CHAPTER 4

PLANNING AND PROCEDURE
4.1 INTRODUCTION:

After reviewing the related literature, the next step in the process of research is the planning and procedure of the study. The planning helps the researcher in the preparation of the research design on the problem under study.

In research study, planning is an important step, without a proper research plan a satisfactory result may not be possible. The planning helps a researcher to make his work possibly faultless. For better and scientific planning of the work the main objectives of the research must be kept in view constantly. The main objectives of the present investigation was to study the effectiveness of adolescent education programme on adolescent awareness i.e. personal adjustment, class-room problem, physical development, homo-hetero relation, home problem, social problem. The present chapter is devoted to the details of planning aspects as well as the procedure adopted for study.

The planning is the fundamental and essential step for an ordinary day-to-day work if one wants to do it systematically. Without comprehensive planning for research work; no specific outcome would be generated. Research design is a mapping strategy like an architect’s plan. Without proper planning the result of the study will not come to the light of the day. It is obviously true that the careful and thoughtful planning of works helps to save time, energy and economy. No work can be successfully finished without it being well planned.

The researcher must consider certain fundamental steps that are essentially the same regardless of the type of research design be processes to use. Walter (1963, P.166) has rightly said, “The factor that must often differentiate between good and poor research is not the funds available, the size of the sample or sophistication of the statistics; it is the care and thought which goes into research plan”.

Thus planning is an essential step in the process of research work. In other words planning is a mapping strategy. As McGrath (1970, P.115) puts it, “The activities related to design in research are comparable to those of the architect in designing an intricate structure. As the architect does his designing before construction activities get underway, so should the researcher does his designing before he gets his project underway.”

Travers (1958, P.37) states a research plan serves a number of different purposes.
1. The research plan helps the researcher to organize his ideas in a form whereby it will be possible for him to look for flows and inadequacy.

2. The research plan provides an researcher what has to be done and what materials have to be collected as a preliminary step in the working of the study.

3. The research plan is a document that can be given to others for comment and criticism.

   A good research work can not just happen. It includes a number of operations carried out with patience and accuracy, a serious work, planning requires utmost care and insight.

   Research design is the plan, structure and strategy of investigation conceived so as to tackle and encounter the research problem more efficiently and accurately. Experimental design or technique refers to the layout or setup, procedure and conditions under which the experiment itself is carried out or conducted.

   A research design is a set of instructions to the researcher to gather and analyze his data in certain ways, strictly in accordance with certain controlled mechanism.

   Research design is a strategy on paper like an architect's plan. Certain fundamental steps of research design must be given due importance when proposed to be used.

   The first phase of the study i.e. planning and procedure has been described in the foregoing caption. This caption deals with the description of research design for the study.

4.2 POPULATION AND SAMPLE:

   The primary purpose of research was to discover principles that have universal application. The researcher is concerned with the generalizability of the data beyond that of the immediate sample. To study the whole population in order to arrive at generalizations would be impracticable. Some populations are so large that their characteristics could not be measured and the population would have changed before the measurement has been completed. Fortunately, the process of sampling makes it possible to draw valid inferences or generalization on the basis of careful observation of variables within a relatively small proportion of the population.

   A large majority of the research studies in Education and Psychology or for that matter, in many other fields, are of a type known as sampling studies. In such studies, measurements and observations are made of a limited number or sample
individuals or objects in order that generalizations or inferences may be drawn about still larger groups or populations of the individuals or objects that these samples are supposed to represent.

The generalizability of the conclusions by and large depends upon the representative sample of the population. The difficult task confronting the researcher now to select subjects in such a way that the adolescents studying in the secondary school could be termed as representative of the total population of the secondary school pupils. In order to obtain a representative sample, the researcher thrashed certain but important point with the guide and others learned experts. The points that were considered useful for selecting the secondary schools are given below:

1. Total strength of the secondary schools.
2. Sex of the secondary school students (Boys and Girls)
3. Area (Rural and Urban)
4. Stage (Pre-adolescent and Adolescent)

The researcher has decided to perform the experiment with secondary school students. Population of the present study was the students of pre-adolescent and adolescent stages of Anand district. There were 226 schools in Anand district. Since it is not feasible to carry out experiment with secondary school students of Anand district, the researcher has selected to perform the experiment in two schools of Anand district, out of which one of rural area and one of urban area for the present study. Sample of the present study was selected using purposive sampling method, according to the variables of the study. Selected School and Sample of the study were as under Table 4.1.
### Table 4.1

**SCHOOL AND SAMPLE OF THE STUDY**

<table>
<thead>
<tr>
<th>NO</th>
<th>SCHOOL NAME</th>
<th>AREA</th>
<th>EXPERIMENT</th>
<th>CONTROL</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pre-ado. B</td>
<td>Ado. G</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Ado. B</td>
<td>Pre-ado. G</td>
<td>Ado. G</td>
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</tr>
<tr>
<td>1</td>
<td>Sardar Patel High-school, Anand</td>
<td>Urban</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>160</td>
</tr>
<tr>
<td>2</td>
<td>Sardar Patel Vinay Mandir Highschool, Ode.</td>
<td>Rural</td>
<td>20</td>
<td>20</td>
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<td></td>
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<td>160</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>40</td>
<td>40</td>
<td>40</td>
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<td></td>
<td></td>
<td></td>
<td>320</td>
</tr>
</tbody>
</table>

In this school, Students were considering as sample for the study and they were selected on the basis of independent variables, Treatment, Area, Sex and Stage. Thus, the composition of the sample was found as shown in Table 4.2

### Table 4.2

**COMPOSITION OF SAMPLE UNDER STUDY**

<table>
<thead>
<tr>
<th>Area</th>
<th>Urban</th>
<th>Rural</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Pre-adol. (Std.8)</td>
<td>Adol. (Std.10)</td>
<td>Pre-adol. (Std.8)</td>
</tr>
<tr>
<td>Boys</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Girls</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Grand Total</td>
<td>160</td>
<td>160</td>
<td>320</td>
</tr>
</tbody>
</table>

- Researcher has selected two schools – one from rural and one from urban area.
- Researcher has selected two classes of each school of std. 8 and std. 10.
- Total sample of the study was 320 students of secondary schools, in which 160 for experimental group and 160 for control group.
Both the groups are identical with regard to their Adolescent Awareness Group as an Experiment and Control Group was selected at random.

Hence, because of the above reasons it is very safe and natural to say that the sample, chosen for the study is quite representative of the total population of the Anand district.

The scheme of the execution of the whole Adolescent Education Programme is again in this chapter.

4.3 EXPERIMENTAL DESIGN:

Types of Experimental Design:

Every human behaviour or event-taking place is correlated with some cause. Science works in finding the causes related to it. The causal-comparative studies find out the related cause. For instance two groups of students studying in different situations achieves in a different way. But in causal comparative studies, it is not possible to study the causes of achievement for different groups. Different variables work in different way. It is not possible to control all variables. Experimental studies helps finding out various causes and control of variables is possible.

Design-1 Single group, Pre-test, Post-test Method

In this method the students are tested for pre-test, and then they are taught with some learning method. Finally, they are retested at the end of the experiment. The difference is observed to find the achievement of students.

Design-2 Randomized Group- Pre-test, Post-test Method

In this method a random group is selected for experimental group and controlled group. Both the groups are tested previously. The experimental group is given the special treatment or taught with certain technique. It is found more than the teaching method is found significant. Sometimes two experimental methods can also be compared with this technique. In this method the factors affecting internal validity can be controlled to a great extent. So it is widely used.

Design-3 Randomized Solomon four-group Method

It is observed that some factors are effective during the pre-test and treatment period. Such factor does have an impact on the post-test.

1, 2, 3 and 4 groups are randomly selected. Group 1 & 3 are given pre-test, Group-2 and 4 are not given pre-test. It is expected that mean scores of Post-test of group-2 and 4 are similar to that of group-1and 3. There may be difference in between
post-test scores of experimental group-1 & controlled group-2 & 4. Certain statistical methods can be used for analysis.

**Design-4 Quasi-Experimental Design**

This method is useful when (a) pre-test is not available (b) pre-test is infeasible and expensive (c) Internal interaction between pre-test and treatment is likely to happen (d) Ss are needed to remain ignorant about the experiment to be done on them (e) A new field is to be explored.

**Design-5 Unequal Controlled Group Pre-test and Post-test Method**

In this method the experimental group and the controlled group may be unequal. In certain psychological or educational researches the homogeneous group can not be formed on the basis of pre-test. So in that case this method is applicable.

Here, Analysis of Covariance is used for getting results.

**Design-6 Counter-Balanced Method**

This is also a quasi-experimental method. When randomized group can not be formed and the whole class is taken under experiment, this method is applicable. It is also named as the MacColl Transition group method, Underwood balanced method, Coax longitudinal method and Camphorn Criss-Cross method. When more than one treatment is to be given, pre-test is not given and Ss are in a definite number, this method is applicable.

Here, $T_1$, $T_2$ and $T_3$ are post-tests, which is a dependent variable. At the end of the three attempts the mean of post-test can be obtained longitudinally.

**Design-7 One-group Time-Series Method**

In this technique pre-test and post-test can be given 3-4 times. Here the variables affecting the internal validity can be obtained properly.

**Design-8 Control group Time Series Method**

When two groups are compared with method 7 design which frames a new technique.

Recently a vast number of experimental research designs have been developed to meet the needs of researchers, developing on the area of the experimental work, as well as the nature of the problem and the purpose.

A variety of experimental design has been described under different names by different authors. E.F. Lindquist (1956) has summarized the basic experimental designs as follows.

1. Simple Randomized Design
In the present study, researcher has selected the factorial design according to the nature of the problem and the purpose of investigation. In the present study, researcher has decided to study the main effect and interaction effect of four independent variables. In the present experiment there are four independent variables and each of which is varied into two way-levels. So the present experimental design is $2 \times 2 \times 2 \times 2$ factorial design in nature. Researcher has decided to observe the main effects of the factors and interaction effects also.

Experimental design and statistical techniques had to be adopted for the testing of the hypotheses. Main design and tools, techniques are enlisted herein; out of which the researcher has made use of the techniques keeping in view the needs of the method adopted. Adopted design and statistical techniques have been described in the caption to follow.

ANOVA: Factorial Design:

According to Kerlinger (1978, P.7) "Factorial Design is the structure of research in which two or more independent variables are juxtaposed in order to study their independent and interactive effects on a dependent variable."

In the present experiment, the independent variables are Treatment (A); Area (B); Sex (C), Stage (D) and each is varied at 2 levels. Hence it is a $2 \times 2 \times 2 \times 2$ factorial experiment.

Factorial Analysis of variance has several advantages. It enables the researcher to manipulate and control more variables. Secondly, variables like sex that cannot be manipulated can also be controlled. A third advantage is that factorial analysis is more precise than the one-way analysis. Finally the interactive effect could be studied. This is important from the scientific point of view.

Statistical Technique in ANOVA:

Here, Treatment (A), Area (B), Sex (C) and Stage (D) are the independent variables each of which is varied at 2 levels. In all these 10 cells would include the student of various strata. They are shown in Table 4.3
The F-test is based on the following assumptions:

1. An equal unit cell is assumed for the measurement of the dependent variable.
2. Homogeneity of variance.
3. Levene’s Test of Equality of Error Variances.

The ANOVA summary helps in testing whether the group means differ or not. It is shown in Table 4.4

TABLE 4.4

ANOVA SUMMARY, BETWEEN THE GROUPS AND WITHIN THE GROUP

<table>
<thead>
<tr>
<th>Source of variance</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean SS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between the groups</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within the groups</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The 0.05, 0.01 confidence levels were taken to test for significance.

4.4 BASIC ELEMENTS OF RESEARCH DESIGN:

Basic elements of research method are variables, hypotheses, research tools and sample selection. In this caption these three elements are 'put into practice.'

Variables:

It is expected that certain characteristics independent variables have its impact on following characteristics dependent variable in a hypothesis. In order to examine the impacts of certain variables, researcher keeps control over all other remaining variables. The researcher may implement certain variables to some extent or may remove it and observe its effect. So the interaction of independent variable and dependent variable may be observed in an experiment.
Variables are the dynamic parts of the research design. In every study design, researcher tries to find out the effect of connected variables of the study. Mostly two variables i.e. Independent and dependent variables are functioning in the research design. The independent variables incorporated are divided into two levels as shown in Table: 4.5

### Table: 4.5

**VARIABLE AND THEIR LEVELS**

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of the Variable</th>
<th>Nature of the Variable</th>
<th>No. of Levels</th>
<th>Name of Levels</th>
</tr>
</thead>
</table>
| 1   | Treatment            | Independent            | 2             | 1. A.E.P. (Exp. Group)  
|     |                      |                        |               | 2. No Programme (Control Group) |
| 2   | Area                 | Independent            | 2             | 1. Urban  
|     |                      |                        |               | 2. Rural |
| 3   | Sex                  | Independent            | 2             | 1. Boys  
|     |                      |                        |               | 2. Girls |
| 4   | Stage                | Independent            | 2             | 1. Pre-adolescent  
|     |                      |                        |               | 2. Adolescent |
| 5   | Adolescent Awareness | Dependent              | --            |                |

The dependent variable was the score of Adolescent Awareness Scale. They were obtained by administering the standard Adolescent Awareness Scale prepared and standardized by the researcher, to the adolescents who are studying in secondary schools.

According to the design, the main as well as the interactive effects whatever may be observed, a complete structural model for a score $2 \times 2 \times 2 \times 2$ factorial design is postulated as bellows:

$$Y = G + A + B + C + D + AB + AC + AD + BC + BD + CD + ABCD + E$$

Where, $Y = \text{Dependent variable score}$

$G = \text{Usual Grand Mean}$

$A = \text{Effects due to Treatment}$

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The pre-determined procedure for the analysis of observed data is briefed in the coming caption.

The variables as per the above description were incorporated in the study paved way to the hypotheses that will really test after the data collection.

**Hypotheses:**

The null hypotheses formulated for the present study are mentioned below:

- **H₀₁** There is no significant difference between the mean score of Adolescent Awareness of Experimental and Control group.
- **H₀₂** There is no significant difference between the mean score of Adolescent Awareness of Pre-adolescent and Adolescent Students.
- **H₀₃** There is no significant difference between the mean score of Adolescent Awareness of Boys and Girls.
- **H₀₄** There is no significant difference between the mean score of Adolescent Awareness of Rural and Urban Students.
- **H₀₅** There is no significant interaction effect of Treatment and Stage on the mean score of Adolescent Awareness.
- **H₀₆** There is no significant interaction effect of Treatment and Sex on the mean score of Adolescent Awareness.
- **H₀₇** There is no significant interaction effect of Treatment and Area on the mean score of Adolescent Awareness.
- **H₀₈** There is no significant interaction effect of Stage and Sex on the mean score of Adolescent Awareness.
- **H₀₉** There is no significant interaction effect of Stage and Area on the mean score of Adolescent Awareness.
- **H₀₁₀** There is no significant interaction effect of Sex and Area on the mean score of Adolescent Awareness.
- **H₀₁₁** There is no significant interaction effect of Treatment, Stage and Sex on the mean score of Adolescent Awareness.
- **H₀₁₂** There is no significant interaction effect of Treatment, Sex and Area on the mean score of Adolescent Awareness.
There is no significant interaction effect of Sex, Stage and Area on the mean score of Adolescent Awareness.

There is no significant interaction effect of Treatment, Stage and Area on the mean score of Adolescent Awareness.

There is no significant interaction effect of Stage, Sex, Area and Treatment on the mean score of Adolescent Awareness.

**Tools:**

Keeping in view the variables taken in this study the following tools were used:

1. The Adolescent Education Programme (AEP) for adolescent who are studying in secondary schools in Gujarat developed by the researcher.
2. The Adolescent Awareness Scale constructed and standardized by the researcher.
3. A personal Data-Sheet constructed by the researcher.

The details of the above tools have been described as under:

**Adolescent Education Programme:**

This teaching-learning programme was used as a tool in the study to enhance the adolescent awareness of the secondary school students. The programme itself was prepared on the basis of the content of the needs of adolescents, adolescents' problem and how to solve it for secondary school students and adolescents, who are not study. It was prepared by the researcher himself. The details of the programme have been discussed in chapter-6.

**Adolescent Awareness Scale:**

A. A. scale was constructed and standardized by the researcher to measure the extent of Adolescent Awareness of the subjects. It contains in all 52 statements regarding the different aspects of adolescent awareness, viz. Personal adjustment, Physical development of adolescent, Homo-hetero relation, Class-room problem, Home problem and Social problem. It is distributed over five point rating scale. Its test-retest reliability index was found to be 0.90, as per components of the scale reliability coefficient was ranged from 0.87 to 0.93 and split-half reliability was found to be 0.81, Construct validity of the scale was established and coefficients of correlation were ranged from 0.30 to 0.77.

Thus, the scale used is reliable as well as valid to measure the Adolescent Awareness of the subjects under study.
Bio-Data Sheet:

A personal bio-data sheet was prepared by the researcher to get the information regarding the independent variables to be used in study, viz. name, area, sex, age and stage.

4.5 EXECUTION OF THE ADOLESCENT EDUCATION PROGRAMME:

The A.E.P. was designed to serve the need of growing generation between the age group 13 to 20. Researcher referred authentic literature available and made available by the use of internet. The programme followed the strict discipline of development of a programme. The complicated and scientific terminologies were made easy to understand and grasp. The whole programme was checked by the experts in both the considerations that is experts in the field of programme development and following through discussion and suggestions the programme was corrected. Most of the content was covered under the programme.

The prepared AEP was undertaken as one of the treatments. The treatment was executed on the sample as discussed in the foregoing captions.

Before the implementation of AEP, it is the first step for the researcher to be familiar with the programme. This caption includes the specific aspects such as instructions and time schedule.

Instructions: stressing the significance of the instructions given in the programme booklet. Thorndike (1949, P.66) states, “it is very important that the instructions be very clear and adequately detailed. When the test is familiar and the procedures are simple a brief paragraph of instructions will suffice.”

The following briefed instructions for AEP are strictly followed by the executor.

- The executor should go through all the instructions before going for experimentation.
- The executor should list out the materials and methods required for presentation while experimentation.
- The executor should collect relevant material to enrich the experiences of the students.
- The executor should involve the subjects while providing learning experiences. He should use learner centered approach to get maximum participation of subjects.
• The executor should try to conclude the gist of the discussion for better learning.
• The executor should motivate the students to clarify their doubts.
• The executor should encourage the students for given activities.

The general instructions to be given should also be familiarized. They would be useful in the discussion to be carried out after the teaching of programme. So, each participant would take note of:

a. The theme of the programme and its exercises.
b. Questions regarding the theme of the programme.
c. Points of discussion regarding the theme.
d. Activities that teachers can give to their students.

As this type of programme seems to be new, the instructions and its needs and details should be well clarified before the AEP is to be executed. Moreover, this programme is for the secondary school students, the time schedule is the next most important step as they have no any free periods in day to day teaching work.

**Time schedule:** The AEP which is to be spread over six week duration as determined in the foregoing caption. In each lesson there is concept of any adolescent aware aspect and questions of discussions and points of discussions regarding that aspect of adolescent needs. The time required for the teaching of concept is about 40 minutes and time for discussion of points and questions is about 20 minutes.

Considering the distribution the contents it was decided to interact with the group under study for 34 periods. After following the same in a small group.

Two institutions were purposively selected, the name of the institution are Sardar Patel Highschool, Near Agriculture University, Anand, Std. 8 & 10. Sardar Vinay Mandir Highschool, ODE, Ta & Di. Anand, Std 8 & 10. Respectively first from the urban setting and another from rural setting.

**4.6 EXPERIMENTAL WORK DONE:**

The experimental group was considered as the treatment group to whom the AEP was to be administered and the control group was not given any treatment. Behter (1975, pp.31-32) had suggested some essential points for open climate; the researcher had tried to follow the points for healthy discussion which are as under:

• Be on the alert for new ideas and encourage the secondary school students to participate in the programme.
• Make secondary school students more sensitive to adolescents' problems and preventive the care how to solve it?
• Develop tolerance to new ideas.
• Beware of forcing a set pattern.
• Develop atmosphere- a free relaxed and unhurried one.
• Encourage students to note their ideas in concrete form whenever possible.
• Encourage and evaluate self learning.
• Develop constructive criticism, not just criticism.

First of all the subjects of the experimental group were oriented with the theoretical perspective of AEP. In the initial stage they were provided a notebook to note the main points and issues arise during the programme execution.

They were also asked to provide their general bio-data on the front page of the booklet in final format of the scale as appendix-3.

The AEP would create the curiosity and the interest of the students, which in turn would make them sincere towards the study procedure. Response of the students on the programme was to be noted in the given notebook. Researcher established the repur with some introductory remark. Such as — today we are going to do some work in a typical way. You will be taught a distinguish programme highlights. You will have to think about the theme and discuss the questions given there in the group. You are asked to think from different angles. This is not a test or an examination but a training programme. We shall work together for this purpose, so please be honest in your work. Do not try to be passive but rise as may issues as possible to make the discussion alive. Experimental group was given the adolescent education programme—a teaching treatment for 34 periods and control group was not given any treatment.

Research design was randomized experimental control group only post test designed following 2 x 2 x 2 x 2 factorial design. The treatment was followed in the experimental group only, where as the control group was limited to the contains of the science subject at std. 8 & 10.

The experimental group was given a treatment through the programme developed using components- Adolescent Awareness, personal Adjustment, Classroom Problem, Physical Development, Homo-hetero Relation and Home-Social Problem.
4.7 COLLECTION OF DATA AND DATA ANALYSES:

After experimental treatment adolescent awareness scale was again administered to both the groups and data were collected for further factorial analysis.

The computation of the collected data were analysed by using SPSS-11 version. There were researcher tested fifteen hypotheses.

Data were analysed according to following order:

1. Scores of adolescent awareness were obtained administering Adolescent Awareness Score in both the groups.
2. Data of adolescent awareness were tabulated according to the variables of the study ie. Treatment - Experiment - Control
   Sex - Male - Female
   Area - Urban - Rural
   Stage - Adolescent - Pre-adolescent

3. Homogeneity of variance was calculated using SPSS and tested.


5. Hypotheses were tested using F-test and t-test.

4.8 CONCLUSION:

In the chapter includes planning and procedures in all its details. The population and sampling along with sampling techniques it also describes experimental design.

Considered for the study along with the adolescent and independent variables of the study. Tools and execution of the programme provides full details of through what and how, chapter also indicates the procedure of collecting data and analyses thus, it provides all the important aspects of the planning and procedure.

This chapter describes the plan and procedure for the study. The designed planned was comprised of steps such as selected tools, sample and hypotheses which are narrated to present their importance and the weight in the context of the present study.

The experimental design drawn, the sample decided, the treatment programme prepared, the researcher follows the experiment with different strategies using the standardized rating scale. The major task of developing programme and tool and treatment of programme could be accomplished. The data collected shall be preceded for analysis and interpretation of results shall be performed in following chapter.