CHAPTER-3

Method of the Study
In the preceding chapters, the theoretical framework of the problem, review of related studies, emergence of problem, objectives, hypotheses and description of the tools along with their development were discussed. The present chapter has been devoted to the method of the study, which deals with the design of study, sample, procedure and the statistical techniques used for the analysis of the data.

The method of investigation has been discussed under following headings:

- Tools used
- The sample
- Design of the study
- Control of variables
- Procedure of the study
- The statistical techniques used

### 3.1 TOOLS USED

Factual material or data unknown or untapped so far is essential in every study. Relevant data, adequate in quantity and quality and also reliable and valid in every respect is a must. Thus, the selection of suitable instruments is of vital importance for successful research, especially in an experimental research study of present type.

Following tools were used for collecting data:

- Entry behaviour test (developed and validated by the investigator).
- Instructional sequences for mastery learning (developed and validated by the investigator).

This was based upon Bloom’s Mastery Learning Strategy using

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corrective feedback.

- Material for conventional group learning (developed by the investigator).
- Formative tests (developed and validated by the investigator).
- Criterion test for summative evaluation (developed and validated by investigator).
- 16 PF questionnaire (developed by Cattell and Eber, Indian Adaptation by Kapoor and Tripathi, 1982) This questionnaire was used to test life skills of decision making life skill and critical thinking among the students.
- Ways of coping stress questionnaire (developed and validated by Susan Folkman and Richard S. Lazarus, 1988). This tool was used to assess thoughts and actions individuals used to cope with the stressful encounters.
- Revised two-factor study process questionnaire (R-SPQ-2F) (developed and standardized by Biggs, J., 2001). This tool was used to identify deep and surface learning approaches.

### 3.2 SAMPLE

Sample is a selected subset of a population chosen by some process usually with the objective of investigating particular properties of the parent population. The process of selecting some part of a population to observe so as to estimate something of interest about the whole population is known as sampling (Cambridge Dictionary of Statistics, 1998).

Some obvious questions for the investigator are how to obtain the sample and make observations and once the sample data are to hand, how best to use them to estimate the characteristics of the whole population.

Sampling is an important aspect of life in general and enquiry in particular. We make judgement about people, places and things on the basis of fragmentary evidence (Garett, 1966, 1981; Edwards, 1968; Smith, 1975). Population refers to all cases under investigation and a sample is an actual
subset of observations drawn at random from a population. A population is a theoretical set of all possible observations for a particular experiment (Calfee, 1975). If the observations are numbers, then the population is described by the distribution function of the observations, which gives the probability of occurrence for each possible numerical value. In statistical terminology, the items that make up a test constitute a sample from a much larger collection or population of items that might have been used in that test (Ebel and Frisbie, 1991).

Sampling is critical to external validity the extent to which findings of study can be generalised to people or situations other than those observed in the study. To generalize validity of the findings from a sample to some defined population, requires that the sample has been drawn from that population according to one of several probability sampling plans. By a probability sample is meant that the probability of inclusion in the sample of any element in the population must be given priori. All probability samples involve the idea of random sampling at some stage (Shavelson, 1988). In experimentation, two distinct steps are involved:

• Random selection – participants to be included in the sample have been chosen at random from the same population. Define the population and indicate the sample plan in detail.

• Random assignments – participants for the sample have been assigned at random to one of the experimental conditions.

Another reason for being concerned with sampling is that of internal validity the extent to which the outcomes of a study result from the variables that were manipulated measured or selected rather than from other variables not systematically treated. Without probability sampling error estimates cannot be constructed (Shavelson, 1988). The key word in sampling is representative. One must ask oneself, how representative is the sample of the survey population (the group from which the sample is selected) and how representative is the survey population of the target population (the larger group to which we wish to generalize).
Method of the Study

It is often stated that samples of 30 or more are to be considered large samples and those with fewer than 30 as small samples. More important than size is the care with which the sample is selected. Various methods of sampling can be grouted under two broad heads (Gupta, S.P., 1997).

A) Probability Sampling (Random Sampling)

B) Non-Probability Sampling (Non-Random Sampling)

**Probability sampling methods**: are those in which every item in the universe has a known chance, or probability of being chosen for the sample.

- **Simple Random Sampling** refers to that sampling technique in which each and every unit of the population has an equal opportunity of being elected in the sample. In simple random sampling which items get selected in the sample is just a matter of chance – personal bias of the investigator does not influence the selection. The word random does not mean haphazard or hit– or miss– it rather means that the selection process is such that the chance only determines which items shall be included in the sample. To ensure randomness of selection one may adopt either the Lottery Method or consult table of random numbers. It is risky to take randomization for granted.

- **Systematic sampling**: Selecting one unit at random and then selecting additional units at evenly spaced intervals until the sample has been formed, forms a systematic sampling. This method is popularly used in those cases where a complete list of the population from which sample is to be drawn, is available. The list may be prepared in alphabetical, geographical, numerical or some other order. The first item is selected at random generally by following the Lottery Method. Subsequent items are selected by taking every k\(^{th}\) item from the list where k’ refers to the sampling interval or sampling ratio, i.e., the ratio of population size to the size of the sample. Symbolically:

\[
k = \frac{N}{n}
\]

Where k = Sampling Interval, N= Universe Size & n = Sample Size.
Multi-stage Sampling or Cluster Sampling: Under this method, the random selection is made of primary, intermediate and final units from a given population. There are several stages in which the sampling process is carried out. At first, the initial stage units are sampled by some suitable method, such as simple random sampling. Then, a sample of second stage units is selected from each of the selected first units, again by same as or different from the method employed for the first stage units. Further stages may be added as required.

Stratified Sampling: In stratified sampling the available information concerned with the population disused to design a more efficient sample than obtained by the simple random procedure. It is applicable when the population is composed of sub-groups or strata of different sizes so that a representative sample must contain individuals drawn from each category or stratum in accordance with the size of the sub-groups. Within each stratum or sub-group, the sampling is random or as nearly as possible. This involves dividing the population into a number of groups or strata where members of a particular characteristic.

Non-probability sampling methods: are those, which do not provide every item in the universe with a known chance of being included in the sample. The selection process is, at least, partially subjective.

Judgement Sampling: In this method, the investigator exercises his judgement in the choice and includes those items in the sample, which he thinks are most typical of the universe with regard to the characteristics under investigation.

Quota Sampling: In a quota sample, quotas are set up according to some specified characteristics. Within the quota, the selection of sample items depends on personal judgement. Quota sampling and stratified random sampling are similar in an as mush as in both methods the universe is divided into parts and the total sample is allocated among the parts. However, the two procedures diverge radically. In stratified random sampling the sample within each stratum is chosen at random.
But, in quota sampling, the sampling within each cell is not done at random; the field representatives are given wide latitude in the selection of respondents to meet their quotas.

- **Convenience Sampling**: A convenience sample is obtained by selection convenient population units. Convenience samples are prone to bias by their very nature – selecting population elements, which are convenient to choose, almost always make them special or different from the best of the elements in the population in some way.

- **Purposive Sampling**: A sample is built up which enables the investigator to satisfy his specific needs in the projects. The principle of selection in purposive sampling is the investigator’s judgement of the typicality of his interest. A sample may then be expectedly chosen because, in the light of the available evidence, it mirrors some larger groups with reference to a given characteristic. Random sampling formulas apply more or less accurately to purposive samples (Garrett and Woodworth, 1996).

**PROCEDURE OF SAMPLE SELECTION**

The research investigation was carried out on the students of class IX, of the age ranging between 13–15 years. The sample was selected in the present investigation at two levels:

a) The School Sample

b) The Student Sample

**The School Sample**: The school sample was drawn from the representative secondary schools. A list of the schools under the administration of the Union Territory of Chandigarh was procured from the Director Public Instructions (Schools) through the District Education Office. In order to get relevant information from schools, the investigator sought permission to visit schools from the Director Public Instructions (Schools) Union Territory, Chandigarh following the normal procedures. Three schools were randomly selected from the list of schools available for data collection.
Method of the Study

The Student Sample: The initial sample consisted of 300 students. The structure of the initial sample according to their schools is given in Table 3.1.

Each of the selected three schools had more than one sections of ninth grade students. Hence, two sections form each schools were randomly chosen as intact groups and two schools with N=150 were considered for control group and the remaining one school with N=150 was selected for conducting the experiment.

Table 3.1: Sample Structure for the Study.

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of the School</th>
<th>No. of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Government Model School, Sector–34, Chandigarh</td>
<td>75</td>
</tr>
<tr>
<td>2</td>
<td>Government Model Senior Secondary School, Sector–35, Chandigarh</td>
<td>75</td>
</tr>
<tr>
<td>3</td>
<td>Shivalik Public School, Sector–41, Chandigarh</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>300</td>
</tr>
</tbody>
</table>

In the experimental group, students were imparted instruction through Bloom’s Mastery Learning Strategy with single feedback corrected and with multiple feedback corrective. Their own teachers taught the third group (control group), through conventional group learning. The students of each of the experimental groups and control group were categorized into Deep and Surface approaches to learning. This grouping of students into deep and surface approach was done by administering Two–Factor Study Process Questionnaires. The sample for analysis in the 2x3 factorial design was randomly chosen in different number of the students in each of the three instructional groups, the experimental and control groups. The three groups were randomly allocated to one of the three instructional strategies. The control group learned through conventional method and experimental group with single feedback correction and experimental group with multiple feedback corrective studied through Mastery learning Strategy. The distribution of final sample according to various classification criteria has been given in Table 3.2.
Method of the Study

Table 3.2: The sample size of the treatment group in 2x3 Factorial Design Classified on Total Scores.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Instructional group</th>
<th>Approaches to Learning</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Deep</td>
<td>Surface</td>
</tr>
<tr>
<td>1</td>
<td>Mastery Learning Strategy with Single Feedback corrective</td>
<td>N=25</td>
<td>N=25</td>
</tr>
<tr>
<td>2</td>
<td>Mastery Learning strategy with multiple feedback corrective</td>
<td>N=25</td>
<td>N=25</td>
</tr>
<tr>
<td>3</td>
<td>Conventional group learning</td>
<td>N=50</td>
<td>N=50</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

A few (N=100) students were dropped out of the study at the final stage of the data analysis who were either absent or were not found appropriate to be selected on the basis of their learning approach and only 200 students in total were selected out of 300 students. Out of these 200 students, 100 students were with deep approach to learning while other 100 students worked with surface approach to learning. On the whole sample of 200 students was selected which was further divided equally in three categories i.e. (1) Experimental Group (100 students) were divided in (a) Mastery learning strategy through Single feedback corrective (N = 50 students); (b) Mastery Learning strategy through multiple feedback corrective (N = 50 students). (2) Control group – Conventional method of teaching was used with sample of 100 students.

3.3 DESIGN OF THE STUDY

Educational Research is described as experimental when the researcher has firstly, specified the finite set of reachable hypotheses and secondly, has established a systematic programme of the data gathering, under precisely defined conditions in an effort to test these hypotheses (Ingersoll, 1982).

The good experimental design should provide some information with respect to all the objectives of the experiment (Winner, 1971) and be kept as simple as possible (Montgomery, 1984).

The present study was experimental in nature. In order to find out the effectiveness of Mastery Learning Strategy with single feedback corrective and
approaches to learning on various life skills, a 2x3 design was used to conduct the experiment.

For the present investigation the independent variables were:

- **Approaches to learning** which was the classification variable and was studied at two levels – Deep and Surface Approach.

- **Instructional Treatment**
  - Mastery Learning Strategy (Treatment) studied with single feedback corrective.
  - Mastery Learning Strategy (Treatment) with multiple feedback corrective.
  - Conventional group learning.

Gains on **Achievement** and selected **Life skills** i.e. Critical thinking, decision making and coping stress were the **dependent** variable.

The schematic layout of the experimental design has been given below:

![Diagram](image)

where, MLS – Mastery Learning Strategy.

**Fig. 3.1 : Layout of the design.**
Method of the Study

The number of different combination groups came out to be $2 \times 3 = 6$ as given below:

- Deep Approach / MLS with single feedback.
- Deep Approach / MLS with multiple feedback.
- Surface Approach / MLS with single feedback.
- Surface Approach / MLS with multiple feedback.
- Surface Approach / Conventional group learning.

3.4 CONTROL OF VARIABLES

In order to reduce the contamination and study the clear effect of variables certain controls were introduced. A brief explanation of these experimental controls is as follows:

**Organismic Variables**: In research, frequent use is made of response-inferred organismic variables (Edward, 1968) which means a classification based upon prior observation of responses. Approaches to learning was the organismic variable in the present study. All the three groups were matched balanced on deep and surface approaches to learning.

**Stimulus Variables**: The general class of things related to an environment situation or conditions of stimulation are referred to as stimulus variables. Control on this experimental variable was exercised by assigning the same teacher to all the treatment groups. The investigator herself administered the instructional treatment through feedback correctives/remedial material. The activities involved in treatment were exactly similar for each group. In the present experiment it was desired to see the difference in attainment scores when subjects were involved under group based, teacher – paced i.e. Bloom’s Mastery Learning Strategy and conventional teaching. Role of teacher varied but all the other aspects of the stimulus situation were maintained uniformly.

**Response / Behavioural Variables**: It refers to any variable which involves some action or response of an organism. To control such variables, criterion/achievement test was administered for a pre-test as well as post-test
measurement. Every effort was made to administer the pre-test and post-test under the similar conditions of room and instructions.

Randomization: Randomization was exercised for the allocation/selection of schools and selection of students to various treatment groups. At initial stage of selecting schools these total number of seven schools, randomisation was exercised and only three schools were selected. Experimental treatment was assigned to selected schools on random basis. Students in each school were also selected randomly to constitute three groups.

Table 3.3: School wise distribution of students to different groups.

<table>
<thead>
<tr>
<th>Treatment Groups</th>
<th>Schools</th>
<th>No. of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental group I (MLS with SFC)</td>
<td>Shivalik Public Senior Secondary School, Sector-41, Chandigarh.</td>
<td>50</td>
</tr>
<tr>
<td>Experimental group II (MLS with MFC)</td>
<td>Shivalik Public Senior Secondary School, Sector-41, Chandigarh.</td>
<td>50</td>
</tr>
<tr>
<td>Conventional Group</td>
<td>Government Model School, Sector-34, Chandigarh, Government Model Senior Secondary School, Sector-35, Chandigarh</td>
<td>50+50= 100</td>
</tr>
</tbody>
</table>

3.5 PROCEDURE

Procedure of the experiment comprised of two main stages, which were:

- Selecting the sample
- Conducting the experiment

Selecting the Sample

Process of sample selection has already been discussed under the heading sample in the preceding paragraphs of this chapter.

Conducting the Experiment

The experiment was conducted in four phases as presented in the following paragraphs:

- Phase I – Administration of the prerequisite skill test and approaches to
Phase I – Administration of the Pre-Requisite Skill test

After selecting the schools for experiment the investigator fixed appointments and discussed the proposed instructional programme with the principals of schools. Availability and favourable climate for research was the criteria for final selection of schools. A meeting with class teachers and subject teachers helped in chalkling out the date and time schedules for the implementation of the programme. The investigator visited the selected classes and established a rapport with students in IX class of each school. An informal introduction and orientation into the mechanism of Mastery Learning Strategies was then provided to students.

Before starting with the instructional programme all the students were given pre-requisite test. Scores of the test were used to determine whether the students had the pre-requisite, skills, required for the Instructional treatment. In case where the students did not fulfill the condition of entry behaviour, they were provided orientation before entering into the instructional programme.

The questionnaire of revised two factor study process was administered to identify deep approach and surface approach. The test was administered during its first phase so that it is scored in advance and check that the three schools sub-samples has adequate number of deep and surface approach students and also that the proposition of deep and surface approach was almost equal in both the experimental groups i.e. single feedback group, multiple feedback group and control group.

Phase II – Administration of the pre-test criterion test, Life skills test

Before starting with the instructional programme, all the students of
selected groups were given Pre-test, the criterion test, space for answers was provided with the questions. No time limit was imposed for completing the test. Scoring was done to obtain the information regarding pre-treatment knowledge of the students on the selected content.

Pre-test of various life skills i.e. Critical Thinking, Decision Making and Coping Stress were administered to all the students of selected groups. Separate answer sheets were provided. Scoring was done to obtain the information regarding life skills of the students before entering into the instructional programme. The schedule of pre-testing is contained in Table 3.4.

Table 3.4: School wise data schedule for test administration for the pre-testing of the students.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name of the School</th>
<th>Pre-pre-testing Schedule</th>
<th>Pre-testing schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pre-requisite skill test</td>
<td>Learning Approach test</td>
</tr>
</tbody>
</table>

Phase III – Implementing Instructional Programme

For the experiment, the students were classified on the basis of learning approaches and divided into two groups i.e. Deep Learning approach and Surface Learning approach. Both groups were further classified in two groups – The experimental and control group. The experimental group learnt through Bloom’s mastery Learning Strategy while the control group was taught through conventional strategy. In experimental group again two groups were formed, one group received single feedback corrective and the other was given multiple feedback corrective till they attained mastery.

For implementing the instructional programme four components listed by Anderson and Block (1987) provided the framework. These components have been listed as follows:–
Method of the Study

- Defining mastery
- Planning for mastery
- Teaching for mastery
- Grading for mastery

The framework of these components required completion of tasks summed up by Ahuja M (2000) detailed already in Chapter 1 of the report, under above mentioned components. The implementation of the instructional plans was carried out in light of Torshen’s Mastery Implementation Evaluation Model. Torshen’s model was viewed in three phases viz.: Phase–I Planning for Mastery; Phase–II Defining and Designing Mastery Learning Instructional Packages; Phase–III Implementing and monitoring of Mastery Learning Instructional Packages.

Eleven instructional units were developed along with their formative tests. A final summative test was also developed. Enrichment and remedial material had been designed for each unit and for each trial. Various life skills were also developed along with the content as investigator includes various activities and tasks for the students while learning the content which develops Life skills i.e. Critical Thinking, Decision Making and Coping with Stress simultaneously. The instructional treatment was administered according to the following steps:

- Investigator herself provided the initial teaching to the group following the guidelines developed in advance. This initial instruction was designed after Gagne’s instructional events.
- New stimulus material was presented without an overdose of new material. These materials were administered at a rate suitable for each pupil in a group learning situation.
- Chalkboard and coloured chalks were utilized for making tables, diagrams and for writing notes.
- Visual aids like charts, transparencies were also used along with teacher explanation.
Method of the Study

- Content was recapitulated and summarized at moderate intervals.

- The investigator creates situations, ask learners to classify or ask questions which enforces the children to think critically or to decide the correct answer from given situations so that life skills of Critical Thinking and Decision Making was developed.

- Investigator also create a stressful situation while teaching content for the learners and then give some cues to give training about ways to coping stress or confirm the responses to reduce the stress among learners.

- This initial instruction was followed by a unit formative test. The tests were immediately scored and a table was prepared where record of progress for each individual learner was maintained.

- On the second day each student was given feedback for his previous days performance.

- Those students who attained mastery (100 percent) were identified and enrichment material was suggested to them. Some of the these students were told to prepare charts on the unit’s material mastered by them or to go to the library and fetch parallel materials or work in second unit test as an additional exercise.

- Experimental group I comprising of 50 students of single feedback corrective, those students which do not have mastery over the content were again giving appropriate feedback by the investigator herself. For this group feedback may be more easy language, use of audio visual aids or examples, decided by the investigator so that all students can attain 100% mastery over the content after single feedback.

- The investigators approached each student of experimental group II i.e. multiple feedback corrective, in remedial tutoring session. Second tutoring was provided by the teacher. Some more students had qualified for the mastery attainment. They were routed to enrichment whereas the students who had still not been able to attain mastery were given next trial.
Method of the Study

- Experimental group II on the third day gets feedback. The students who had still not been able to attain mastery were given multiple feedback correctives/remediation i.e. use of charts, teaching through monitors, through examples etc. so that they attain mastery. The cycle continued till all the students of experimental group II gained mastery.

- Each unit (Total Eleven) took about 4–5 days to complete. The maximum number of trials any unit required was four. No student on any of the eleven units and any of the mastery learning strategy needed trials beyond four.

- The second unit was introduced and the cycle was repeated for all the units. Corrective feedback and confirmations were provided whenever needed.

- A final summative test was administered at the end of all the eleven units to all the students.

For Control Group

This group was taught by the regular Geography teacher in the conventional group learning situation. It generally refers to reading out the chapter by the teacher. Solving exercise and providing notes for certain important questions.

- Lessons were provided to the regular teacher by the investigator, so that there is no difference among groups on the amount of content taught to them.

- No unit criterion tests were conducted after the completion of different units. The time schedule followed for this group was similar to that of the other two groups.

- After having completed content, a summative test was administered to this group also.

The date wise schedule followed for implementing the instructional strategies along with conventional instruction has been given in the Table 3.5.
Table 3.5: The date wise schedule for the conduct of experiment.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Name of the School</th>
<th>Instructions</th>
<th>Pre-test of Life Skills</th>
<th>Achievement Pre-test</th>
<th>Post test of Life skills</th>
<th>Achievement Post-test</th>
</tr>
</thead>
</table>

Experimental Groups

<table>
<thead>
<tr>
<th>S.No</th>
<th>Name of the School</th>
<th>Instructions</th>
<th>Pre-test of Life Skills</th>
<th>Achievement Pre-test</th>
<th>Post test of Life skills</th>
<th>Achievement Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.</td>
<td>Shivalik Public School, Sector 41, Chandigarh</td>
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<td>SFG</td>
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<td></td>
<td>15–17 Sept, 2003</td>
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<td></td>
<td>15–18 Sept, 2003</td>
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<td>23–27 Sept, 2003</td>
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<td>10–13 Oct. 2003</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>S.No</th>
<th>Name of the School</th>
<th>Instructions</th>
<th>Pre-test of Life Skills</th>
<th>Achievement Pre-test</th>
<th>Post test of Life skills</th>
<th>Achievement Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.</td>
<td>Shivalik Public School, Sector 41, Chandigarh</td>
<td></td>
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<tr>
<td></td>
<td>MFG</td>
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<td>15–18 Sept, 2003</td>
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Method of the Study

CGL: Taught by their teachers through conventional group learning method
Method of the Study

Phase IV – Administration of post-test as achievement test and life skills

After completion of all eleven units, the criterion/summative test was administered to all the students. Answer sheets were scored. Post test of various life skills were also administered to all the students and answer sheets were scored in accordance to scoring keys. Students were thanked for their full cooperation.

Phase V – Scoring

All the tools were scored according to their prescribed scoring keys and the data thus, obtained was subjected to statistical analysis.

3.6 THE STATISTICAL TECHNIQUES

According to the nature and complexity of the study to test the various hypotheses based on the objectives of the study, different statistical treatment are needed. The statistical techniques used in the present investigation for the analyses of data were :-

- Means and standard deviations were used wherever required.
- Skewness and Kurtosis was calculated.
- Graphical analysis presentations were done through Frequency Polygons, Inverted Ogives and Bar graphs.
- One way analysis of variance was used for analysis of pre-test scores on criterion test Critical Thinking, Decision Making and Coping with Stress.
- Two way analysis of variance was used for analysis of data pertaining to effect of M.L.S. on achievement, life skills i.e. critical thinking, decision making and coping with stress gain scores.
- Each significant F–ratio was followed by t–test.

The detailed results and discussions are presented in Chapter IV.

The results have been reported under the following headings :
SECTION I

4.1 ANALYSES RELATED WITH SKILL OF ACQUIRING KNOWLEDGE

• Analysis of pre–test scores (Achievement).
• Analysis of post–test scores (Achievement).
• Frequency polygons for post–test scores.
• Analyses on gain scores (Achievement).
  ➢ Frequency polygons on gain scores.
  ➢ Inverted Ogives on gain scores.
  ➢ Bar graph on gain scores.
  ➢ ANOVA on achievement gain scores.

SECTION II

4.2 ANALYSES RELATED WITH SKILL OF CRITICAL THINKING

• Analysis of pre–test scores.
• Analysis of post–test scores
• Frequency polygons for post–test scores.
• Analyses on gain scores
  ➢ Frequency polygons on gain scores.
  ➢ Inverted Ogives on gain scores.
  ➢ Bar graph on gain scores.
  ➢ ANOVA on gain scores.

SECTION III

4.3 ANALYSES RELATED WITH SKILL OF DECISION MAKING.

• Analysis of pre–test scores.
• Analysis of post–test scores
• Frequency polygons for post–test scores.
• Analyses on gain scores
Method of the Study

- Frequency polygons on gain scores.
- Inverted Ogives on gain scores.
- Bar graph on gain scores.
- ANOVA on gain scores.

SECTION IV

4.4 ANALYSES RELATED WITH SKILL OF COPING STRESS.

- Analysis of pre-test scores.
- Analysis of post-test scores
- Analyses on gain scores.
- ANOVA on gain scores.