CHAPTER-V

MODUS OPERANDI OF THE STUDY

5.1. A BRIEF NOTE

The details of the methodology adopted for the study are described in this chapter. It is imperative to present the methodological aspects in a systematic and sequential manner. This chapter is presented in three parts.

They are

i) Part I - Prelude

ii) Part II - Plan of the Study and

iii) Part III - Execution of the Plan

As conducting an experimental research is a complex problem, adequate planning and the cautions in the implementation are needed. As far as the present study is concerned, an effective plan for the execution of the study was conceived, working into account the methodological aspects of the study. Thus prelude, plan and procedure form the three components of the modus operandi of the study.

5.2. PART I: PRELUDE

5.2.1. INTRODUCTION

This prelude forms an introduction of the plan and the procedure which gives the researcher a clear direction to follow and make the study an effective one. The prelude comprises the statement of the problem, assumptions of the study and the hypotheses formulated in this study.
5.2.2. THE PROBLEM

In the regular classroom teaching, there is no possibility for individualized instruction. So the achievement level of the slow learners is very poor. The affecting factors of achievement level of the slow learners are,

1. Maths anxiety
2. Lack of interpersonal relationship
3. Teaching methodology

5.2.3. HYPOTHESES

The following hypotheses were formulated to give specific directions to the study:

A) General Hypothesis

Peer tutoring with student - to - student counselling enhances academic achievement of learners in mathematics at standard IX level.

B) Specific Hypotheses

1. There exists no significant difference between the pre- achievement scores of the experimental group and the control group.
2. The post - achievement mean score of the experimental group is significantly greater than its pre-achievement mean score.
3. The post - achievement mean score of the control group is significantly greater than its pre - achievement mean score.
4. The post - achievement mean score of the experimental group is significantly greater than that of the control group.
5. The interpersonal relationship level among the experimental subjects in the post-treatment period is higher than in the pre-treatment period.

6. The post-anxiety mean score of the experimental group is significantly lesser than its pre-anxiety mean score.

7. The post-attitude mean score of the experimental group towards peer tutoring with student-to-student counseling is more positive.

8. There exists no gender difference among tutors and tutees, interpersonal relationship level, maths anxiety level, and attitude level of the experimental group in the post-treatment period.

5.2.5. ASSUMPTIONS OF THE STUDY

The following are the assumptions of the study:

1. Peer tutoring already exists in some of the Indian schools.

2. Student-to-Student counselling is a successful strategy in foreign countries.

3. Combining these two strategies for the enhancement of mathematics learning in Indian schools may be a suitable and successful one.

4. The new strategy, Peer Tutoring with Student-to-Student Counselling could enhance the interpersonal relationship and attitude of the learners and also reduce their anxiety level.
5.3. PART II: MODUS OPERANDI

PLAN OF THE STUDY

5.3.1. INTRODUCTION

After framing the hypotheses, it is an important need on the part of the investigator to plan the procedure of the study. The hypotheses give proper and correct directions for planning the study. They show directions to plan the stages and strategies of the present study. The planning of the study includes identifying the selection of the experimental design developing and standardizing the tools to be used and selection of the sample. The plan designed for carrying out the present investigation is elaborately dealt with in this section.

5.3.2. STEPS IN THE RESEARCH PROCESS

The present problem involves the following steps of investigation:

1. Conducting the I.Q. test
2. Conducting the pre test for achievement
3. Selection of tutor-cum-counsellor
4. Selection of control group
5. Selection of tutees
6. Tutor-cum-counsellor training
7. Conducting the pre-test for achievement, anxiety and interpersonal relationship
8. Implementation of treatment
9. Conducting the post - test for the level of achievement, anxiety and interpersonal relationship
10. Finding out the attitude of the experimental group towards the treatment.

5.3.3. RESEARCH STRATEGIES

The research strategy is planned in such a way as to accomplish the stated objectives of the study. The present study is experimental in nature.

5.3.4. EXPERIMENTAL METHOD

Experimental research to quote Best (1977) is the, "description and analysis of what will be, or what will occur, under carefully controlled conditions".

The Experimental method involves two tests normally pretest and posttest. The treatment is to be applied to the group that is under experimentation. After the period of treatment is over, the posttest scores are compared and contrasted with the pretest scores to find out whether there is any change or improvement in the experimental group. If there is any change identified in the experimental group, it is assumed that it is only due to the experiment or the treatment.

Of all the research methodologies, experimental research is unique in two very important respects: it is the only type of research that directly attempts to influence a particular variable, and it is the only type that can really test hypotheses about cause and effect relationship.

The present study fulfils the following four essential characteristics of an experimental research:
a) Manipulation of the Independent Variable

The experiment is a powerful research method. Experimentation provides a method of hypothesis-testing. An experiment involves the comparison of the effects of a particular treatment.

b) Independent and Dependent Variables

Variables are the conditions or characteristics that the experimenter manipulates, controls or observes. The independent variables are the conditions or characteristics that the experimenter manipulates or controls in his attempt to ascertain their relationship to observed phenomenon. The dependent variables are the conditions or characteristics that appear, disappear or change as the experimenter introduces, removes or changes the independent variables.

In an educational research, an independent variable may be a particular teaching method, a type of teaching material, a reward or a period of exposure to a particular condition, or an attribute such as sex or level of intelligence. The dependent variable may be a test score, the number of errors or measured speed in performing a task. Thus, the dependent variables are the measures of changes in pupil performance attributable to the influence of the independent variables (Best and Kahn, 1992).
c) **Randomization**

An important aspect of many experiments is the random assignment of subjects to groups. Random assignment means that every individual who is participating in the experiment has an equal chance of being assigned to any of the experimental conditions.

Random assignment is a powerful technique for controlling the subject characteristics threat to internal validity, a major consideration in educational research.

**d) Control of Extraneous Variables**

Researchers in an experimental study, have an opportunity to exercise far more control than in most other forms of research. They determine the treatment, select the sample, decide which group will get the treatment, try to control other facts besides the treatment that might influence the outcome of the study and then (finally) observe to measure the effect of the treatment. Hence, it is very important for researchers conducting an experimental study to do their best to control for that is, to eliminate or to minimize the possible effect of the threats (Fraenkel and Wallen, 1993).
e) Experimental Design

The investigator selected Two Parallel - Group, Pretest - Posttest Design for the experimentation.

5.3.5. CONSTRUCTION OF TOOLS

In the present study the following tools were developed to collect the relevant data based upon methods:

i. Attitude Scale to find out the student's attitude towards Peer Tutoring.

ii. Interpersonal Relationship Scale.

iii. Maths Anxiety measuring Scale.

iv. Teacher - made Achievement Tests.

The attitude scale was intended to find out the attitude of students towards Peer Tutoring. The scale was meant for the implementation of Peer Tutoring in schools. In this tool, the items were included in order to facilitate the respondents not to blindly tick or choose the item but to think for a while and select the response. Fig.5.1 shows the steps involved in the development of tools.
Fig. 5.1

STEPS IN DEVELOPING TOOLS

Start

Consultation with experts with regard to inclusion of each item

Preparation of rough draft of the tool

Inviting Jury council’s opinion

Reframing and Revising the tool items

Final Tool

Stop
5.3.5.1. SOURCE OF ITEMS

The preliminary item pool was generated by drawing items from the following sources:

1. Materials downloaded from the Internet.
2. Discussion with 9th Standard students
3. Discussion with the faculty members of Sociology Department and Psychology Department.

Based on the information collected from these sources, statements are made.

5.3.5.2. CRITERIA FOR SELECTION OF ITEMS

Once the statements had been collected, they were subjected to screening. Ambiguous, confusing and excessively long statements were eliminated. The following criteria had been laid down for the inclusion of statements in the tools:

a. Avoid statements that refer to the past rather than the present.

b. Avoid statements that are likely to be endorsed by almost everyone or no one.

c. Select the statement that is believed to cover the entire range of the effective scale of interest.

d. Keep the language of the statements simple, clear and direct.

e. Statement should be short.

f. Each statement should contain only one complete thought.
g. Avoid words such as 'all', 'always', 'none', 'never' etc.

h. Words such as 'only' 'just' and 'merely' should be used with care and moderation in writing statements.

i. Whenever possible, statements should be in the form of simple sentences rather than compound or complex sentences.

j. Avoid the use of words that may not be understood,

k. Avoid the use of double negatives.

5.3.5.3 ACHIEVEMENT TEST IN MATHS

Measures on criterion tests are necessary for determining the effectiveness of Instructional Procedures. So an Achievement Test tool in Maths had been prepared by the investigator on the topic selected for treatment. This tool was used for the Pre-test and the Post-test in this study. The procedure adopted for the construction of Achievement Test in Maths is described in the following section:

a) CONSTRUCTION OF ACHIEVEMENT TEST QUESTIONNAIRE

The curriculum, syllabus and textbook of Maths for Standard IX pupils had been thoroughly studied by the investigator. Also, the investigator himself was a maths teacher and he was teaching maths for standard IX pupils for 21 years. So, with his very long experience in teaching maths, items for the Achievement Test tool in Maths was prepared on the basis of the major objective in the cognitive domain.
b) STANDARDISATION OF ACHIEVEMENT TEST

In order to standardize the Achievement Test Questionnaire, the draft test was tried out by the investigator on a representative sample of 30 students of standard IX in a school other than the one wherefrom Experimental and Control subjects were selected. Before the administration of the test, the purpose of the test was made clear to the subjects. All the 30 answer papers were valued by the investigator.

c) VALIDITY OF THE TOOL

There are various methods of estimating the validity of a measuring instrument. The following types of validity were establishment for the Achievement Test:

i. Content Validity

Content validity was estimated by evaluating the relevance of the test item individually and as a whole (Freeman, 1976). Content validity is most appropriately applied only to tests of proficiency and educational achievement. This type of test is designed to measure how well the individual has mastered a specific skill or course of the study. The investigator subjected the test items for expert’s evaluation. As per the expert’s evaluation, the test content covered the significant concepts and was comprehensive enough in terms of the instructional objectives. Thus, the content validity of the Achievement Test in Maths was established.
ii. Face Validity

To establish face validity, items of the Achievement Test was subjected to expert’s evaluation. The experts confirmed that the items were able to measure Achievement in Maths of standard IX pupils.

d) RELIABILITY OF THE TOOL

Split – half method was applied to calculate the reliability of the Achievement Test. The scores of the odd and even numbered items were correlated using Pearson’s formula for Product Moment Correlation (Garrett, 2004). There were 10 items in each half. For this purpose the Achievement Test was administered on a representative sample of 30 students and the scores thus, obtained were utilized for studying the reliability of the test.

The formula to find the Product Moment Correlation is

\[ r = \frac{N \sum xy - (\sum x)(\sum y)}{\sqrt{N \sum x^2 - (\sum x)^2}} \frac{1}{\sqrt{N \sum y^2 - (\sum y)^2}} \]

Where,

\( \Sigma x = \) Total score for first half items
\( \Sigma y = \) Total score for the second half items
\( N = \) Number of students

As the calculated correlation coefficient value was 0.803 and high the reliability of the achievement tool constructed by the investigator was thus, established.
5.3.5.4. CONSTRUCTION OF THE ATTITUDE SCALE

The logic behind the use of opinion to measure the attitude is that there is a positive correlation between what people say on a subject and what they will also think about it (Gillfford, 1971).

The following aspects were considered for the inclusion of the items in the attitude scale:

1. Academic Development
2. Social Development
3. Psychological Development
4. Self-Development
5. Joyful Learning Environment

The investigator prepared a tool of 25 items in Tamil. Each item was in the form of brief and specific statement which could describe the pupils' attitude towards Peer Tutoring. The pupil should decide to what extent each statement is correct according to them. Their decision could be marked on a four point scale such as 1) Entirely correct 2) Partially correct 3) Partially wrong 4) Entirely wrong. The Likert scaling technique assigns a scale value to each of the four responses. Scoring of the responses is done according to the scale value.
Table 5.1

The items were scored as shown in the following:

<table>
<thead>
<tr>
<th>Response</th>
<th>Scale Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entirely Correct</td>
<td>4</td>
</tr>
<tr>
<td>Partially Correct</td>
<td>3</td>
</tr>
<tr>
<td>Partially Wrong</td>
<td>2</td>
</tr>
<tr>
<td>Entirely Wrong</td>
<td>1</td>
</tr>
</tbody>
</table>

5.3.5.5. CONSTRUCTION OF MATHS ANXIETY SCALE

Anxiety is a complex combination of the feeling of fear, apprehension and worry often accompanied by physical sensations such as palpitations, chest pain and/or shortness of breath. Anxiety is often described as having cognitive, somatic, emotional and behavioral components (Seligman, Walker & Rosenhan, 2001).

Math anxiety is described as "feelings of tension and anxiety that interfere with the manipulation of mathematical problems in a wide variety of ordinary life and academic situations" (Richardson and Suinn, 1972). So, Math Anxiety is a feeling of intense frustration and helplessness about one's ability to do math.

Having the above-said concepts about Maths anxiety in his mind, the investigator had a discussion with a few maths senior teachers, teacher educators and headmasters of high and higher secondary schools. Their
opinion regarding the statements included in the above said tool was invited.

The items of the Maths Anxiety Scale were framed under four dimensions. They are

i) Anxiety related to the subject (Maths)

ii) Anxiety related to class (Maths class) activities

iii) Anxiety related to Maths problem-solving

iv) Anxiety related to Maths exam.

The investigator prepared a tool of 20 items in Tamil. Each item is in the form of brief and specific statements which described the pupils’ maths learning behaviors. The pupil should decide to what extent each statement is correct according to them. Their decision can be marked on a four point scale such as (1) Entirely correct 2) Partially correct 3) Partially wrong 4) Entirely wrong. The Likert scaling technique assigns a scale value. The items were scored as shown in the following table 5.2:

Table 5.2

<table>
<thead>
<tr>
<th>Response</th>
<th>Scale Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entirely correct</td>
<td>1</td>
</tr>
<tr>
<td>Partially correct</td>
<td>2</td>
</tr>
<tr>
<td>Partially wrong</td>
<td>3</td>
</tr>
<tr>
<td>Entirely wrong</td>
<td>4</td>
</tr>
</tbody>
</table>
5.3.5.6. CONSTRUCTION OF INTERPERSONAL RELATIONSHIP SCALE

Peer relations contribute substantially to both social and cognitive development and to the effectiveness with which one functions as adults. Interpersonal relationships are important in helping children develop emotionally and socially.

Through interacting with Peers, children learn the give and take of social behaviour in general. They learn how to set up rules, how to weigh alternatives and make decisions when faced with dilemmas. They experience fear, anger, aggression and rejection. They learn ‘how to win’, ‘how to lose’, ‘what’s appropriate’, ‘what's not?’. They learn about social standing and power ‘who’s in’, ‘who's out’, ‘how to lead’ and ‘how to follow’, ‘what's fair and ‘what’s not’. They learn that different people and different situations call for different behaviours. They learn that they are both similar to and different from others. Through friendships and belonging to group, children improve their sense of self-esteem. The solace and support of friends help children cope with troubling times and through transition times - moving up to a new school, entering adolescence, dealing with family stresses, facing disappointments. Friendships are not just a luxury; they are necessity for healthy psychological development.
It seems logical that having friends at school would enhance a child's academic progress. Friends can help each other with class assignments and homework, they can fill in what is missed during absence, and most importantly, friends make school more fun.

So, there may be a chance for development of Interpersonal Relationship through Peer Tutoring. To what extent the Interpersonal Relationship improves is to be measured.

The investigator constructed an Interpersonal Relationship Scale. For the construction of the tool, the investigator had a discussion with the faculty members of sociology and psychology.

Finally the investigator prepared a tool of 25 items in Tamil. Each item is in the form of brief and specific statements which show the pupils’ internal feelings regarding the peers during Peer Tutoring. The pupil should decide to what extent each statement is correct according to them. Their decision can be marked on a four point scale such as 1) Entirely correct 2) Partially correct 3) Partially wrong 4) Entirely wrong.

The Likert Scaling technique assigns a scale value to each of the four responses. Scoring of the responses is done according to the scale value.
The items were scored as shown in the following table 5.3:

**Table 5.3**

<table>
<thead>
<tr>
<th>Response</th>
<th>Scale Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entirely correct</td>
<td>4</td>
</tr>
<tr>
<td>Partially correct</td>
<td>3</td>
</tr>
<tr>
<td>Partially wrong</td>
<td>2</td>
</tr>
<tr>
<td>Entirely wrong</td>
<td>1</td>
</tr>
</tbody>
</table>

5.3.6. SELECTION OF THE SAMPLE AND THE SAMPLING TECHNIQUE

Standard IX Pupils of Secondary / Higher secondary schools of Tamil Nadu State were considered as the population for the present study. As it was an experimental study, it was difficult to collect data from a large sample. Therefore, the school in which the investigator working was selected for this study. In this school 147 students were studying in IX standard. Thus he followed Purposive Sampling Techniques. Among them, 45 boys and 45 girls were selected at random. The I.Q. test and Pre-achievement test were conducted to all the 90 students. According to their I.Q. test score, first 15 boys and 15 girls were reserved for – tutor - cum - counselor. The remaining 30 boys and 30 girls were separately ranked according to their pre-achievement test scores. The odd number rank holders of the boys and the even number rank holders of the girls were
assigned for the experimental group. The remaining 15 boys and 15 girls were assigned for the control group.

5.3.7. SELECTION AND TRAINING OF TUTOR-CUM-COUNSELLOR

The selection, training and supervision of those students given tutoring and counselling responsibilities are the important factors in the success or failure of Peer Tutoring with Student-to-Student Counselling.

5.3.7.1. SELECTION OF TUTOR-CUM-COUNSELLOR

Among the 30 students reserved for tutor-cum-counsellor, 5 boys and 5 girls were selected on the basis of considering the following qualities:

- Academic achievement
- Teacher / Counsellor recommendation
- Willingness
- Ability to lead and instruct
- Dependability
- Course activity
- Availability
- Communication skill
- Patience
- Dedication
- Assertiveness
Judgment and common sense

Personal morals and behavior

Emotional stability

Friendliness and tactfulness

Sense of responsibility

Peer acceptance

Study habits and attitudes

5.3.7.2. TUTOR TRAINING

Training is absolutely critical to a successful tutoring program. Training is an ongoing process that begins before the tutor starts tutoring and continues for the duration of the experience. There are at least two primary components of a training program.

a) Initial Training / Orientation

b) On the job training and coaching

a) Initial Training / Orientation

During the initial tutor training, tutors learnt both subject-specific information and expectations, and general tutoring skills and strategies. At a minimum, tutors needed skills in the following areas:

1) How to help tutees without doing their work for them?

2) How to be positive and encouraging?

   a) How to provide appropriate positive reinforcement?

   b) How to encourage risk-taking?
3) How to pose questions and interact socially?

In addition, tutors should learn skills in the following areas:

1) Listening skills and nonverbal communication

2) Empathy (what it is like to be a tutee)

3) Responsibility and the obligations of being a role-model

Subject - Specific Training (30 - 45 minutes)

One session before the tutors begin

Ideally given by the tutee teachers

Purpose

To give tutors a sense of what they can expect when they begin tutoring. To give tutors a sense of what will be expected of them while they are tutoring.

General tutor skills training:

Should be conducted before tutors start tutoring.

Purpose

To introduce tutors to what tutoring is.

To introduce tutors to the idea of - and strategies for - helping someone instead of doing the work for them.

On the Job Training and Coaching

In addition to the training sessions outside of the classroom and tutoring room, on the job training can provide attention and critical
assistance to the tutors. During on-the-job-training, the trainer actually observes the tutors in action and notes strengths and areas for development. At this time (or immediately after the tutoring session), the trainer might give tutors appropriate praise, offer helpful hints, or suggest additional strategies.

**Ongoing on a regular basis**

For this part of the training, the investigator actually goes to the tutoring sessions to:

- Observe the tutors while they are tutoring.
- Give tutors hints and suggestions if they need help.
- **NOTE**: Intervene only if it is necessary
- Otherwise, take tutor aside after the incident to coach.
- Notice and record areas that the tutors are generally having trouble with, so these things can be addressed during regular training sessions.
- Point out and praise positive things the tutors are doing.

**Table 5.4**

Tutor’s Behaviours and Comments

<table>
<thead>
<tr>
<th>Tutor’s behavior</th>
<th>Notice and record</th>
<th>Intervene</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helping the tutee</td>
<td>How was he/she helping?</td>
<td>No</td>
<td>After the session, tell tutor what you noticed</td>
</tr>
<tr>
<td>Behavior</td>
<td>How was he/she doing?</td>
<td>Response</td>
<td>Action</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>------------------------</td>
<td>----------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>Doing tutee's work</td>
<td>How was he/she doing?</td>
<td>Yes</td>
<td>Suggest an alternative way to help</td>
</tr>
<tr>
<td>Encouraging</td>
<td>How was he/she encouraging?</td>
<td>No</td>
<td>After the session, tell tutor what you noticed</td>
</tr>
<tr>
<td>Discouraging</td>
<td>How was he/she discouraging?</td>
<td>Use judgment</td>
<td>Remind tutor why it is important to be positive and encouraging</td>
</tr>
<tr>
<td>Acting responsibly</td>
<td>How was he/she acting responsibly</td>
<td>No</td>
<td>After the session, tell tutor what you noticed</td>
</tr>
<tr>
<td>Goofing around/acting inappropriately</td>
<td>How was he/she goofing around?</td>
<td>Yes</td>
<td>Remind tutor that he/she is a role-model; suggest other ways to behave.</td>
</tr>
<tr>
<td>Asking the tutee good questions</td>
<td>What questions?</td>
<td>No</td>
<td>After the Session, tell tutor what you noticed</td>
</tr>
<tr>
<td>Attentive to tutee/situation</td>
<td>How was he/she being attentive?</td>
<td>No</td>
<td>After the session, tell tutor what you noticed</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------------------</td>
<td>----</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Seems unsure of what he/she is supposed to be doing</td>
<td>What he/she is or seems unsure about</td>
<td>Yes</td>
<td>Ask if he/she is clear about what he/she is doing, then offer suggestions</td>
</tr>
<tr>
<td>Generally doing a good job</td>
<td>How was he/she doing a good job?</td>
<td>No</td>
<td>After the session, tell tutor what you noticed.</td>
</tr>
</tbody>
</table>

**Some Tutoring Tips:**

1. Introduce yourself to your tutee.
2. Act responsibly during tutoring.
4. Help your tutee feel confident and positive.
5. Reinforce skills they already have or things they already do well.
6. Remember that it is OK for both of you to make mistakes.
7. Give your tutees your undivided attention while tutoring them.
8. Listen with your ears, eyes and mouth.
9. Listen to your tutees. Let them think and speak.
10. Let your tutees know you are about them by showing trust, respect and acceptance.

11. Be aware of what skills your tutees are working on.

12. Never let your tutees struggle with their answers to the point of frustration.

13. Let your tutees know that you are human to. Don't be afraid to make mistakes or say "I don't know".

14. Know the classroom rules and expectations and abide by them. You are a role-model.

15. Ask for help when you need it.

16. Be considerate of your tutee's feelings.

17. Do not give your tutees orders.

18. Be patient.

**5.3.7.3 Counsellor Training:**

A good training procedure usually consists of two components - general or core training and position or job specific training. Core training focuses on the knowledge, skills and attitudes considered necessary for all student counsellors and typically includes the following areas: (a) official issues, such as confidentiality, considered essential for counsellee welfare; (b) community building wherein student counsellors learn to support and use each other as consultants; and (c) interpersonal
relations training involving the acquisition of appropriate attending, listening and helping behaviour.

The selection process showed have screened out individuals lacking in minimal interpersonal competence, therefore, the training program should focus on sharpening such helping behaviour as attending meaningfully and positively, listening emphatically and genuinely, and communicating concretely and respectfully.

Job-specific training focuses on teaching the student counsellors to use, efficiency and effectively, the methods and materials selected for use in specified situations. Defining the necessary competencies must, therefore, follow the selection of methods and guidance materials to be used in providing – designed services. Job – specific training often utilizes a basic model containing the following components:

a) Explanation and discussion of the skill to be learned by the trainee,

b) Demonstration or modeling of the skill by professionals or experienced student counsellors, and

c) Practice of the skill during training with feedback until minimal competence is achieved.

The training program utilizes lectures, demonstrations, discussion periods, and role-playing activities, as appropriate, to assure the
acquisition of requisite knowledges and skills. Training is continued until each counsellor trainee has developed the following proficiencies:

1. Ability to promote and lead group discussion of assigned topics through employment of materials and techniques.

2. Ability to achieve understanding of past scholastic performance through analysis and synthesis of available ability, achievement adjustment and attitude data.

3. Ability to interpret test and questionnaire results objectively and realistically to counselees having low, average or high scores.

4. Ability to discuss, without criticism or emotionality, negative study attitudes, their underlying basis, and their probable influence upon scholastic success.

5. Ability to explain and illustrate, quickly and accurately, all study tools and techniques described in the materials distributed to the counsellor.
Table 5.5

Typical Steps in Study Skill Counselling

<table>
<thead>
<tr>
<th>S.No</th>
<th>Things to be Accomplished</th>
<th>What to Do to Accomplish Them</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Help the counselee feel at ease</td>
<td>Begin in an interested and friendly way. Be natural and sincere. Take it easy. Discuss topics of mutual interest. Ensure privacy. Follow counselee's lead in getting into the problem. Provide comfortable setting.</td>
</tr>
<tr>
<td>2</td>
<td>Win the counselee's confidence</td>
<td>Show a sincere interest, Recognize and respect his attitudes and ideas. Stress his strengths. Increase his self-respect. Do not violate confidential materials of other counselees. Don't be hurried. Let him talk. Do not pry. Try to understand his point of view. Do not sermonize.</td>
</tr>
<tr>
<td>3</td>
<td>Try to make the interview helpful</td>
<td>Encourage counselee to express himself frankly and freely. Encourage an analysis of the real problems. Observe reactions, mannerisms, and tensions to locate key spots. Listen and observe. Listen to counselee's &quot;theme song&quot;. Stimulate self-examination and self-therapy. Try to help counselee identify, analyze, and suggest solutions for his own problems. Don't monopolize the conversation.</td>
</tr>
<tr>
<td>4</td>
<td>Keep the interview going</td>
<td>Try to move into helpful action. Don't get too far afield. Stop and summarize. Emphasize decisions and plans made by counselee. Restate counselee's ideas occasionally. Try to explore all desirable angles.</td>
</tr>
<tr>
<td>5</td>
<td>Guard against yourself</td>
<td>Don't take over the responsibility for the problem. Watch your own biases, attitudes, and values. Be sure you are talking a language that both understand. Don't push, coerce, or decide.</td>
</tr>
</tbody>
</table>
6 Close the interview carefully

Plan some next steps. Don't drag on too long. Use other resources as referral aids. Make it possible for person to return. Observe counselee to determine time to stop. Stress plans involving action.

### 5.3.8 CONCLUSION

In this subsection, the plan of the experiment has been explained with clarity. The plan includes selection of the experimental design, construction and validation of tools, selection of sample and training procedure. The next sub-section deals with the execution of the plan.
5.4 PART - III: MODUS OPERANDI

EXECUTION OF THE PLAN

5.4.1 INTRODUCTION

Planning and execution are two important aspects for realizing the objectives of the study. For the implementation of the plan, process of executions to be contemplated. This present section deals with the process and explains how the constructed tools were administered to the sample selected the treatment was made and experiment conducted with the controlling of variables.

5.4.2 CONDUCTING THE INTELLIGENCE TEST

The I.Q. level of the students was tested using the standardised tool of National Psychological Corporation by G.C.Ahuja (2005). Selection of tutors and allocation of tutees to the tutors have been done according the score of this test.

5.4.3 ADMINISTRATION OF THE PRE-TEST

Before starting the treatment, both the control and experimental groups were allowed to take part in the pre-test. Pre-tests were conducted in order to measure the pre-experimental status of achievement in maths, anxiety and interpersonal relationship. Same questionnaire was used for the control and the experimental group.
5.4.4 ALOCATION OF TUTEES

Thirty tutees were selected. Among the thirty tutees fifteen were boys and fifteen girls. According to the ability and I.Q., tutees were evenly allocated to the tutors. So, there were three tutees for each tutor. Both the tutor and tutees were of the same sex.

5.4.5 SELECTION OF CONTROL GROUP

Thirty students were selected for the control group. Among the thirty students 15 were boys and 15 girls. These 30 students were more or less equal to the tutees in all aspects.

5.4.6 IMPLEMENTATION OF TUTOR - CUM- COUNSELLOR TRAINING

Training was given to the tutor-cum-counsellors before starting the experimental treatment. Training was mainly in the form of verbal instructions and techniques like demonstration of desired behaviour, effective listening and questioning were incorporated wherever necessary. The subject matter was conveyed to the tutors in the form of concepts. Each Training session's time duration was one to one and half an hour and was conducted after the school hours in the evening time. Altogether 15 training sessions were conducted for the tutor-cum- counsellor.

5.4.7 EXPERIMENTAL TREATMENT
Experimental classes were conducted after training sessions. Before treatment, the seating arrangement of the classrooms of the experimental groups was changed to the horse-shoe format. This arrangement ensured better tutoring environment. One unit was taught for 16 tutoring - cum - counselling sessions. The duration of each session was one hour. Thus, a total time duration of 16 hours were utilized for the experimental treatment. The investigator was present throughout all the sessions and ensured that tutoring with activities was going on in all the groups.

5.4.8 CONTROL TREATMENT

For treatment to the control group, the investigator used regular classroom teaching and the topic selected was the same for the experimental and control groups. One unit was taught for 16 periods using different classroom activities which the existing method of teaching insisted. The time duration of a period was one hour. Thus, the total time duration for the control treatment was kept equal to that of the experimental treatment (16 hours).

5.4.9 ADMINISTRATION OF THE POSTTEST

The posttest data were collected from the subjects in both the experimental and control groups the next day after the completion of the treatments. Posttests were conducted in order to find out post-experimental status of achievement in maths, anxiety and interpersonal
relationship. The achievement test questions prepared by the investigator, which were already used for the pretest, were utilized for this purpose. All necessary guidelines were given to the subjects, before administering the tests, and the purpose of the tests was made clear to them.

5.4.10 ADMINISTRATION OF ATTITUDE SCALE

The structured and validated attitude scale was administered to the students of the experimental group to find out their attitude towards Peer Tutoring. The data collection was held in a cordial atmosphere. The subjects were encouraged to give free and frank responses. No time limit was fixed for the subjects to respond to the attitude tool.

5.4.11 CONTROL OF THREATS TO INTERNAL VALIDITY DURING EXPERIMENTATION

When a study has internal validity, it means that any relationship observed between two or more variables should be meaningful in its own right rather than being due to "Something else". The "Something else" may be any one of the number of factors such as the age or ability of the subjects, the conditions under which the study is conducted, or the type of materials used. If these factors are not in some way or other, controlled or accounted for, the researcher can never be sure that they are not the reason for any observed results. Stated differently, internal validity means that observed differences on the dependent variables are directly related to the independent variable, and not due to some other unintended variable.
The following are the factors that cause threats to the internal validity of the experimentation. They are subject characteristics, mortality, location, instrumentation, testing, history, maturation, attitude of subjects, regression and implementation (Frannkel and Wallen, 1993).

5.4.12 MORTALITY (LOSS OF SUBJECTS)

No matter how carefully the subjects of a study are selected, it is common to 'lose' some as the study progresses. This is known as a mortality threat. Because of illness, family relocation, or the requirement of other activities, some subjects may drop out of the study. Mortality did not pose any threat to the internal validity of the present study as no subject was lost during the experimentation and the post-test. Mortality was not a major threat because the experimentation lasted only for a short term of three months.

5.4.13 LOCATION

The particular location in which data are collected may create alternative explanations for results. This is called a location threat. The location in which learner's performance on tests may be lower if tests are given in noisy or poorly lighted rooms.

The location threat in this experimentation, was controlled as the investigator held the location constant for all the participants in the course of the experiment. The experiment was conducted in a noise-free atmosphere and in a lighted room.
5.4.14 INSTRUMENTATION

The way in which instruments are used may also constitute a threat to the internal validity of the study. Instrumentation includes unstable instrumentation, instrumentation decay, data collector characteristics and data collector bias.

a) Unstable Instrumentation

Researchers point out that unreliable instruments sometimes pose threats to the validity of the experiment. In the support for the hypothesis more likely the problem is overcome by adopting two principal techniques training of data collectors and planned ignorance that is, ensuring that the data collectors lack the information they would need to distort the result (Fraenkel and Wallen, 1993)

b) Instrumentation Decay

Instrumentation can create problems if the nature of the instrument (the scoring procedure) is changed in some way or other. This is usually referred as "instrument decay". This is often the case when the instrument is of a type that permits different interpretations of results or is especially long or difficult to score, thereby resulting in the fatigue of the scorer. The instrument decay in this research was controlled by the investigator in the following ways: Tools used for data collection were standardised
tools and were of objective type tests or scales. They were used to elicit a particular answer or specified behaviour from the pupil. All of these tests were scored using appropriate scoring keys or scoring procedures. So, the error due to instrument decay was eliminated.

c) Data Collector Characteristics

The characteristics of the data gatherers can also affect results. Gender, age, experience, type of management of the individuals who collect the data in a study may have an effect on the nature of the data they obtain. This threat was controlled in the present investigation as the investigator himself collected data and scored the answer scripts of the subjects individually.

d) Data Collector Bias

There is also a possibility that the data collector and / or scorer may unconsciously distort the data in such a way as to make certain outcomes. The stability of the instruments was ensured. The investigator has taken all efforts to consider the subjects. Such events are referred to in educational research as a history threat. The history did not pose any threat to the present study as to the knowledge of the investigator, no untoward events occurred in the course of the experimental treatment as to affect the responses of the subjects.

5.4.15 MATURATION
Often change during an intervention may be due to factors associated with the passing of time rather than the intervention itself. This is known as a maturation threat. According to Fraenkel and Wallen (1993), maturation is a serious threat in studies using only pre-post data for the intervention group, or in studies that span a number of years.

5.4.16 ATTITUDE OF SUBJECTS

The way in which subjects view a study and their participation in it can create a threat to internal validity. The recipients of an experiment treatment may perform better because of the specific nature of the treatment. This is also known as 'Hawthorne Effect'. This effect could not pose a great threat to this present experimentation as there was no more novelty in the treatment to the experimental group than a regular part of instruction.

Another way to overcome the problem is to examine carefully whether any alterations are made in the tool (Frankel and Wallen 1993). In the present study, the developed tools were subjected to careful scrutiny and no alterations were made in the tool thereafter during the experimentation.

5.4.17 REGRESSION

This threat may be present whenever change is studied in a group that extremely low or high in its pretest performance. Subjects of the
study were not selected on the basis of high or low pre-test scores and therefore, statistical regression was not a threat factor.

5.4.18 IMPLEMENTATION

The treatment or method in any experimental study must be administrated by a researcher or a teacher. This fact varies the possibility that the experimental group may be treated in ways that are unintended and not a necessary part of the treatment or method, yet which give them an advantage of one sort or another. This is known as an implementer threat. The whole experiment was implemented by the investigator himself. The treatment was administered as intended and described. So the threat of implementation due to the use of other persons for data collection was reduced.

5.4.19 STATISTICAL TECHNIQUES USED

The present study demanded the use of following statistical techniques to realize the objectives set for the investigation:

Test of Significance of Difference between Means:

Test of Significance of Difference between Means was used to compare the relevant variables between the experimental and control groups. For large sample the following formula suggested by Garrett (2004) was used.
Here $M_1$, $M_2$ are the means, $S_1$, $S_2$ are the standard deviations, and $N_1$, $N_2$ are sample size of the groups.

For small sample, the following formula was used

$$t = \frac{|M_1 - M_2|}{\sqrt{\frac{S_1^2}{N_1} + \frac{S_2^2}{N_2}}}$$

In these formulas, $M_1$, $M_2$ are the means, $N_1$, $N_2$ are the sample size of the groups and $S_1$, $S_2$ are the standard deviation.

**5.5 CONCLUSION**

The present chapter has dealt with the various features associated with conducting the research. The nature of tools, the research stages and strategies and experimental procedures adopted have been explained in an elaborate manner. The required data were collected with the help of tools developed and validated by the investigator and they are analyzed in the chapter to follow. Part I has presented the prelude. Part II has discussed the plan of the study and Part III the procedure of study. Part I has dealt with the problem statement, assumptions and hypotheses of the study. The research stages and strategies, methods and statistical techniques have been explained in great detail in Part II and Part III respectively. The required data were collected with the help of the tools developed and
validated by the investigator and they are analysed in the chapter to follow.