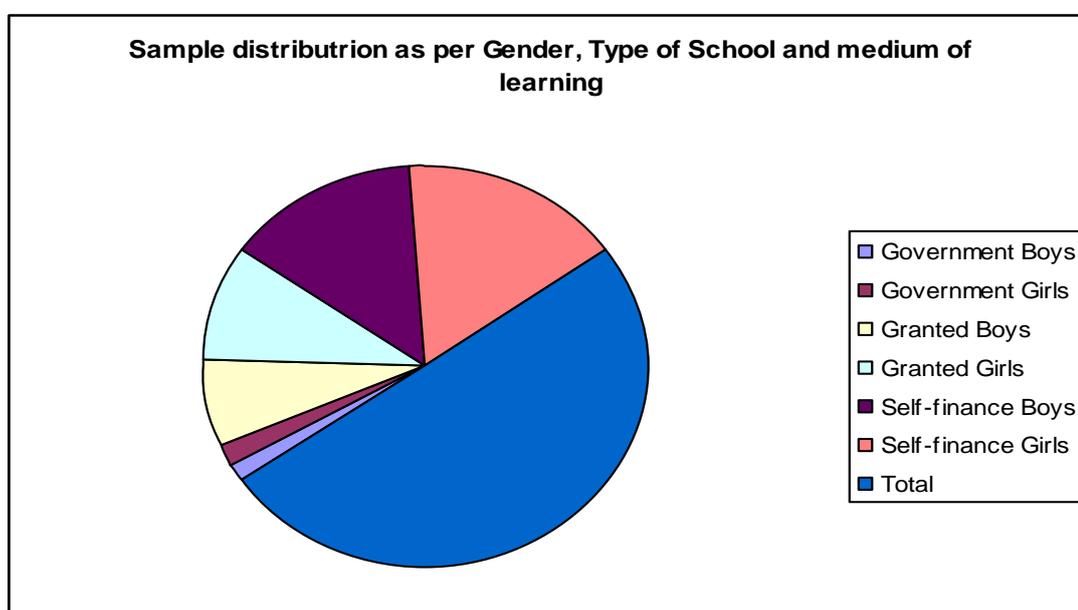
Graph : 3.3

Sample distriburion as per Gender, Type of School and medium of learning

- Government Boys
- Government Girls
- Granted Boys
- Granted Girls
- Self-finance Boys
- Self-finance Girls
- Total

TABLE : 3.4

Sample distribution as per area and father's education

Area	Father's education			Total
	Il-literacy	High-literacy	Less-literacy	
Rural	500	250	400	1150
Urban	450	1000	350	1800
Total	**950**	**1250**	**750**	**2950**

We can see from Table 3.4 that there are 1150 students from rural area and 1800 students from urban area. We can also observe that there are 500 students whose father is Il-literate, 250 highly-literate and 400 less-literate living in rural area. While in urban area there are 450 students whose father is ill-literate, 1000 highly literate and 350 less-literate.
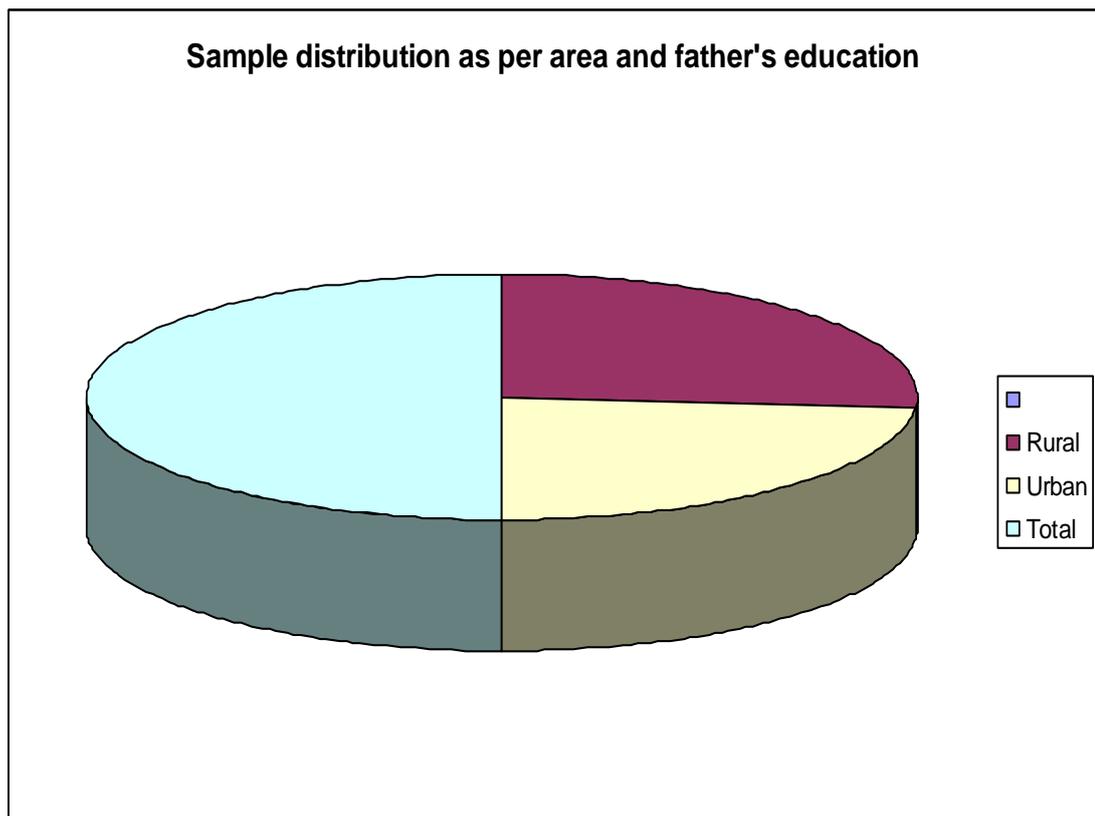
Graph :3.4

Sample distribution as per area and father's education

TABLE : 3.5

Sample distribution as per area and mother's education

Area	Mother's education			Total
	Ill-literacy	High-literacy	Less-literacy	
Rural	600	100	450	1150
Urban	375	775	650	1800
Total	**975**	**875**	**1100**	**2950**

We can see from Table 3.5 that there are 1150 students from rural area and 1800 students from urban area. We can also observe that there are 600 students whose mother is Il-literate, 100 highly-literate and 450 less-literate living in rural area. While in urban area there are 375 students whose mother is Il-literate, 775 highly literate and 650 less-literate.
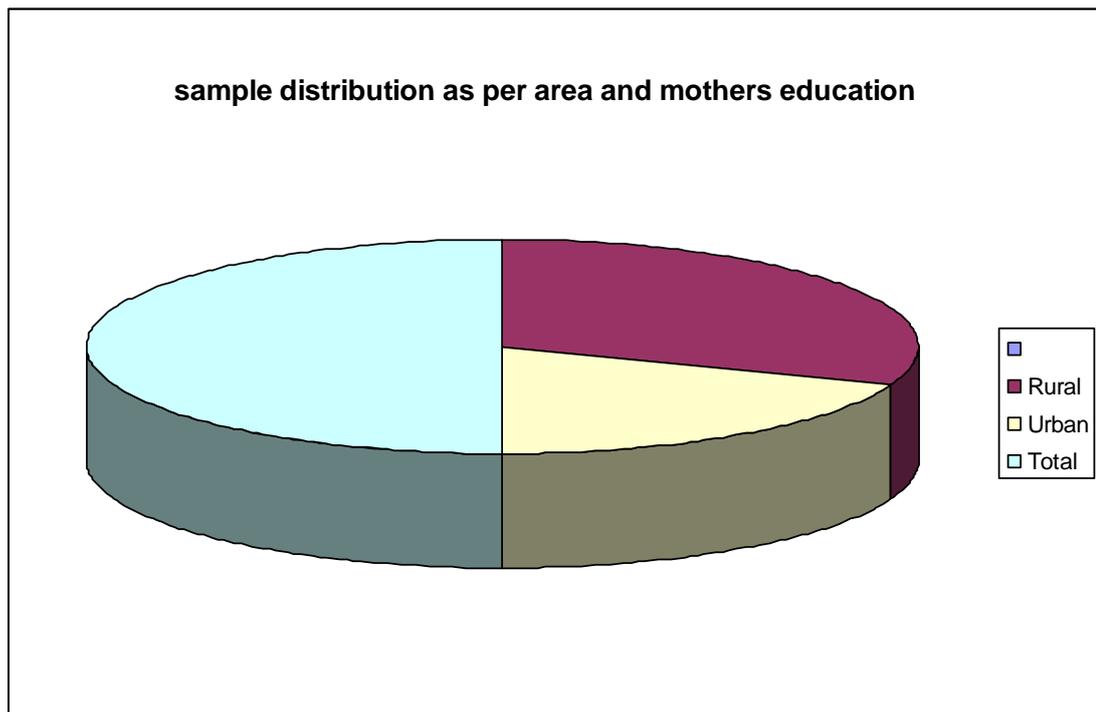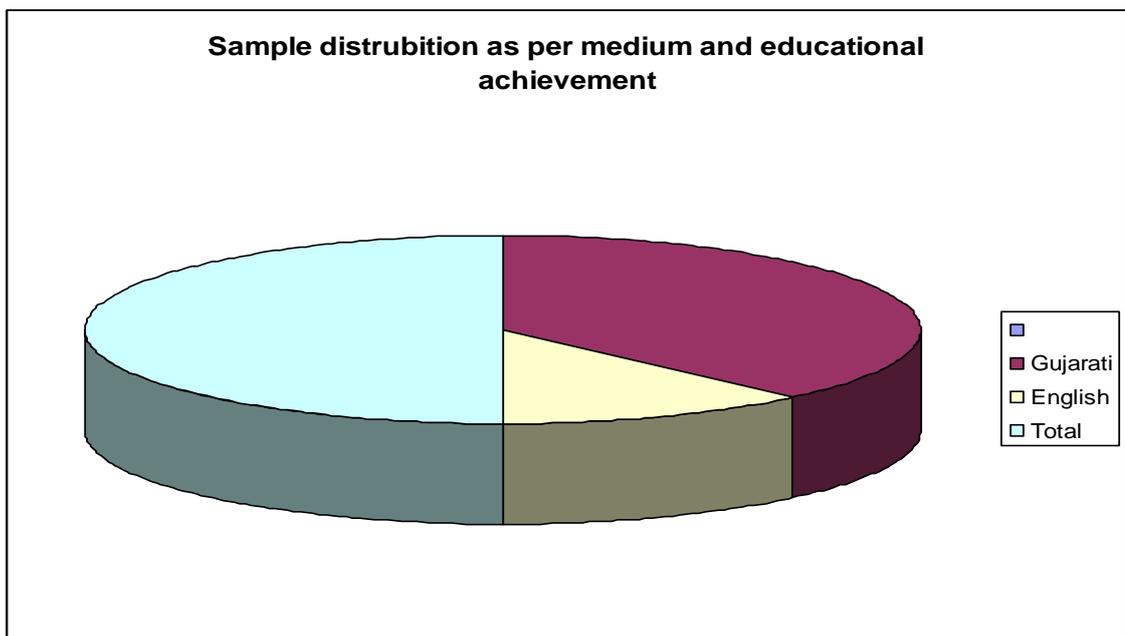
Graph : 3.5

sample distribution as per area and mothers education

TABLE : 3.6

Sample distribution as per medium and educational achievement

Area	Educational achievement			Total
	High Level	Middle Level	Lower Level	
Gujarati	1000	980	470	2450
English	325	90	85	500
Total	1325	1070	555	2950

We can see from table 3.6 that there are 1000 students whose educational achievement is on high level, 980 students of middle level and 470 student of lower level of Gujarati medium. While in English medium there are 325 students whose educational achievement is of high level, 90 students of middle level and 85 students of lower level.

Graph : 3.6

Sample distrubition as per medium and educational achievement

3.7   SELECTION OF RESEARCH TOOL:

In the present study, researcher has made an attitude scale as per Likert method to get students responses. Researcher wants to know students attitudes towards the subject of statistics. There is no tool available for this purpose, so researcher has decided to construct a new attitude scale. All the steps have been taken to construct an attitude scale and to standardize it. All the information regarding this is given in **Chapter-4.**

Details of an attitude scale are given below :

Information about students as per variables is necessary, for this a different section is allotted on front page of attitude scale by researcher. The section presents details like students name, name of school, gender, father's education, mother's education, area, type of school of 11th standard.

[This introduction page is given in appendix-5]

3.8 ADMINISTRATION OF THE FINAL FORMS OF THE TOOLS :

From the obtained information about the students, the respondents in advance, the researcher arranged the programme for data collection. First of all permission of principals of different school is taken. Researcher went to schools as per sample selection to gather information from the stu dents. Researcher got information from the students of 12th standard during the month of July,August-2013.

Before distributing the copies, the investigator gave oral instructions to establish rapport and to explain the purpose of the study. he emphasized the following points :

1:     Each respondent should give his/her opinion clearly.

2:     The respondent should respond to each statement.

3:     No answer was right or wrong.

4:     Personal information should be filled in completely and carefully.

5:     The opinions of respondents should be kept as confidential.

6:     It wasn't a test.

Then the copies were distributed. They were asked to respond. One point to be cleared here is that the investigator is a teacher so he collected this type of data personally. Students gave their responses in 40 minutes. After 40 minutes the attitude scales were collected from the students. Thus an attitude scale was administrated by researcher.

3.9   SCORING OF DATA :

The scoring of attitude scale was done by adding the scale values of each item ticked by respondent. Thus on the 30 statements the minimum could be 30 and the maximum could be 150.

3.10 COMPUTATION OF DATA :

There are two main purposes of the study, first is to find out the present status of the concerned variables in the students, second is to determine the relationship between the dependent and independent variables. For this the following statistical calculations were done :

The data was complied in tabular form for each variable and analyzed to see the number of students falling below and above the mean scores of each variable. This was done by placing the data in

frequency table. 't' values were computed to find out the significance difference if any, in gender wise, area wise, medium wise, parents education wise, type of school wise and educational achievement wise h of each variable. Similarly the relationship between the variables were determined by the coefficient of correlations. Regression analysis technique was employed to formulate regression equations for the prediction of attitude.

This chapter described in detail the design of the study, the administration of final forms and the data gathering process. Also presents scoring and computation of data. The next chapter includes the detail is about tool construction by researcher.**(Chapter-4)**

CHAPTER NO. : 3
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