CHAPTER 4
RESEARCH DESIGN

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CHAPTER: 4
RESEARCH DESIGN

4.1. Introduction:

The research design provides the glue that holds the research project together. A design is used to structure the research, to show how all the major parts of the research project - the sample measures, treatments and methods of assignment- work together to try to address the central research questions. The activity related to design in research is comparable to those of the architect in design and intricate structure i.e. as the architect does in the designing before construction activity gets underway. The importance of planning a research can never be underestimated. Planning of the research work saves time, money and energy. Systematic planning of the whole research work is, hence, very essential.

Research design is the important step in the research science which comes after selection of problem and formulation of the hypothesis. It is a mapping strategy based on sampling technique. Here mainly the chapter includes introduction to sampling techniques, research method and strategy, tools and techniques for collection of evidences, analyzing the data and mainly selection of tool and its standardization. It is the work before carrying on the real process. It is the statement of object of inquiry and how satisfactory culmination to be effected. Here researcher chooses the components of the project and development of certain components of a design. The research components are selected keeping in view the objectives of the research. In the present chapter research design is discussed.
4.2. Population of the study:

According to Patel\(^1\) (2011), population means,

"When statistical information or data is to be collected from any field then a group covering of all units on which data is to be collected is called a population"

According to Siddhu\(^2\) (1985)

"Population means an aggregate or the totality of the subject regarding which inferences are to be made in a sampling study"

According to Walter R. Borg\(^3\),

“A population is any group of individuals that have one or more characteristics in common that are of the interest of researcher”

In any research, the investigator has to think of the population to which the results are to be applied. The population is a universal set of subjects to which the results are to be applied. Here, the researcher had decided to construct and standardize the Spiritual Intelligence Scale for the Higher Secondary students of Gujarati medium of Gujarat State. Therefore, all the students of Standard 11\(^{th}\) and 12\(^{th}\) Students of Gujarat State of Gujarati Medium Schools of academic year 2012-13 became the population of the present study.

4.3. Sample of the study:

Sampling is the process of selecting units from a population of interest. So that by studying the sample we may fairly generalize our results back to the population, from which they were chosen. According to Best and Kahn\(^4\) (1989),

"A sample is a small proportion of a population selected for observation and analysis."

According to P.V. Young\(^5\),

“A sample is a short form of the well-defined clear group”

According to Goode and Hatt\(^6\),
“A Sample is a small representative of a big population”

(A) Probability Sampling Methods
a. Random Sampling
b. Stratified Random Sampling
c. Systematic Sampling
d. Cluster Sampling

(B) Non Probability Sampling Methods
a. Incidental or Accidental sampling
b. Purposive Sampling
c. Quota Sampling

(C) Other Method
a. Paired Sampling
b. Double Sampling
c. Sequential Sampling
d. Snow-ball Sampling
e. Multi-Stage Sampling

While selecting a sample, following points would be kept in mind:

- Sample should be representative of the population
- Each member of the population should have the chance to be selected
- Sample should be selected without any bias.

The inquiry based on a small fraction of units from the population is called a sample. The population for the present study was the students of Higher Secondary Schools of Gujarati Medium of the state of Gujarat, so as to ensure that the entire state is adequately represented in the sample higher secondary schools were selected stratified random sampling method. Students of Std.11th and 12th were selected using
cluster sampling technique, from each school. Thus, schools were selected through stratified random sampling method and the students from those selected schools were selected using cluster sampling method.

No attempt has been made to maintain the equal ratio of std. 11th and 12th, boys and girls, rural to urban, level of intelligence and level of SES. The detail about the sample has been tabulated in table-4.1. Detail Summary of Sample According to School Standard, Gender and area is given; in table-4.2. Detail Total Sample according to Intelligence is given; in table-4.3 Total Sample according to Social Economical Status (SES) is given;

Table: 4.1

Summary of Sample According to School Standard, Gender and Area

<table>
<thead>
<tr>
<th>Standard</th>
<th>Gender</th>
<th>Boys</th>
<th>Girls</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Area</td>
<td>Urban</td>
<td>Rural</td>
<td>Urban</td>
</tr>
<tr>
<td>11th</td>
<td>447</td>
<td>403</td>
<td>398</td>
<td>377</td>
</tr>
<tr>
<td>12th</td>
<td>430</td>
<td>411</td>
<td>374</td>
<td>340</td>
</tr>
<tr>
<td>Total</td>
<td>877</td>
<td>814</td>
<td>772</td>
<td>717</td>
</tr>
</tbody>
</table>

Table: 4.2

Total Sample according to Intelligence

<table>
<thead>
<tr>
<th>Intelligence</th>
<th>Gender</th>
<th>Area of Residence</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boys</td>
<td>Girls</td>
<td>Urban</td>
</tr>
<tr>
<td>Low Intelligence</td>
<td>259</td>
<td>257</td>
<td>256</td>
</tr>
<tr>
<td>High Intelligence</td>
<td>242</td>
<td>223</td>
<td>219</td>
</tr>
<tr>
<td>Total</td>
<td>501</td>
<td>480</td>
<td>475</td>
</tr>
<tr>
<td></td>
<td>981</td>
<td>981</td>
<td>981</td>
</tr>
</tbody>
</table>
Table: 4.3
Total Sample according to Social Economical Status (SES)

<table>
<thead>
<tr>
<th>Social Economical Status</th>
<th>Gender</th>
<th>Area of Residence</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boys</td>
<td>Girls</td>
<td>Urban</td>
</tr>
<tr>
<td>Low SES</td>
<td>272</td>
<td>266</td>
<td>262</td>
</tr>
<tr>
<td>High SES</td>
<td>228</td>
<td>215</td>
<td>206</td>
</tr>
<tr>
<td>Total</td>
<td>500</td>
<td>481</td>
<td>468</td>
</tr>
</tbody>
</table>

According to tables total 3180 students of 11<sup>th</sup> and 12<sup>th</sup> Stander were selected for the present study. Out of 3180 students 1625 (850 Boys and 775 Girls) students were from Stander 11<sup>th</sup> and 1555 (841 Boys and 714 Girls) students from Stander 12<sup>th</sup> were selected, And for study of variable Intelligence and Social Economical Status total 981 students from 11<sup>th</sup> and 12<sup>th</sup> stander were selected.

4.4. Tools for Data Collection:

Selection of the tool is the important step in research as the utility and the importance of any study depends upon the findings and which in turn depends on the data collected. The tool used must be according to the study and reliable as well as valid. The following tools was used for collecting the data of the present study:

1. The Spiritual Intelligence Scale (SIS). This tool was prepared and standardized by the researcher.
2. Spiritual Intelligence Scale prepared by Nishad B.Oza
3. Social Economical Status Scale (SESs) prepared by Dr. R.S. Patel and published by Akash Manomapn Kandra

4. Verbal and Non Verbal Intelligence Test prepared by Dr. K.G. Desai and Published by Institute of Psychological and Educational Research and Guidance.

Description of the tools used for the present research study is discussed in chapter-5 and chapter-6.

4.5. Method of Research:

There are many research methods and techniques which can be used for conducting research-work in the field of educational research. The researcher as per his/her convenience can select the appropriate research method by taking into account the research's form of the subject, characteristics, universe of sample etc. The main methods of the research are as given below:

1. Historical Method 2. Descriptive Research Method

Looking to the nature of the present research, it would be a process of establishing present status of the level of Spiritual Intelligence of the students and establishment of Norms for Spiritual Intelligence the most suitable method would be survey. So that, investigator has selected survey method for the present research.

4.6. Technique of Data Collection:

In the present research, the students of higher secondary schools of Gujarat State are the population. So for the selection of the sample the entire Gujarat State has been divided in four Zones, from each zone, total
25 schools of urban area and rural area have been selected randomly. One class of std-11th and std-12th of the selected schools has been selected as cluster. Thus from the entire Gujarat state, by thinking the area and varieties of the level of the students of the selected schools by stratified, Random Sampling and cluster method, the permission was taken earlier of the schools by the visit at the principals. According to time given by them, by entering the various classes and establishing rapport with the students the proper instructions and understanding about the test were given. Thus the final Spiritual Intelligence Scale answer sheets were obtained from total 3200 students and the data was collected.

4.7. Methods of Data Analysis:

After assessing the obtained answer sheets of the test, frequency distributions were prepared out of the obtained scores by each respondent taken in sample of the study. On the basis of the statements of each field, frequency distribution was prepared, of each field section and std. wise statistical analysis was undertaken on the basis of the obtained scores. Out of std. wise and sex wise frequency distributions,

1. Mean, Median, Mode, Standard Deviation
2. Significance of difference of means between groups(t-Value)
3. Skewness and Kurtosis of each group
4. Presentation of graphs as required per group
5. Verification of normal distribution of the scores
6. Establishing the norms, based on the significance of difference of means of the scores, determining their PR and T-scores have been established.
Methods for determining Reliability

- Test-Retest Reliability
- Internal Consistency Reliability
  - Split Half Reliability
    - Spearman-Brown
    - Rulon/Guttman’s Formula
    - Flanagan Formula
  - Kuder Richardson

Method for determined Validity

- Face Validity
- The correlation between the scores of Spiritual Intelligence Scale and the score of Spiritual Intelligence Scale prepared by Nishad B.Oza
- The correlation between the scores of Spiritual Intelligence Scale and the scores of Verbal and Non verbal Intelligence test prepared by Dr. K.G. Desai and published by Institute of Psychological and Educational Research and Guidance.
- Factor Validity

4.8. Conclusion:

In the present chapter details regarding population, sample, research method, tool for data collection, method of data collection and method of data analysis were discussed in detail.
REFERENCES


