CHAPTER 3

Planning and Procedure
CHAPTER 3

PLANNING AND PROCEDURE

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3.0 INTRODUCTION

This chapter provides an overview of the proposed design and conceptual framework. It includes details related to specific methodology explaining why proposed methods are the best to accomplish study goals and details of how data will be collected and analyzed. It describes tools and statistical techniques applied. It also provides the conceptual and logical framework of the present research. The chapter also discusses the steps that resulted in well designed and integrated research plan along with its implementations. If the planning is well imagined then context becomes relevant parallel to the research objectives.

This chapter includes proposed work plan and timeline. This chapter also includes details towards fulfilling the research objectives. Clarity in the mind of the investigator ever creates an action plan well to be implemented. Research does not depend upon its size length or its quantitative measurement but it depends upon how it leads to research conclusions. Mukerjee Shridhernath\(^1\) had rightly said that “Planning is an instrument and not a goal”. It is attitude which is necessary to increase research efficiency of investigator. It is possible only due to planning. Van Dalen\(^2\) considered following points for research planning.

I. Identification of variable.
II. Selection of problem
III. Selection of sample from population
IV. To select tool, preparation of tool and its standardization
V. Data collection
VI. Formation of null hypotheses.

3.1 PLANNING- FROM THINKING TO DOING

“Success is like a turtle climbing a mountain; Failure is like water running down hill.”

How well a research project is planned and how well the steps in the plan are integrated can make the difference between success or failure. The probability of success of a research is greatly enhanced when the “beginning” is correctly defined as a precise statement of goals and justification. Having accomplished this, the sequential steps necessary for writing a research plan and then successfully executing a research becomes easier for identify and organize. Therefore, each portion of the
research plan should be based on how to assure the quality of the data collected. The goal should always be to obtain the possible relevant data. In the matter of psychology based studies empirical data becomes more important. Proper planning helps the investigator in data collection, analysis interpretation and conclusion of the study. It is necessary on the part of investigator to select or construct the tool, employ the most appropriate method of selecting the sample. Proper planning research becomes more perfect. Planning is essential step for any work to be done systematically. Without comprehensive planning for the research work no specific outcome would be generated. Planning helps researcher to make his work possibly flawless. For better and scientific planning of the work, the chief objectives of the research must be kept in view constantly. The main objectives of the present research are to study the level of self confidence and to study its relation with various variables like curiosity, educational aspiration and achievement. In present chapter, the researcher mainly described the details regarding the techniques selected for the study, information about tools, sample used in the study and the techniques used for analysis of data.

3.2 **RESEARCH METHOD, PROCEDURE AND VARIABLES OF THE STUDY**

Before conducting investigation investigator decided proper method and procedure in accordance to the statement of the problem. For the present research investigator concentrated on sample and sampling technique along with reliable and valid tools for data collection. Details in this line are described in ensuing paragraphs

3.2.1 **POPULATION, SAMPLE AND SAMPLING TECHNIQUE**

John W Best (1983 : 8-12) pointed out that “A population is any group of individuals that have one or more characteristics in common that are of interest to the investigator. The population may be all the restricted part of that group. A sample is an observation and analysis. By observing the characteristics of the sample, one can make certain inferences about the characteristics of the population from which it is drawn. Contrary to some popular opinion, samples are not selected haphazardly they are chosen randomly in a systematic way, so that chance or the operation of probability can be utilized.”
The primary purpose of research is to discover principles that have universal application, but to study a whole population in order to arrive at generalization would be impracticable, if not impossible. Some populations are so large that their characteristics could not be measured; before the measurement had been completed the population would have changed.

The process of sampling makes it possible to draw valid inferences or generalizations on the basis of careful observation of variables within a relatively small proportion of the population. A measured value based upon sample data is a statistic. A population value inferred from a statistic is a parameter.

It is important to note that a random sample is not necessarily an identical representation of the population. Characteristics of successive random samples drawn from the same population may differ to some degree, but it is possible to estimate their variation from population characteristics and from each other. The variation, known as sampling error, does not suggest that mistake has been made in the process, but that with randomization, certain predictable chance variations are observed.

**Population** is the larger group from which individuals are selected to participate in a study.

"A population is the aggregate of all the cases that confirm to some designated set of specification." Hakim and Asthana

"Population means the aggregate or totality of objects or individuals regarding which entrances are to be made in a sampling study,"—Siddhu K.S.

In present study the population of present study consist all science schools of Gujarat.

**Sampling:**

Our knowledge, our attitudes and our actions are based to a very large extent on samples. This is equally true in everyday life and in scientific research.

The success of research is depends on sample. Collecting data of whole population is very tough because it needs more and more time to collect data. So, for saving time, power and money sampling is the best process.

"When we select some of the elements with the intention of finding out something about the population from which they are taken, we defer to that group of elements as a sample." Hakim and Asthana

"Equally important is the requirement that the sample be representative of the population under consideration." Anne Anastasi
In short, a sample is a representative and also a small part of the population which can be selected for observation and analysis. It is not possible to carry research by using total population as sample. Research & sample is two side of coin. So we can’t separate them, sample should be collected in such a way that it has proper proportion of all variable (Like area, Sex) and hence proper method of sampling should be selected.

From this sample all relation & hypothesis is analyzed and conclusion is made.

For selection of Sample following methods can be used.
1) Random sample.
2) Stratified Random sample.
3) Double sample.
4) Planned sample.
5) Cluster sample.
6) Consecutive sample.
7) Purposive sample.

Gujarat state is divided in five zones. East, West, North, South and Central zone. In the present study central zone of Gujarat was selected, which includes five districts viz. Kheda, Vadodara, Anand, Dahod and Panchmahal. The science stream students are the students who are progressively making their foundations to be the member of technocrat society of the future. Therefore the researcher was particularly interest in science stream students. In this study the schools were selected by employing stratified random sampling technique. Which include 3 schools of each area having science stream. Further the sampled was grouped considering sex, high and low achievement groups, high and low curiosity groups, high and low educational aspiration groups, high and low parental education groups, high and low family income groups, family size groups. Thus investigator has used stratified Random sampling along with consideration of urban and rural area as notified by the government of Gujarat. The stratum, its population and representative sample drawn is mentioned in the lines to come in this chapter.
Table 3.1

Zones of Gujarat and name of their districts

<table>
<thead>
<tr>
<th>Zones of Gujarat</th>
<th>Name of districts</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Zone</td>
<td>Mahesana</td>
</tr>
<tr>
<td></td>
<td>Patan</td>
</tr>
<tr>
<td></td>
<td>Sabarkantha</td>
</tr>
<tr>
<td></td>
<td>Banaskantha</td>
</tr>
<tr>
<td></td>
<td>Kachchh</td>
</tr>
<tr>
<td>West Zone</td>
<td>Ahernadavad (Urban &amp; Rural)</td>
</tr>
<tr>
<td></td>
<td>Gandhinagar</td>
</tr>
<tr>
<td></td>
<td>Surendernagar</td>
</tr>
<tr>
<td></td>
<td>Bhavnagar</td>
</tr>
<tr>
<td>Saurastra Zone</td>
<td>Rajkot</td>
</tr>
<tr>
<td></td>
<td>Junagadh</td>
</tr>
<tr>
<td></td>
<td>Porbandar</td>
</tr>
<tr>
<td></td>
<td>Jamnagar</td>
</tr>
<tr>
<td></td>
<td>Amreli</td>
</tr>
<tr>
<td>Central Zone</td>
<td>Anand</td>
</tr>
<tr>
<td></td>
<td>Dahod</td>
</tr>
<tr>
<td></td>
<td>Kheda</td>
</tr>
<tr>
<td></td>
<td>Panchmahal</td>
</tr>
<tr>
<td></td>
<td>Vadodara</td>
</tr>
<tr>
<td>South Zone</td>
<td>Surat</td>
</tr>
<tr>
<td></td>
<td>Navasari</td>
</tr>
<tr>
<td></td>
<td>Valsad</td>
</tr>
<tr>
<td></td>
<td>Dang</td>
</tr>
<tr>
<td></td>
<td>Bharuch</td>
</tr>
<tr>
<td></td>
<td>Narmada</td>
</tr>
<tr>
<td></td>
<td>Union territory</td>
</tr>
</tbody>
</table>

Table 3.2

Number of schools in central Zones of Gujarat

<table>
<thead>
<tr>
<th>District</th>
<th>Number of schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anand</td>
<td>24</td>
</tr>
<tr>
<td>Dahod</td>
<td>11</td>
</tr>
<tr>
<td>Kheda</td>
<td>19</td>
</tr>
<tr>
<td>Panchmahal</td>
<td>13</td>
</tr>
<tr>
<td>Vadodara</td>
<td>70</td>
</tr>
</tbody>
</table>
Types of Sample

- Stratified random sample (used in this study)
- Planned sample
- Clustered sample
- Double sample
- Random sample
- Purposive sample
- Consecutive sample
Population and sample

Gujarat (Total 5 Zone)

Central zone of Gujarat

5 districts of central zone of Gujarat

3 schools of each area
### Table 3.3

Number of students with respect to area & Gender

<table>
<thead>
<tr>
<th>No.</th>
<th>Area</th>
<th>Male.</th>
<th>Female.</th>
<th>Total.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Urban</td>
<td>436</td>
<td>518</td>
<td>954</td>
</tr>
<tr>
<td>2</td>
<td>Rural</td>
<td>360</td>
<td>189</td>
<td>549</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>796</td>
<td>707</td>
<td>1503</td>
</tr>
</tbody>
</table>

### Table 3.4

Number of students with respect to achievement, family income, parental education & family size

<table>
<thead>
<tr>
<th>Variable</th>
<th>Family income</th>
<th>Parental education</th>
<th>Family size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>High Achievement</td>
<td>234</td>
<td>193</td>
<td>247</td>
</tr>
<tr>
<td>Low Achievement</td>
<td>203</td>
<td>366</td>
<td>198</td>
</tr>
</tbody>
</table>

### Table 3.5

Number of students with respect to EAS, family income, parental education & family size

<table>
<thead>
<tr>
<th>Variable</th>
<th>Family income</th>
<th>Parental education</th>
<th>Family size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>High EAS</td>
<td>240</td>
<td>173</td>
<td>262</td>
</tr>
<tr>
<td>Low EAS</td>
<td>93</td>
<td>157</td>
<td>112</td>
</tr>
</tbody>
</table>

### Table 3.6

Number of students with respect to curiosity, family income, parental education & family size

<table>
<thead>
<tr>
<th>Variable</th>
<th>Family income</th>
<th>Parental education</th>
<th>Family size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>High Curiosity</td>
<td>180</td>
<td>204</td>
<td>193</td>
</tr>
<tr>
<td>Low Curiosity</td>
<td>291</td>
<td>351</td>
<td>304</td>
</tr>
</tbody>
</table>
3.2.2 **TOOLS AND DATA COLLECTION**

For studying effect of different variables like curiosity, achievement and educational aspiration on self confidence it was required to have reliable and valid tools. For these investigator gone through available tools for measuring self confidence, curiosity and educational aspiration. The investigator constructed and standardized self confidence inventory. Tools play a significant part in research. They are instruments for collecting information which can be qualified into mere figures. After careful consideration for collection of data, according to objectives formulated by investigator it was found that following standardized tools can be used which fulfill the aim of investigator. Investigator has standardized self confidence inventory.
3.2.2.1 Construction and Standardization of self-confidence inventory:

Before construction of self confidence inventory, investigator studied various standardized test prepared by various investigators. After careful study and critical analysis the investigator decided to construct and standardize self confidence inventory with the support of authentic test.

Preliminary it was administered to a sample 100 (individual) students of 12th std science stream representing different districts of central Gujarat. Before administering the primary form of test the investigator followed the due procedures. Expert opinion was also taken. Then it was administered for standardization. It was administered on 100 students from each district [Anand, Kheda, Dahod, Panchmahal and Vadodara] which includes 275 males ad 225 female and scores were obtained.

1. Item analysis:-
   - **Difficulty/Facility value:** Obtained total score of each individual were arranged in descending order. The extreme were identified by taking 27% of top score as upper group and 27% of the bottom score as lower group. (L Kelly's Method) Then for each item true answer from upper and lower group difficulty/ facility value was determined. Item consisting 70 to 90% value were selected as high difficulty value. Item consisting 10 to 15% value were selected as Low difficulty value.
   - **Discriminative value:** Discriminative value of each item was found. Item consisting DI value 0.20 to 0.80 were selected.

2. Reliability:- Reliability coefficient were obtained by split-half, test-retest and K-R Formula-20.
   - **Split- half:** Item having even and odd number were splitted whose difficulty were same. With the help of Spearman Brown formula value was obtained, which are in the following table.
   - **Method of rational equivalence:** It was found by K-R-20 formula, which are in the following table.
   - **Test- Retest:** Inventory was administered to one group and it is again administered to same group after one month and relation was found.
<table>
<thead>
<tr>
<th>Method</th>
<th>N</th>
<th>Reliability co-efficient</th>
<th>Inventory index of reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Split Half</td>
<td>262</td>
<td>0.91</td>
<td>0.93</td>
</tr>
<tr>
<td>K-R 20 Formula</td>
<td>100</td>
<td>0.87</td>
<td>0.95</td>
</tr>
<tr>
<td>Test retest After One Month</td>
<td>80</td>
<td>0.78</td>
<td>0.88</td>
</tr>
</tbody>
</table>

3. **Validity:** In item analysis validity co-efficient were determined for each item by Flanagan’s table of normalized biserial coefficients. The obtained validity indices ranged between 0.7 and 0.73. The items were retained which yielded 0.25 or above biserial correlation with the total score. The inventory was also validated by correlating the scores obtained on this inventory with the scores obtained by the subject on Basavanna’s Self confidence Inventory. The validity coefficient obtained was 0.82 which is significant beyond 0.01 level. Thus, the final form of the BSCI has 56 items. Its abbreviated name has been used so that the respondent may not decipher the real purpose of the test and fake good.

**Instruction for administration:**
Normally it takes 25 minutes and it is self administering. It has true-false type items.

**Scoring:** The inventory can be scored by hand. A score of one is awarded for a response indicative of lack of self confidence. i.e. making cross (X) to “I believe” response to item nos. 2, 7, 23, 31, 40, 41, 43, 44, 45, 53, 54, 55 and for making cross (X) to response to the rest of the items. Hence, the lower the scores, the higher would be the level of self confidence and vice-versa.

**Norms:**
The norms have been prepared on a sample of 500 individuals. Mean, S.D. and Standard Error of mean for the total sample are recorded in following table.

<table>
<thead>
<tr>
<th>N</th>
<th>M</th>
<th>S.D.</th>
<th>SE_M</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>24.98</td>
<td>9.25</td>
<td>0.20</td>
</tr>
</tbody>
</table>
The raw score obtained by the subject can be interpreted with the help of Tables 3.9, Tables 3.10, and Tables 3.11.

**Tables 3.9**

Raw score and its interpretation

<table>
<thead>
<tr>
<th>Raw score</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 and below</td>
<td>Very high S-C</td>
</tr>
<tr>
<td>8-19</td>
<td>High S-C</td>
</tr>
<tr>
<td>20-32</td>
<td>Average S-C</td>
</tr>
<tr>
<td>33-44</td>
<td>Low S-C</td>
</tr>
<tr>
<td>45 or above</td>
<td>Very low S-C</td>
</tr>
</tbody>
</table>

**Tables 3.10**

T-Score, Standard Score and Z-Score Norms

<table>
<thead>
<tr>
<th>Raw Scores</th>
<th>T-Score</th>
<th>Standard Score</th>
<th>Z-Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-54</td>
<td>77</td>
<td>152</td>
<td>2.58</td>
</tr>
<tr>
<td>45-49</td>
<td>70</td>
<td>142</td>
<td>2.09</td>
</tr>
<tr>
<td>40-44</td>
<td>65</td>
<td>132</td>
<td>1.60</td>
</tr>
<tr>
<td>35-39</td>
<td>61</td>
<td>122</td>
<td>1.11</td>
</tr>
<tr>
<td>30-34</td>
<td>56</td>
<td>113</td>
<td>0.63</td>
</tr>
<tr>
<td>25-29</td>
<td>51</td>
<td>103</td>
<td>0.14</td>
</tr>
<tr>
<td>20-24</td>
<td>47</td>
<td>93</td>
<td>0.35</td>
</tr>
<tr>
<td>15-19</td>
<td>42</td>
<td>83</td>
<td>-0.84</td>
</tr>
<tr>
<td>10-14</td>
<td>38</td>
<td>74</td>
<td>-1.33</td>
</tr>
<tr>
<td>5-9</td>
<td>32</td>
<td>64</td>
<td>-1.81</td>
</tr>
<tr>
<td>0-4</td>
<td>24</td>
<td>54</td>
<td>-2.30</td>
</tr>
</tbody>
</table>
Tables 3.11
Percentile Equivalents of Raw Scores

<table>
<thead>
<tr>
<th>Percentile Norms</th>
<th>Raw Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>P 99</td>
<td>49</td>
</tr>
<tr>
<td>P 90</td>
<td>39</td>
</tr>
<tr>
<td>P 80</td>
<td>34</td>
</tr>
<tr>
<td>P 75 (Q₃)</td>
<td>33</td>
</tr>
<tr>
<td>P 70</td>
<td>31</td>
</tr>
<tr>
<td>P 60</td>
<td>28</td>
</tr>
<tr>
<td>P 50 (Md)</td>
<td>25</td>
</tr>
<tr>
<td>P 40</td>
<td>23</td>
</tr>
<tr>
<td>P 30</td>
<td>20</td>
</tr>
<tr>
<td>P 25 (Q₁)</td>
<td>18</td>
</tr>
<tr>
<td>P 20</td>
<td>16</td>
</tr>
<tr>
<td>P 10</td>
<td>12</td>
</tr>
<tr>
<td>P 5</td>
<td>9</td>
</tr>
<tr>
<td>P 1</td>
<td>5</td>
</tr>
</tbody>
</table>

The inventory was also validated by correlating the scores obtained on this inventory with the scores obtained by the subject of Basvanna’s (1975) self confidence inventory. The validity coefficient obtained is 0.82 which is significant beyond 0.01 level. The scale is shown in appendix – 4.

3.2.2.2 EDUCATIONAL ASPIRATION

For measurement of Educational aspiration investigator administered a standardized “Educational Aspiration Scale (EAS) by Dr. V.P.Sharma and Dr. Anuradha”. For its standardization they designed the list on the strength degrees, diploma, certificate and other distinctive educational qualification as maintained by different Indian University’s competitive Examinations Boards P.S. Cs and U.P.S.C. About 300 educational status of different level were prepared with a view to detect the duplication and inadequacy on which 25 items were deleted. Then ten judges from college faculty were requested to classify this 275 items into 10 piles (A,B,C,D,...,I,J) in which most prestigious qualification was classify in pile A while least one under pile J. After having got the 275 items of qualification classified into 10 piles by 10 judges the items classified systematically recorded the numbers of items showing 100% consistency among 10 judges have been presented below.
Following table represents consistency of degree of pile A to J

<table>
<thead>
<tr>
<th>Pile</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% Consistency</td>
<td>13</td>
<td>11</td>
<td>9</td>
<td>6</td>
<td>7</td>
<td>5</td>
<td>8</td>
<td>11</td>
<td>1</td>
<td>10</td>
<td>91</td>
</tr>
</tbody>
</table>

These retained items in each of the piles were further subjected to rank order, criteria being social prestigious and level of difficulty in attaining them an intra pile rank order technique was employed and the top eight qualification in each of the piles as evaluated by the same 10 judges were retained for preparation of the EAS. It was translated into Gujarati by expert.

Eight lists each consisting 10 items in all the lists have been randomly presented.

<table>
<thead>
<tr>
<th>Goal Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of Expression.</td>
</tr>
<tr>
<td>----------------------</td>
</tr>
<tr>
<td>Realistic (R)</td>
</tr>
<tr>
<td>Idealistic (I)</td>
</tr>
</tbody>
</table>

Reliability:

a. Coefficient of stability test
   Retest method hpt = 0.798
b. Coefficient of internal consistency by split half method using S.B.formula.
   I. Between R & I       rtt = 0.671
   II. Between S & L      rtt = 0.817

Validity:

I. The EAS has been validated against scholastic attainment  r = 0.758
II. It has been validated against the judges opinion  r = 0.542
3.2.2.3  

**CURIOSITY**

Investigator has used "Curiosity scale (CS)" by Dr. Rajivkumar. Initially 50 items stated in positive or negative terms were collected. Most of the items were collected from the self rating instrument developed by Mav & Maw and translated in simple Hindi.

The scale was pre-tried out on 20 students in order to find out the difficulties of the students in answering the questions and understanding the language of the statements.

After pre try out, the test was administered on a sample of 200 students. t-test was applied for item discrimination first of all 27% upper and 27% lower cases were selected from the sample for item analysis.

Hence, the items having t-values 1.75 or more were considered to be discriminating between the high and low group and included in the final form of the list which did not discriminate between subjects with high and low total scores were removed. Thus, the final form of the list contained 44 statements. It was translated into Gujarati by expert.

All the items have four alternatives - 'Never', 'sometimes', 'often', 'always'.

Its reliability was as under

- Test- retest \( r = 0.83 \)
- Split Half \( r = 0.87 \)

The concurrent validity of the instrument was also established using teachers ranking of their pupils has been found 0.20 to 0.67.

The scale in Gujarati is shown in appendix – 6.

3.2.2.4  

**ACHIEVEMENT**

For achievement investigator has used score of New S.S.C board exam (first public exam) from higher & lower 27% Students are used as higher and lower achiever. SSC i.e. first public exam percentage is shown in appendix-4.

3.2.2.5  

**Family Income**

Student's family income is shown in appendix-4

3.2.2.6  

**Parental Education**

Student's parental education is shown in appendix-4

3.2.2.7  

**Family Size**

Student's family size is shown in appendix-4
3.2.2.8 DATA COLLECTION AND ORGANIZATION

Procedure of data collection

Data analysis and its interpretation is a heart of Research project. It is difficult to analyze and to interpret of results without help of statistical test. For more understanding of obtained information and for its interpretation, Data analysis is necessary.

There are statistical methods of analysis like t-test, null hypothesis included in this chapter.

For data collection first tools were administered. Prior permission was secured from all principals of schools for the administration of the research tools. Subjects were not given any clue regarding the tests they were about to take. Since there are many students in each class, students were divided in various groups for easy administration of the tests. The investigator took the help of her husband Mr. Parag Shah for the purpose of administration of the tests. When the subjects were assembled in two or three groups as planned earlier, investigator and her husband went into the hall where the students were seated. The researcher explained to their respective groups the tests they were going to take. First BSCI was administered. The questionnaire was supplied to the subjects. After giving some oral instructions they were asked to read out for themselves the instructions on the cover page of the questionnaire. After they were through with their reading, their quarries if any were answered. The subjects were asked to write their name and other information in the space provided on the cover page. When everybody was ready the subjects were asked to fill the answer about themselves. In the same way C.S and E.A.S questionnaire were administered. After collecting tools they were analyzed according key.

Evaluation of data

SELF CONFIDENCE:-

The inventory can be scored. A score of one is awarded for a response indicating of lack of self-confidence i.e. for making cross (x) to ‘’?’ response to item nos. 2, 7, 23, 31, 40, 41, 43, 44, 45, 53, 54, 55 and for making cross (x) to ‘’?’ response to the rest of the items. Hence the lower the score, the higher would be the level of self-confidence and vice-versa.

CURIOSITY:-

The responses on the scale form can be scored conveniently by giving scores 0, 1, 2 and 3 to responses ‘Never’ ‘Sometimes’ ‘Often’ and ‘Always’ respectively in case of all the positive items and scores 3, 2, 1 and 0
respectively to these responses in case of negative items Nos.5, 12, 23 and 33. Then the total scores are found out by summating the scores obtained by the subject in each item.

<table>
<thead>
<tr>
<th>Sr No.</th>
<th>Type of statement</th>
<th>Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Positive</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Negative</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**Educational Aspiration**

Table 3.12

Evaluation of Educational Aspiration

<table>
<thead>
<tr>
<th>Alternatives</th>
<th>List No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2 3 4 5 6 7 8</td>
</tr>
<tr>
<td>2</td>
<td>3 4 9 10 5 4 3 8</td>
</tr>
<tr>
<td>3</td>
<td>10 3 5 3 9 .6 9 10</td>
</tr>
<tr>
<td>4</td>
<td>8 5 10 2 7 5 8 9</td>
</tr>
<tr>
<td>5</td>
<td>2 6 1 6 4 3 7 8</td>
</tr>
<tr>
<td>6</td>
<td>5 1 2 8 1 9 10 7</td>
</tr>
<tr>
<td>7</td>
<td>4 10 8 1 3 1 6 4</td>
</tr>
<tr>
<td>8</td>
<td>6 7 4 5 2 10 4 3</td>
</tr>
<tr>
<td>9</td>
<td>7 2 6 9 8 8 2 2</td>
</tr>
<tr>
<td>10</td>
<td>9 8 7 7 10 2 5 1</td>
</tr>
</tbody>
</table>

**VARIABLES OF THE STUDY**

To ensure that the researcher, the data collectors and the reader of the research report understands exactly what has been measured and to ensure that there will be consistency in the measurement. It is necessary to clearly define the variable. Variables can be classified into the following categories:

**A) Independent Variable:**

That factor, which manipulated or selected by the experimenter to determine its relationship to an observed phenomenon is independent variable.

"In a research study, independent variables are antecedent conditions that are presumed to affect a dependent variable. They are either manipulated by the researcher or are observed by the researcher. So
that their values can be related to that dependent variable. For example, in a research study on the relationship between mosquitoes and mosquito bites, the number of mosquitoes per acre of ground would be an independent variable.”
Jaeger, 1990 (p-373)
In present research there are eight independent variables

I. Curiosity
   It has two indicators like
   a) High curiosity
   b) Low curiosity
II. Achievement
   It has two indicators like
   a) High Achievement
   b) Low Achievement
III. Educational aspiration
   It has two indicators like
   a) High educational aspiration
   b) Low educational aspiration
IV. Gender
   It has two indicators like
   a) male
   b) female
V. Area
   It has two indicators like
   a) Urban
   b) Rural
VI. Family Income
   It has two indicators like
   a) High family Income
   b) Low family Income
VII. Parental Education
   It has two indicators like
   a) High Parental Education
   b) Low Parental Education
VIII. Family size
   It has two indicators like
   a) Big Family size
   b) Small Family size
B) Dependent Variable:
That factor which observed and measured to determine the effect of the dependent variable is called dependent variable. I.e. That factor that appears, disappears or varies as the experimenter introduces, removes or varies the independent variable is called dependent variable.

"In a research study, the independent variable defines a principal focus of research interest. It is the consequent variable that is presumably affected by one or more independent variables that are either manipulated by the researcher or are observed by the researcher as antecedent conditions that determine the value of the dependent variable. For example, in a research study on the relationship between mosquitoes and mosquito bites, the number of mosquito bites per hour would be the dependent variable."
Jaeger, 1990 (p-373)

The dependent variable is the participant’s response. It is the outcome. In an experiment, it may be what was caused or what changed as a result of the study. In a comparison of groups, it is what they differ on. In the present study, dependent variable is self confidence.

C) Controlled Variable:
This is a variable which must be controlled. So, that its effects are neutralized, canceled out or equated for all conditions. The present study has two control variables.
1) Central Gujarat
2) Standard 12\textsuperscript{th} Science

Variables make the collection of data as well as the analysis more focused and efficient.
This is tabulated as follow.

Table 3.13

 Information of Variables

<table>
<thead>
<tr>
<th>No</th>
<th>Name of Variable</th>
<th>Type of Variable</th>
<th>No. Of Variable</th>
<th>Level</th>
<th>Tool For Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Self Confidence</td>
<td>Dependent</td>
<td>-</td>
<td>-</td>
<td>BSCI constructed &amp; standardized by investigator</td>
</tr>
<tr>
<td>2</td>
<td>Educational Aspiration</td>
<td>Independent</td>
<td>2</td>
<td>(i) high EAS (ii) low EAS</td>
<td>EAS by Dr. V P Sharma &amp; Ku. Anuradha Gupta</td>
</tr>
<tr>
<td>3</td>
<td>Achievement</td>
<td>Independent</td>
<td>2</td>
<td>(i) high Achievement (ii) low Achievement</td>
<td>SSC Board Exam Score</td>
</tr>
<tr>
<td>4</td>
<td>Curiosity</td>
<td>Independent</td>
<td>2</td>
<td>(i) high Curiosity (ii) low Curiosity</td>
<td>CCS by Dr. Rajivkumar</td>
</tr>
<tr>
<td>5</td>
<td>Sex</td>
<td>Independent</td>
<td>2</td>
<td>(i) Male (ii) Female</td>
<td>——</td>
</tr>
<tr>
<td>6</td>
<td>Area</td>
<td>Independent</td>
<td>2</td>
<td>(i) Urban (ii) Rural</td>
<td>According to D E O classification</td>
</tr>
<tr>
<td>7</td>
<td>Family income</td>
<td>Independent</td>
<td>2</td>
<td>(i) high income (ii) low income</td>
<td>Above 2 lacs below 2 lacs to 1.80 lacs and not less</td>
</tr>
<tr>
<td>8</td>
<td>Parental education</td>
<td>Independent</td>
<td>2</td>
<td>(i) high education (ii) low education</td>
<td>Graduate Under graduate</td>
</tr>
<tr>
<td>9</td>
<td>Family size</td>
<td>Independent</td>
<td>2</td>
<td>(i) Big (ii) Small</td>
<td>More than 2 Child 2 or Less than 2 Child</td>
</tr>
</tbody>
</table>
FIGURE OF VARIABLES
RESEARCH METHOD

The research method is directly connected to the problem, statement and goal of research. Because the research goal and problem may vary different methods of research can be utilized.

Research is a purposeful, precise and systematic search for new knowledge, skills, attitudes and values or for the re-interpretation of existing knowledge, skills, attitudes and values.

Following methods are generally preferred/ selected by the investigators:

I. Historical method
II. Descriptive research method
III. Experimental research method
IV. Survey study method
V. Relational study method
VI. Content Analysis
VII. Developmental research method
VIII. Co-relational study method
IX. Causal comparative study
X. Case study method
XI. Trend study
XII. Cross sectional study method
XIII. Longitudinal study method
XIV. Confirmatory longitudinal study method
XV. Exploratory longitudinal study method
Methods of research

- Historical Research Method
- Descriptive Research Method
- Experimental Research Method
- Relational Study Method
- Content Analysis Method
- Developmental Research Method
- Survey Method (used in this study)
- Case Study Method
- Longitudinal Study Method
- Cross Sectional Study Method
- Trend Study Method
- Causal Comparative study Method
- Confirmatory Longitudinal Study Method
- Exploratory Longitudinal Study Method

Co relational Study Method
Investigator has found change in self confidence in terms of high and low educational aspiration, curiosity and achievement.
3.3 **GROUP FORMATION AND DATA ANALYSIS**

3.3.1 **FORMATION OF GROUPS IN TERMS OF:**

For analysis of obtained data investigator formulated groups as under

3.3.1.1 **ACHIEVEMENT**

For achievement score of S.S.C board exam is used as tool. Score were arranged in ascending order from it upper & lower 27% is used upper 27% is used as high achievement group & lower 27% is used as low achievement group. So student having 53 or less percentage were included in low achievement group while students having 65 or more percentage were included in high achievement group, groups were done in terms of hypotheses.

**Graph 3.2 Achievement of students**

![Achievement Graph](image-url)
Graph 3.3 Achievement of rural students

Graph 3.4 Achievement of urban students
3.3.1.2 EDUCATIONAL ASPIRATION

The students who obtained 37 or less score were included in low educational Aspiration group while students having 53 or more score were included in high educational Aspiration group, further the groups were classified in terms of hypotheses i.e. Urban, Rural, Gender, etc.

Graph 3.5 EAS of students
Graph 3.6 EAS of rural students

Graph 3.7 EAS of urban students
3.3.1.3 **CURIOSITY**

Scores were arranged in ascending order and from it upper and lower 27% students were taken. Hence students having 75 or less score were included in low Curiosity group while students having 88 or more score were included in high curiosity group. Later the groups were classified in terms of hypotheses.

**Graph 3.8 Curiosity of students**
Graph 3.9 Curiosity of rural students

Graph 3.10 Curiosity of urban students
3.3.1.4 **FAMILY INCOME**  
Family having income 2 lacs or above are considered as high income group while below 2 lacs were classified as low income group but not less than 1.80 lacs annual income.

3.3.1.5 **PARENTAL EDUCATION**  
Students whose mother or father is graduate are grouped as high parental education while whose mother or father is under graduate are grouped as low parental education.

3.3.1.6 **FAMILY SIZE**  
Student's family where there are more than 2 child are grouped as big while family where there are 2 or less than 2 child are grouped as small
3.3.2 HYPOTHESES TESTING AND STATISTICAL METHODS USED

Mean of group classified is found by using following formula

\[ X = \frac{\sum X_i}{n} \]

Where \( X \) = Mean of group (Average)

\( \sum X_i \) = Summation of score of group

\( n \) = no. of students in group

**Standard deviation (SD)**

\[ \sigma = \frac{\sum X^2}{n} \]

\( \sigma \) = standard deviation

\( \sum X^2 \) = Square of summation of difference of score with mean.

\( n \) = no. of students in group

To measure significant difference in mean score t–test is used. For it following formula is used.

\[ t = \frac{M_D}{\frac{\sigma_D}{n}} \]

Where \( M_D \) = Mean difference between two groups.

\[ M_D = |M_1 - M_2| \]

\[ \sigma_D = \sqrt{\frac{\sigma_1^2}{N_1} + \frac{\sigma_2^2}{N_2}} \]

\( \sigma_1 \) = Sd of first group

\( N_1 \) = no. of students in first group

\( \sigma_2 \) = Sd of second group

\( N_2 \) = no. of students in second group
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