CHAPTER III

RESEARCH METHODOLOGY

The research problem when formulated in clear cut terms, the researcher has to be required to prepare its research design to state the conceptual structure within its limits of research to be conducted. The preparation of such a design facilitates research to be as resourceful as possible yielding maximal information. In other words, the function of research design is to give for the collection of relevant and applicable evidence with minimum effort, time and money. But how all these can be achieved depends mainly on the research purpose. Research purposes may be grouped into four categories-(I) Examination, (II) Description, (III) Diagnosis, and (IV) Experimentation. The preparation of research design, appropriate for a particular research problem involves the consideration of the following:

1. Methods of Data Collection to be adopted in work
2. Source of information
3. Tools and techniques for Data collection.
4. Data Analysis i.e. qualitative and quantitative.

III.1 RESEARCH DESIGN

A flexible research design which provides chances for considering many different aspects of a problem is to be considered appropriate and suitable if the purpose of the research study is that of investigation. But when the purpose happens to be an accurate description of a situation or of an association between variables, the suitable design will be one that reduces bias and maximizes the reliability of the data collected and analyzed. There are many research designs like experimental and non-experimental hypothesis testing. Research design considers the following:

- The mode of obtaining the information from sources
- The availability and skills of the researcher himself
- Explanation of way to obtain information will be organized
- The reasoning of the problem selection
The time available for research
The cost factor relating to research, i.e., the finance available for the purpose.

On keeping the above facts in the mind a descriptive research design has been employed as the study aimed to investigate the problems of students of professional courses in context to personality characteristics, sex and institutional environment in Jaipur district. Actual work begins with the selection of method and techniques and proper tools to carry out the research.

III.2 METHOD USED

Survey method has been used for this research study. Approach most suited for gathering descriptive information. This method provides three types of information:-
- Of what exists.
- What we want.
- How to get information.

The information of what exists is gathered by studying and analyzing important aspect of present situation. The information of what we want is obtained by clarifying goals and objectives. The information of how to get these is collected through discovering the possible means of achieving the goals on the basis of the experiences of others or of opinions of experts.

*Advantage of survey method:-*
- As compared to other methods survey yield a broader range of information.
  Questioning is usually faster and cheaper that Observation.
- Questions are simple and suitable to administer and analyzing.
- Data is reliable and authentic.
- The variability of results is reduced to some extent.
- It is relatively simple and interesting to analyze, quote and interrelate the data gathered by survey method.

III.3 POPULATION

Population is the larger group from which individuals are selected to participate in a study. The population for the study comprised of undergraduate and
postgraduate students studying in professional courses of Rajasthan state. Population comprises for the present survey are the students of Rajasthan who had been admitted through pre-entrance examination (Govt. or private) conducted by examination bodies of Rajasthan state as per required norms.

III.4 SAMPLE

Sample is the representatives selected for a research purpose whose distinctiveness demonstrates the larger group from which they were selected. Researchers generally draw conclusions and results about large groups by taking a sample. A Sample is a section of the population selected to represent the population as a whole in a research study. Ideally, the sample should be representative and allow the investigator to make precise estimation of the thoughts and behaviour of the larger population. For designing the sample three things should be decided -

- Who will be surveyed, they are the sample
- How many people will be surveyed, that is sample size
- Large samples give more reliable and accurate results than small samples.
- How should the sample be chosen is called Sampling
- Sample members may be chosen at random from the entire population

III.5 SAMPLING

Sampling - The process to select a number of individuals for any research study in such a way that the individuals represent themselves as a part of larger group from which they were selected. Purpose of sampling is to gather data about the population in order to make an conclusion that can be generalized to the population.

There are two types of sampling techniques one is Probability Sampling and second is Non-Probability Sampling. Probability sampling is one in which each member of the population has an equal chance of being selected but in a non-probability sample, a particular member of the population can have chosen.

Types of probability sampling –

- **Probability sampling**-
  
  Simple random sampling, systematic sampling, stratified sampling, cluster sampling, Multi stage sampling
- **Non-probability sampling**
  Purposive Sampling, Convenience Sampling, Quota sampling, Snow ball sampling

### III.6 SAMPLING PROCEDURE

It is a process of selecting a sample from the population. After taking into consideration the nature of the investigation and examination and other related factors for the present research investigation researcher used two types of methods for the sampling-

1. **Purposive sampling**— In this sampling method, the researcher selects a typical group of professional courses who represent a section from all professional courses and then collects data from this group. As this sampling method involves purposive or deliberate selection of particular units of the universe for constituting a sample which represents the universe thus it was used for the selection of four courses i.e. education, engineering, medical science and business management from available professional courses in Rajasthan for the study.

2. **Random sampling**— *Simple random sampling* is also known as chance sampling or probability sampling where each and every item in the population has an equal probability to select in the sample. In simple random sampling every member of the population has probability of coming into the sample and it is least biased of all sampling techniques. It can be easily used with large sample size. Therefore in this study, institution running professional courses of ED*, EN*, MD*, MN* and their respective students has been selected randomly.

*-{Education-ED, Engineering-EN, Medical science-MD, Business management-MN}*

### III.7 SAMPLE SELECTION

On the basis of above sampling procedures, the distribution of the proposed sample is given in the following table –
### Table - 3.1 Proposed Samples

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Professional institutions of Jaipur district running the courses</th>
<th>Number of institutes</th>
<th>No. of Students</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>1.</td>
<td>Education (ED)</td>
<td>5</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>2.</td>
<td>Engineering (EN)</td>
<td>5</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>3.</td>
<td>Medical science (MD)</td>
<td>3</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>4.</td>
<td>Business management (MN)</td>
<td>5</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>18</td>
<td>400</td>
<td>400</td>
</tr>
</tbody>
</table>

# Note- original sample consists of all potential participants that researcher approach to participate; the final sample consists of those who actually do participate.

Tools has been administered on above proposed sample but actual respondents after rejection of unfilled and incomplete forms as well as received forms, actual sample was as follows

### Table - 3.2 Actual sample

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Professional institutions of Jaipur district running the courses</th>
<th>Number of institutes</th>
<th>No. of Students</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>1.</td>
<td>Education (ED)</td>
<td>5</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>2.</td>
<td>Engineering (EN)</td>
<td>5</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>3.</td>
<td>Medical science (MD)</td>
<td>3</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>4.</td>
<td>Business management (MN)</td>
<td>5</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>18</td>
<td>240</td>
<td>240</td>
</tr>
</tbody>
</table>

### III.8 VARIABLES OF THE PRESENT STUDY

An important step in designing research study is defining or identifying the variables that can be manipulated, measured, examined and described, or controlled.

The variable can be a number, a name, or anything where the value can change. There are two types of variable:

- **Independent Variable (IV):** A variable that is selected or controlled by the researcher, to find out its relationship to the coming outcomes of the research.
Independent variable that can be manipulated, measured, or selected to examine the relationship to some other observed variable. The nature of what is varied should be carefully explained.

- **Dependent Variable (DV):** The variable being measured as an outcome—also called outcome, response, criterion, or explained variable. Dependent variable that is observed and measured in response to an independent variable.

In the present research study following are the variables -

**Independent variables: (IV)**

1) Personality
2) Sex
3) Institutional environment

**Dependent variable: (DV)**

1) Problems of the students of professional courses

### III.9 JUSTIFICATION OF THE SELECTION OF VARIABLES IN THE STUDY

Following variables took for the study because:

- **Professional courses:** A first professional degree is an academic degree that prepares the holder for a particular profession by emphasizing competency skills along with theory and analysis. In current scenario the most popularity is gained by those professional courses which bring future safety and security in vocation/profession as well as an independent financial status in the society. These selected professional courses i.e. education, Engineering, Medical, and business Management courses are the most suitable and demanding courses now a days.

- **Problems of the students:** there is thinking in various people that getting an admission in a professional course after the school education for a career is enough so they give emphasis and most of their efforts till their admission only but the reality shows the other side of the coin. It has been observed everywhere that in students’ life after even after choosing their professional fields all of them face various types of problems. Out of them problems related to educational, personal and vocational fields are most important and should
be taken care of seriously as they can affect their settlement and success in future.

- **Personality characteristics**: The many problems of students are affected by their own personality characteristics. A single dimension of the personality is able to change the situation and circumstances in the life.

- **Sex**: The problems of students of males and females on the basis of their sex difference may be different or common inspite of having same institution or personality. Some of the traits are inborn naturally in males and females which makes the difference.

- **Institutional environment**: Physical and academic environment of any institution place an important role for the problems of students of the professional courses. Building infrastructures and human resource are the constituting criteria of any institutional environment.

### III.10 SOURCES OF DATA

- Students
- Faculties
- Management and other staff of institutions
- Different records of institutions

### III.11 NATURE OF DATA

Both types of Qualitative and Quantitative data were used in the study. Qualitative data was generated from the interviews of selected teachers and students of institutions regarding their institutional environment, different types of problems and their solution. It was also obtained by observation schedule prepared for qualitative study of environment of institutions. Quantitative data was generated and gathered by administrating the two different self made checklists, Multidimensional Personality Inventory prepared by Dr. Manju Agrawal and structured interview.

### III.12 TOOLS FOR COLLECTION OF DATA

In every research work, it is essential to collect information in terms of some data. They can be obtained from many sources, direct or indirect. It is necessary to adopt a systematic method to collect required data. Relevant and adequate data in
sufficient quantity and quality should be collected. They should be satisfactory, reliable and valid. The instruments thus employed as means for collecting data are called tools. The selection of suitable instruments or tools is of vital importance for successful research. Different tools are suitable for collecting various kinds of information for various purposes in a single investigation. The researcher may possibly use one or more of the tools in combination or individually for this purpose. Researchers construct and use them effectively with systematic way and procedure.

Researcher kept all the aspects of study in mind to select the most appropriate tool for her study.

**III.12A. CONSTRUCTION OF RESEARCH INSTRUMENTS OR TOOLS**

The construction of a research instrument or tool for data collection is the most important step of a research project because findings or conclusions is based upon the type of information collected, and the data collected is entirely dependent upon the questions asked of respondents. The famous saying about computers- “garbage in garbage out”- is also applicable for data collection. The research tool provides the input into a study and therefore the quality and validity of the output (the findings), are solely dependent on it. The underlying principle behind the construction of tool is to ensure the validity of instrument by making sure that questions must relate to the objectives of a research study.

On the basis upon the consideration such as variables, objectives, availability of suitable tests, personal competence of the investigator, methods of scoring and interpretation of data a review of tools needed for the study was made, however none of them was found to be appropriate for problems of students for this study due to unavailability of content. Therefore on the basis of requirement of information needed for the present study researcher decided to took both types of standardize and self-made tools. They are presented as follows in next table 3.3 on page- 107
### Table - 3.3: Tools

<table>
<thead>
<tr>
<th>Aspect of the tool</th>
<th>Name of the tool</th>
<th>code</th>
<th>Type of tool</th>
<th>Dimensions on the tool</th>
<th>Number of items</th>
<th>Administered on</th>
<th>Scheme of analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Information</td>
<td>Personal data blank Perforam</td>
<td>T1</td>
<td>Self-made</td>
<td>Personal, health, family, education, sex, etc.</td>
<td></td>
<td>students</td>
<td>Quantitative &amp; qualitative</td>
</tr>
<tr>
<td>Personality</td>
<td>Multidimensional Personality Inventory prepared by Dr. Manju Agarwal</td>
<td>T2</td>
<td>Standardize</td>
<td>Introversion, extroversion, self-concept, independent-dependent, Temperament, Adjustment and Anxiety.</td>
<td>120</td>
<td>students</td>
<td>Quantitative</td>
</tr>
<tr>
<td>Problems of students</td>
<td>Problem checklist</td>
<td>T3</td>
<td>Self-made</td>
<td>Educational, personal and vocational problem of students</td>
<td>150</td>
<td>students</td>
<td>Quantitative</td>
</tr>
<tr>
<td>Institutional environment</td>
<td>Checklist for institutional environment</td>
<td>T4</td>
<td>Self-made</td>
<td>Institutional environment, building, human resources, labs, teaching, academics etc.</td>
<td>26</td>
<td>students</td>
<td>Quantitative</td>
</tr>
<tr>
<td>Institutional environment And problems of students</td>
<td>Observation schedule</td>
<td>T5</td>
<td>Self-made</td>
<td>Facilities related to building infrastructure and human resource</td>
<td>26</td>
<td>Self-observed</td>
<td>Qualitative</td>
</tr>
<tr>
<td>Institutional environment</td>
<td>Interview (Structured)</td>
<td>T6</td>
<td>Self-constructed</td>
<td>Views on problems and solutions facilities, academic environment</td>
<td>10</td>
<td>students</td>
<td>Quantitative &amp; qualitative</td>
</tr>
<tr>
<td>Institutional environment</td>
<td>interview (Focus group discussion)</td>
<td>T7</td>
<td>Self-constructed</td>
<td></td>
<td>10</td>
<td>Experienced and young Teachers groups</td>
<td>Qualitative</td>
</tr>
</tbody>
</table>
III.12.B STEPS FOLLOWED IN CONSTRUCTION OF TOOLS

Following procedure was followed for the construction of self-made tools and its scoring:

- Study of related books and literature for more accuracy.
- Deciding the areas of related subjects of the tools after consulting the various experts and research guide.
- Suggestions of some experts of related fields on items prepared for the tool.
- Pilot testing for providing certainty and deleting ambiguity.
- Tool editing on the basis of above steps in which language correction and reframing of items had been done. Irrelevant items were deleted.

III.13 CONSTRUCTION OF TOOLS

3.13.a. personal data blank-T1  
(Attached in Appendix-1)

For collecting the information’s related to students and more importantly separating them on the basis of sex difference in males and females and course a personal data blank Performa was prepared and had been distributed among the selected sample on which following items related to their information were asked –

- Sex-
- Age-
- Contact-
- Email-
- Residence status- day scholar/hosteller/PG/tenant
- Relationship Status- married/ unmarried
- Family Status – educated/uneducated /business/ service
- Father’s /Husband’s occupation-
- Mother’s/wife’s occupation-
- Health status - good/ any sufferings, if any:
- Admitted for professional degree for: management / engineering / education / medical
- Name of professional course perusing:
- Duration of course-
- You belong to - I/III/IV/final year of perusing year.
3.13. b Multidimensional Personality Inventory prepared by Dr. Manju Agarwal

(Attached in Appendix-2)

Personality researches confirm that it is a complex concept & its definition as well as measurement is not the easy task. Personality cannot be measured through one factor or dimensions of personality. It has multidimensional factors. In this tool dimensions were – Extroversion – Introversion, High Self Concept – Low Self Concept, Independence – Independence, Balance – Imbalance Temperament, High Adjustment – Low adjustment & High – Low Anxiety.

Although several tests are available in the area of personality measurement but none of the test measures all six above mentioned dimension of personality. The construction & standardization of the present inventory fill this gap, because with the administration of present inventory one can get the scores of six personality areas. Therefore, researcher has decided to choose this standardized tool for her study.

The first area of this inventory is Extroversion – Introversion (A) - which has been considered as one of the important potential personality variable, by which one can estimate whether one person – orientation is based on objective condition or facts (Extrovert), or person – orientation is based on own self (Introvert). Extroverted behavior primarily directed by external environment objectives or facts, whereas introverted behavior is directed by himself. His (Introvert) consciousness thinking & way of behavior are subjective. The inner life of extrovert & introvert are determined & controlled by external & internal conditions respectively. The extrovert person has a close touch with the environment & his interest, belief, values & the behavior depend upon the objective condition of the environment. The extrovert person is normally adjusted in moral conduct & other sphere of behavior. The immediate environment condition does not influence the person who is introverted. He acts according to his own expectation & thinking. The introvert & extrovert differ in thinking, feeling, sensation & involution.

The second factor of personality has been included in this inventory is Self – Concept (B). The “Self” has also been considered as a central construct of the
personality, the core of one being or ego, the end result of one’s experience, the potential or the nucleus of personality. This thinking conscious entity is a complex of various vital psychological processes. It possesses a cognitive structure of adjustment & interactions. Despite its genesis in social interactions, self has a continuity of striving that makes self-identifications with a cluster of values or traits & strives for consistency of functional existence & of its own identity. Thus, the self can be explained as the organized consistent conceptual gestalt of perceptions of relationship of the “I” or “Me” to others & to various aspects of life together with value attached to this perception, in terms of self-personification, self-esteem, self-image self-sentiment, perpetuates to actualize itself.

The third factor of this inventory is temperament (C) which refers to reaction of the person toward emotional situation. By knowing temperament of the person one can estimate personality of the person, because this is related to the consistency or mental imbalance & considered as one of the important factor of personality.

Like temperament, dependency v/s independency (D) its fourth dimension is also associated with the personality which has close relation to intelligence or uniqueness of the personality.

Adjustment (Y) - fifth dimension is an index of integration between needs & press, which has a close relation to personality; it has been considered as a trait of personality. By the process of adjustment an individual experiences several facts & events, by which he tries to shape & reshape his personality.

The concept of anxiety (R) the sixth dimension occupies a very important place in the study human personality & multitude activities of the mind. According to Freud “Anxiety is a something felt, unpleasant effect of state or condition.” This state was characterized by all that is covered by the word “nervousness”, ‘apprehension” or anxious expectation’ & different discharge phenomena.

Now, in present research investigation the above tool was utilized to select the different six groups of students so from each selected group (ED, EN, MD and MN) their students have been analyzed for three dimensions according to following table-
Table - 3.4

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Group</th>
<th>Dimension examined</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ED-EN</td>
<td>Extroversion – Introversion (A)</td>
</tr>
<tr>
<td>2</td>
<td>ED-MD</td>
<td>Self – Concept (B).</td>
</tr>
<tr>
<td>3</td>
<td>ED-MN</td>
<td>Dependency / Indepency (D)</td>
</tr>
<tr>
<td>4</td>
<td>EN-MD</td>
<td>Temperament (C)</td>
</tr>
<tr>
<td>5</td>
<td>EN-MN</td>
<td>Adjustment (Y)</td>
</tr>
<tr>
<td>6</td>
<td>MD-MN</td>
<td>anxiety (R)</td>
</tr>
</tbody>
</table>

Note-Out of above six personality dimensions those aspects of each criteria in which maximum number of students lie during the scoring is used to make the groups and has been analyzed in the study.

Scoring procedure: the procedure for this Multidimensional Personality Inventory is very simple. Scores has been given as follows

1. Yes                 - 3  
2. Indefinite        - 2  
3. No                  - 1

III.13c Problem checklist – T3  
(Attached in Appendix-3)

Checklist is a selected list of words, phrases, sentences and paragraphs following which an observer records a check mark to denote a presence or absence of whatever is being observed. It calls for a simple yes / no judgments. The main purpose is to call attention to various aspects of an object or situation, to see that nothing of importance is overlooked.

For its preparation investigator tapped many sources and also discussed with various experts of i.e. education, engineering, medical sciences, management, university and school counsellors, psychologists, students and teachers. After a detail and fruitful discussion researcher was able to prepare a checklist for the students of professional courses. In the checklist total 180 items were framed related to the problems of their educational, personal and vocational field. Items on educational problems were related to study, books and text books, course material, attendance in their theory and practical, teacher and their teaching style, academic achievements,
items on personal problems were related to behavior, emotions, stress intelligence, creativity, anxiety adjustment, health, self-esteem, self-confidence etc. Items on vocational problems were related to vocational choice, attitude and aptitude towards the selected course, job opportunities in the courses, chances of campus selection, personality development as their profession required etc. Nature of items was framed in the form of phrase. Scoring key was also prepared. After preparation of this checklist it was sent to some eminent experts in the field of education, engineering, medical sciences, management. They were requested to give their opinion about the content, type of phrases and relevance of the framed items. Final editing of the tool was done considering unanimous suggestions of the experts. Those items on which 80% of the opinion was found were included in the checklist and rests were discarded as were found inappropriate. On the basis of expert’s opinion 50 items for each criterion were selected. In this way 50 items for each educational, personal and vocational problem were found to be fit on checklist thus checklist was constructed so that 1-50 items for educational problems 51-100 items for personal problems and 101-150 items for vocational problems were arranged serially. For responding on the checklist complete instructions to put (√) and (x) on serial numbers of items were given separately.

**Scoring scheme –**

One mark for (√) response zero for (x) was allotted. Thus the maximum marks on the check list are 3x50=150 which was calculated in three sections of 50 marks separately according to sequence of educational, personal and vocational problems.

<table>
<thead>
<tr>
<th>Items</th>
<th>✓</th>
<th>x</th>
<th>Max. score</th>
<th>Min. score</th>
</tr>
</thead>
<tbody>
<tr>
<td>E (1-50)</td>
<td>1 mark</td>
<td>0 mark</td>
<td>1x50</td>
<td>0x50</td>
</tr>
<tr>
<td>P (51-100)</td>
<td>1 mark</td>
<td>0 mark</td>
<td>1x50</td>
<td>0x50</td>
</tr>
<tr>
<td>V (101-150)</td>
<td>1 mark</td>
<td>0 mark</td>
<td>1x50</td>
<td>0x50</td>
</tr>
</tbody>
</table>
III.13d. Checklist for institutional environment – T4 (for students)

(Attached in Appendix-4)

In the checklist initially total 35 items were framed related to the institutional environment in the form of words. Scoring key was also prepared. Items related to educational environment includes the various aspects of building infrastructure and its human resources i.e. infrastructure facilities, management, administration, academic staff, office staff, peons etc. After preparation of this checklist it was sent to some eminent experts in the field of education, engineering, medical sciences, management. They were requested to give their opinion about the content, type of phrases and relevance of the framed items. Final editing of the tool was done considering unanimous suggestions of the experts. Those items on which 80% of the opinion was found were included in the checklist and rests were discarded due to ambiguity and repetitiveness. On the basis of expert’s opinion 26 items were found to be fit on prepared checklist. For responding on the checklist, complete instructions to put (✓) for Yes and (x) for No, has been given.

Scoring scheme –

One mark for (✓) response and zero for (x) was allotted. Thus the maximum marks on the check list were 1x26=26.

In present research after filling the checklists by all the respondents of selected professional courses, two groups (average and above average level of institutional environment) were prepared on the basis of obtained scores. Nowadays institutional environment for the students of different courses has been maintained almost at same level as most of the students in selected sample are studying in those institutions in which a variety of courses running in same institutions having almost same infrastructure, HR as well as other facilities. Also, sample has been drawn from Jaipur district thus, trends to make institutional environment up to the mark by the management people follows almost same standards due to competition among them. Formation of groups is as follows-

- Average level of institutional environment - Scores obtained below 80% of facilities on observation schedule
• Above average level of institutional environment - Scores obtained 80% and above 80%. of facilities on observation schedule

III.13.e. Observation schedule for institutional environment

(Attached in Appendix-5)

Observation method is a method in which the research subjects is observed and recorded without any direct contact. It can deal in controlled or uncontrolled situations. Observation offers the researcher a distinct way of collecting data. It does not rely on what people say or they perform, or what they say or what they think. It is more direct than that. Instead, it relies only on the direct evidence and proofs of the eye witness events. It is a more usual way of gathering data. Whenever direct observation is possible it is the perfect method. It involves the systematic recording of observable happening or behaviour in a natural setting for the selected situation. The idea behind observation techniques is to collect data in considerable amount in short time span directly and also to get eye witness first hand data in real life situation. It is necessary to make a distinction between observation as a scientific tool and the casual observation of the man in the street. Observation is very systematic and interesting technique. Therefore for a systematic collection of data the various procedure of recording should be used. They are like checklists, rating scales and score card etc.

In the present research investigation it was necessary to observe the different aspects like proper use of facilities and human resources available in institutions, proper conduction of academics and quality teaching etc., systematically without any direct contact. They all are responsible to make institutional environment positive. Thus investigator prepared an observation schedule in the form of rating scale for rating three items 1.building infrastructure 2.Human resource 3.academic environment. The rating grades on the tool is given as- A-Excellent, B- Good, C- Average. Observations of five institutions of ED, EN, MN and three colleges of MD have been observed by the researcher.

Scoring procedure has following structure for calculating the response on various grades in observation schedule.

1. 0% - 33% - below average
2. 34% - 67% - average
3. 68% - 100% - above average
A. Grade-A is provided to those institutions in which 80% and above items found in functional conditions on all the aspects in prepared schedule.
B. Grade-B is provided to those institutions in which 65% - 79% items found in functional conditions on all the aspects in prepared schedule.
C. Grade-C is provided to those institutions in which below 65% items found in functional conditions on all the aspects of prepared schedule.

III.13.f. (i) Structured Interview T6 (for students)  (Attached in Appendix-6)

Interviews are an attractive plan for the investigators and researchers. Interviews are something more than the simple conversation. They involve a set of guess and understandings about the situation which are not normally associated with an informal conversion. In interviews data is collected directly from others in face to face contact in a particular situation. The interviewer can able to obtain certain types of confidential information which might be hesitant to put in writing in front of everybody. Interview is particularly appropriate when the researcher wishes to collect data based on their personal emotions, experiences and feelings.

Therefore researcher decided to take structured interview for further analyzing the institutional environment as well as other probable reasons to investigate the problems of students of professional courses. 8% of actual sample of students who had participated in the study were interviewed. The consent of the subject was taken for the purpose of interview. It was used for purpose of the research study only. The researcher framed a predetermined list of 10 questions of mixed type of nature viz. 8 items on yes and no, one item is of choose the order, and 1 item was to assign grades to institution according to their personal view. Each respondent has faced with identical questions. This type of interview was rigidly standardized and formal. Interpretation has been done on the basis of calculated % of positive responses of students on items. Scoring procedure had following structure for calculating the response on various items in interview schedule.

1. 0% - 33% - below average
2. 34% - 67% - average
3. 68% - 100% - above average
III.13. f. (ii) focus group interview T7 (for teachers)  

(Attached in Appendix-7)

It is rapidly becoming one of the major research tools to understand people’s thoughts and feelings and their views regarding a particular aspect. It is generally conducted by inviting six to ten people in a group to gather for a few hours with a trained moderator to talk and discuss about a product, thought, service or organization. The conference is held in a pleasant place with refreshments and drinks to create a relaxed environment for the participants. The moderator needs independence, vast knowledge of the subject and some understanding of group and their behaviour. The moderator starts with a broad question before moving to more specific subject, encouraging them to open-up and easy discussion to bring out true feelings and thoughts. At the same time, the interviewer focuses their discussion; hence the name is given focus group interviewing. Focus groups are structured around a set of carefully prearranged questions usually not more than 10 but the discussion is free-flowing to discuss. Ideally, participant comments will stimulate and influence the thinking and sharing of others. Some people even find themselves changing their thoughts and opinions during the group. A homogeneous group of unfamiliar person comprises the focus group. Homogeneity reduces self-consciousness among people who will probably never see each other again.

**Characteristics of Focus Group Interviews -**

- Participants of the group
  - Should be carefully recruited
  - Set 5 to 10 people per group but 6-8 preferred
  - Gather similar types of people
  - Set of repeated groups

- Environment for the FGI (focus group interview)
  - Make it comfortable
  - Arrangement in circle seating
  - Tape recorded/Note making

- Moderators of group
  - Must be skillful in group discussions
  - Uses pre-determined questions
Research Methodology

- Establishes liberal environment
- Analysis and Reporting of discussion
  - Systematic analysis of results
  - Demonstrable procedures
  - Appropriate reporting of outcomes

Advantages of the process
- Research procedure in a social context
- Format allows the moderator to probe- flexibility to investigate unexpected issues.
- High face validity in the process
- Relatively completed in low-cost.
- Relatively give fast results.

In the present study researcher had decided to use this new method of conducting interview of 12 faculty members of each course. She was in need to insight into a new area of research is to investigate topics where opinions or attitudes were conditional. Researcher also needs additional information to analyze the data correctly about their working atmosphere and her observation schedule. For this purpose eight focus groups were conducted for each of 90 minutes by a team consisting of a moderator and assistant moderator. The moderator facilitated the discussion; the assistant took the notes. Members of groups were selected randomly. Two groups were of education lecturers (n - 6), two groups of engineering lectures (n-6), two groups of medical science (n-6) and two group of business management (n-6). All the instructions to conduct the interview were followed. Data was planned to collect using both video- audio recorder and notes making and studied later to analyze. The rationale being that if one strategy failed, data would still be recorded by the other method. But Participants had refused to speak in the presence of a camera and recorder, so notes preparation was done by assistant moderator. During the interviews 1-2 participant in all types of groups was unhappy about the discussion leading in a negative direction, and expressed this, but continued to participate.
**Preparation of focus group questions**-

Total 15 items were framed related to the teachers, teaching and their institutional environment in the form of questions. After preparation of this list it was sent to some eminent experts in the field of education, engineering, medical sciences, management. They were requested to give their opinion about the content, type of phrases and relevance of the framed items. Final editing of the tool was done considering unanimous suggestions of the experts. Those items on which 80% of the opinion was found were included in the list and rests were discarded due to ambiguity and repetitiveness. On the basis of expert’s opinion 10 items out of which 2 were engagement questions, 6 exploratory and 2 were exit types of questions found to be fit on prepared list. For responding on the list, complete instructions to discuss on it were given separately. Scoring procedure had following structure for calculating the response on various items in focus group interview.

1. 0% - 33% - below average
2. 34% - 67% - average
3. 68% - 100% - above average

**III.14 RELIABILITY AND VALIDITY OF TOOLS**

**Reliability**

Reliability is the degree to which actions are free from error to yield consistent results. If a measurement device or procedure again and again assigns the same score to individuals or objects with equal values, the instrument or tool can be considered reliable. Reliability involves the consistency or reproducibility of test scores across testing situations on the same, or parallel, testing instruments. This property is not a stagnant function of the test. Repeatability, or stability-over-time reliability, may be measured with the test-retest method

For the present study reliability of problem-checklist of students was established by split-half method. For getting the reliability coefficient of the checklist it was administered to a sample of 200 students of different professional courses. In the sample, students of different professional courses have been randomly selected. Split-half reliability was computed for the three selected subscale of the problems for the checklist as well as total.
Table – 3.6

<table>
<thead>
<tr>
<th>Serial number</th>
<th>Sub-scale</th>
<th>reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Educational problems</td>
<td>0.78</td>
</tr>
<tr>
<td>2</td>
<td>Personal problems</td>
<td>0.87</td>
</tr>
<tr>
<td>3</td>
<td>Vocational problems</td>
<td>0.91</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>0.86</td>
</tr>
</tbody>
</table>

Validity

Validity has been defined by the extent to which a test measures as what it claims to measure with full accuracy. A measure is applicable if it measures as what it is supposed to measure during the time of its construction, and does so cleanly – without any mistake including other factors. The main point is here is not necessarily on scores or items, but rather inferences made from the instrument. In order to be valid, the conclusions made from scores need to be so appropriate, meaningful, and useful. These differences illuminate the link between validity and reliability. Reliability is a necessary but not enough condition for validity. In other words, a valid instrument must be reliable, but a reliable instrument may not necessarily be valid.

Content Validity

Content validity considers whether or not the items on a given test accurately reflect the theoretical domain of the latent construct it claims to measure. Items need to effectively act as a representative sample of all the possible questions that could have been derived from the construct. In present study content validity was established for the tools. Tools had been sent to the experts related to the respective fields.

III.15 DATA COLLECTION PROCEDURE

Prior permission of the Heads of the institution was sought for approaching the teachers and students. The students list was taken from the office to know the strength of the students and for selection of the sample. The head of the department of all institutions were requested verbally to spare one practical class for administering the checklists T1 and T2 and multidimensional personality inventory. Students were made to sit comfortably and provided the assessment material. They were asked to fill the personal data blank Performa which includes general information and education
background of the students. The checklists were self administered to the students who were selected randomly. The necessary instructions were given to the respondents before filling the tools. Before starting the test all doubts of students were clarified and all instructions on the tool were explained. The checklists were administered on the same day with a gap of 10-15 min to avoid mental fatigue, as the test was lengthy. The tests were administered on the same day to avoid chances of absenteeism. Since, it has been likely to occur if the other part of the questionnaire was given on another day. Researcher took totally 16 visits to collect the information. Few students were omitted because they did not completely attend all the tests. They appeared for only one or two tests. Final sample of the students was taken on the basis of complete information’s filled by students.

III.16 ANALYSIS AND PRESENTATION OF DATA

Statistical analysis has been done on the basis of one-way ANOVA. ‘t’ test, and Percentage.

Analysis of variance (ANOVA)-one-way

ANOVA is a statistical method that stands for analysis of variance. It is used to test the significant of the differences among the sample means when the number of samples was more than two

Use of ANOVA

These days, researchers are using ANOVA in many ways. The use of ANOVA depends on the research design. The process of computing ANOVA was as follows:-

Formula:-

1. Sum of all the observation of various samples
   
   \[ \text{Sum} = E_1 + E_2 + E_3 + \ldots + E_n = \text{G.T.} \]

   Where \( E_1, E_2, E_3, \ldots, E_n \) are the summation of the different samples.

2. Correction Factor (c.f.) = \[ \frac{\text{G.T.}^2}{N} \]

   Where \( \text{G.T.} = E_1 + E_2 + E_3 + \ldots + E_n \)

   \( N = \) Total number of observations.

3. The total sum of squares (T.S.S.):
\[ = \text{EX}_1^2 + \text{EX}_2^2 + \text{EX}_3^2 \ldots \ldots \text{EX}_n^2 - \frac{T^2}{N} \]

4. Sum of squares between the samples (SSB):
\[
= \frac{(EX_1)^2}{N_1} + \frac{(EX_2)^2}{N_2} + \frac{(EX_3)^3}{N_3} + \frac{(T)^2}{N}
\]

Where, \( N_1 \) and \( N_2 \) are the total number of observation of respective groups.

5. Sum of squares within the sample (SSW)
\[ SSW = TSS - SSB \]

**ANOVA Table**

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>d.f.</th>
<th>Sum of squares S.S.</th>
<th>Mean sum of squares M.S.S.</th>
<th>F - Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between sample</td>
<td>C - 1</td>
<td>SSB</td>
<td>MSSB = ( \frac{SSB}{C - 1} )</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>( \frac{MSSB}{MSSW} )</td>
<td></td>
</tr>
<tr>
<td>Within the Samples</td>
<td>N - C</td>
<td>SSW</td>
<td>MSSW = ( \frac{SSB}{N - C} )</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>N - 1</td>
<td>TSS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

To calculate the test of significant as \( F = \frac{MSSB}{MSSW} \) this was with d.f. as (C-1, N-C). The level of significant was taken as .05 and .01 level of significance.

In present research investigation Part-A deals with the entire group’s differences which were examined by applying one way Analysis of Variance (ANOVA) on the educational, personal and vocational problems of the students of ED, EN, MD and MN courses.

**t-test**

‘t’ is the difference between two sample means measured in terms of the standard error of those means, or ‘t’ is a comparison between two groups means which takes into account the differences in group variation and group size of the two groups. The test statistic that a t-test produces is a t-value.
**Research Methodology**

**Formula:**
The value of ‘t’ is obtained by applying the following formula:

\[
't' = \frac{\bar{X}_1 - \bar{X}_2}{S} \times \sqrt{\frac{(N_1 \times N_2)}{(N_1 + N_2)}}
\]

Where

\[
S = \sqrt{\frac{(N_1 - 1) \times V_1 + (N_2 - 1) \times V_2}{N_1 + N_2 - 2}}
\]

Where S was combined standard deviation of two groups

X₁ and X₂ means.

N₁ and N₂ are number of subject for the respective group.

V₁ and V₂ are variances.

Microsoft Excel and SPSS v.11.0 were used for statistical calculations and graphical analysis of the data.

**Percentage**

Percentages are defined as a fraction or portion of a whole. Generally percentages deal with an amount out of one hundred but can be used in sales, economics, and science. In this category, there are questions relating to finding, abstracting, and adding percentages.

A percentage frequency distribution is a showing of data that state the percentage of comments that exist for each data point or grouping of data points. It is a particularly useful method of communicating the relative frequency of survey responses and other data. Many times, percentage frequency distributions are displayed in the forms of tables or as bar graphs or pie charts. The process of generating a percentage frequency distribution involves first identifying the total number of observations to be represented then counting the total number of observations within each data point or grouping of data points and then finally dividing the number of observations within each data point or grouping of data points.
**Percentage analysis**

Percentage method refers to a specified kind which is used in making comparison between two or more series of data. Percentages are based on descriptive relationship. It compares the relative items. Since the percentage reduces everything to a common base and thereby allow meaning comparison.

\[
\% = \frac{\text{Number of respondents}}{\text{Total no. of respondents}} \times 100
\]

**Tables and charts**

Various kinds of tables and charts have been used to represent the search of findings, observations and results to understand them in a sequence after each criterion in chapter-4. Charts like pie diagram, bar/column diagram are used.

**Bar/column diagram**

Column diagrams consist of a series of rectangular standing bars on a common base in the form of graph. The length of the bars is directly proportional to their magnitude. The comparison among the bars is based on lengths. There are three types of bar diagram. Simple bar diagram, multiple bar diagram, Component bar diagram.

**Pie diagram**

It is a circle divided into a number of sectors or sections symbolizing the values of the interpreted data. The area of the sectors is also proportional to the values of various results of the components. It is highly useful to know how the given data is distributed.