This chapter is about the method and procedure followed for the present study. It includes the design, sample of the study, variables, experimental controls, tools used, procedure of experimentation, data collection and statistical techniques used.

The present study is experimental in nature. It focused on comparing the effect of two instructional methods on paragraph writing skill among secondary school students.

3.1 Design of the Study

To compare the effect of two instructional approaches i.e. self-regulated strategy model and conventional method, the pre-test-post-test control group experimental design was used which is given below in table 3.1

<table>
<thead>
<tr>
<th>Groups</th>
<th>Pre-test</th>
<th>Independent Variable (randomly Assigned)</th>
<th>Post test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Group</td>
<td>T₁E</td>
<td>SRS Model</td>
<td>T₂E</td>
</tr>
<tr>
<td>Control Group</td>
<td>T₁C</td>
<td>Conventional teaching</td>
<td>T₂C</td>
</tr>
</tbody>
</table>

Here, T₁ means Pre-test; T₂ means Post-test
'E' Stands for Experimental group; 'C' stands for Control group.

3.1.1 Design For Experimentation

For experimentation, eighty five students of IX class from P.K.R. Jain public school in an urban area were selected. These students were given English Language Assessment test, developed and validated by the researcher, to know their knowledge of English language. Those who achieved the criteria of forty percent in this test were further given an intelligence test for measuring their intelligence level. Because of irregularity and non-seriousness of the five students, eighty students were finally retained out of eighty five students. On the basis of the scores obtained
Fig. 3.1

Research Design

P.K.R. Jain Girls Sr. Sec. School

85 Students of IX Class

English Language Assessment Test (40% criteria)

Intelligence Test

I. Sample Selection

<table>
<thead>
<tr>
<th>High</th>
<th>Middle</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>14</td>
<td>13</td>
</tr>
</tbody>
</table>

Sample death = 5 students
Total = 80 Students

II. Group Formation

Experimental Group (G1)
40 students

Control Group (G2)
40 students

III. Teaching Approach

Self-regulated strategy model

Conventional method

IV. Data Collection

Stage 1 Pre-test scores
Stage 2 Post-test scores
Stage 3 Retention score

Stage 1 Pre-test scores
Stage 2 Post-test scores
Stage 3 Retention scores

V. Testing Tools

Stage 1 CRT
Stage 2 CRT
Stage 3 Retention Test

Stage 1 CRT
Stage 2 CRT
Stage 3 Retention Test

VI. Statistical Techniques

1. Measures of central tendency
2. Measures of dispersion
3. t-test

1. Measures of central tendency
2. Measures of dispersion
3. t-test
by them, two groups were formed. One group was designated as experimental group 
(G₁) and the other one was designated as the control group (G₂). Experimental group 
was taught through adapted self-regulated strategy model and the control group was 
exposed to conventional method of teaching. These students were tested on three 
occasions in order to find out the effectiveness of two approaches of teaching. The 
whole research design is illustrated in the figure-3.1

3.2. SAMPLE

The present study was carried out in two phases: The first phase consists of 
development and validation of Instructional material for both experimental and 
control group, and on the other hand the second phase consists of the final 
experimentation. For conducting first phase, a sample of forty students was selected 
while for experimentation; sample of eighty students was selected. The sample 
selection procedure is given below in detail:

3.2.1 Sample Selection during Developmental & Validation Phase of 
Instructional Material:

After the development of instructional material for both experimental and 
control group, it was tried and put to test at various levels. This sample selection 
process is shown in the Fig. 3.2 given below:

Fig. 3.2

Developed Instructional Material

↓

Individual Tryout (5 students of IX class)

↓

Small Group Tryout (8 students of IX class)

↓

Field Tryout (40 students of IX class)

For field tryout, a group of forty students was selected from Pujya Kanshi 
Ram Jain Sr. Sec. Public school, Ambala.
3.2.2. Sample Selection for Experimentation

The procedure of purposive sampling was adopted to ensure the availability of English medium school in urban area. At the initial stage, a sample of eighty five students was selected from P.K.R. Jain Girls Sr. Sec. School. To assess their knowledge of English language, they were administered English Language Assessment test (ELAT) developed by researcher. Those who achieved the criteria of forty percent scores in this test were only selected for the administration of Raven’s Standard Progressive Matrices, 2005 (given in appendix VII) to compute their scores on intelligence. But due to irregularity and non-seriousness of few students, only eighty students were retained for experimentation. Then these students were divided into three levels namely high intelligence, middle intelligence and low intelligence levels comprising of twenty six, twenty eight and twenty six respectively. These three intelligence levels were made in order to match the experimental group and the control group.

The students were matched by randomly selecting thirteen students (in each of the experimental group and the control group) out of twenty six students from high level of intelligence. In the same way, fourteen and thirteen students were selected from middle and low levels of intelligence for both groups respectively. In this way, both groups were allotted equal number of students i.e. forty students. This procedure of randomization was also adopted to eliminate systematic bias in the experimental group. The purpose of selecting thirteen, fourteen and thirteen students from each of the three intelligence level groups was to avoid the sample loss due to sample death. This sample death occurred due to non-seriousness and irregularity of the sample students.

3.3 VARIABLES

Variables are the conditions or characteristics that the experimenter manipulates, controls or observes. There are three types of variables in the present study. These are shown in the Fig. 3.3.
3.3.1 Independent Variable

“The independent variables are the conditions or characteristics that the experimenter manipulates or controls in his/her attempt to ascertain their relationship to observed phenomena” (Best & Kahn, 2004). In this study, the variables which were manipulated by the researcher to see their effect on the writing performance of the students were considered as independent variables. The independent variable for the present study was method of instruction. The method of instruction involved in the study was SRS model & conventional method of teaching respectively.

3.3.2 Dependent Variables

The dependent variables are the conditions or characteristics that appear, disappear or change as the experimenter introduces, removes or changes independent variables (Best & Kahn, 2004). In the present research, dependent variables were:

(a) Achievement Scores

The achievement scores in paragraph writing skill of the students were recorded to know the effect of the adapted self-regulated strategy model and conventional method. These achievement scores were measured by using the criterion referenced test. This test was used on two occasions: one was before starting the experiment i.e. getting pre-test scores, and the other was after teaching each paragraph i.e. post-test scores.

(b) Retention Scores

To see the retention of each paragraph taught during experiment, a retention test was administered on the students. It was conducted after the expiry of seven days. This gap was chosen on the basis of retention study by Bourne and
Healy, (1991). The obtained scores were called retention scores and these were also recorded.

3.3.3 Intervening Variables

Intervening variables affect the achievement of students and also cannot be measured directly. All these variables were either controlled experimentally or statistically or were equalized by the way of controlling them. These are depicted below in Fig. 3.4

These are discussed below:

1. Grade Level

In this study, students of same grade level were selected. So, this variable was controlled by taking only IX class students of one school as the sample for present study.

2. Intelligence

Raven’s Standard Progressive Matrices was administered on the sample and on the basis of scores on this test; students were equally divided in both the
experimental group and the control group. So, it was controlled during the process of selection of sample.

3. Prior Knowledge about the Subject

For knowing the previous knowledge of the students, a criterion reference test was administered before teaching each paragraph. Thus, the obtained pre-test scores were used for the analysis of the data.

4. Teacher Behaviour

The teacher behaviour was controlled by providing the treatment by the researcher herself to both the experimental and control group. All the related tasks like determining the criterion behaviour, specifying the entry level behaviour, preparing the assessment tools and instructional tools, development of instructional material for both the groups, etc. were done by the researcher only.

5. Contamination Effect

Some students take extra classes/ coaching/ tuitions outside the classroom. This may affect the achievement scores of students. This was controlled by conducting the experiment in the beginning of the session i.e. in the months of April to July. During these months IX class students are likely to get little involved in taking private tuitions.

3.4 Experimental Controls

Following controls were exercised by researcher during the experiment:

1. Treatment: The teaching competence or the competence to give treatment may vary from person to person. Therefore, to control the inter-group variation, the researcher herself taught the experimental & control group students.

2. Attitude: The attitude of the researcher was same for both the groups. It was motivating for both the groups.

3. Measuring Device: The measuring devices were based on behavioural objectives so that the devices could not be the source of bias.

4. Conditions: The experimental conditions were similar for both the groups.

5. Punctuality: To avoid further sample death which occurred in the initial stage of sampling, Students were instructed to be regular during the experiment.
3.5 Tools Used

Two types of tools were used in this study and are given below:

(1) Instructional Tools

(2) Measuring Tools

3.5.1 Instructional Tools

Instructional tools were those which were employed to provide instructional material to the students of IX class. Researcher herself developed instructional tools. These were:

(A) Instructional Material for Adapted Self-regulated Strategy Model along with Scaffolding Material

(B) Lesson Plans for Conventional Method

(A) Instructional Material for Adapted Self-regulated Strategy Model along with Scaffolding Material

The instructional material for adapted self-regulated strategy model along with scaffolding material was developed in the form of twelve paragraphs and scaffolding material. This instructional material was developed by following adapted self-regulated strategy model which is based on the six stages of Self Regulated Strategy Development Model. The adapted self-regulated strategy model in this study also consists of six stages. These six stages are meshed with self-regulated strategy ‘RCOWER’ developed by the researcher. Each step of the strategy is related with each step of the adapted self-regulated strategy model. These six stages blended with ‘RCOWER’ are given below:

a) Recall Background Knowledge: In this stage, teacher helped the students in recalling their previous knowledge related to the paragraph topic.

b) Collect Ideas after Discussion: Teacher taught the students to collect the fresh and new ideas. This was done using ‘Answer 6 W’ strategy (appendix II). Students were told about the uses of this strategy in paragraph writing skill. The usage and benefit of the scaffolding material (support material) named ‘Think Sheet for ‘Answer 6 W’ strategy’ for collecting ideas was also discussed with students. They were also guided when to use this think sheet.
c) **Model the Organization of Ideas**: With the help of background knowledge and new collected ideas, the teacher modeled the organization of relevant ideas to students. The usage of scaffolding material for organizing ideas named ‘Format for Paragraph Writing Sheet’ (appendix II) was also demonstrated to students for developing paragraph writing.

d) **Write after Memorization**: In this step, students were instructed to memorize the strategy and usage of scaffolding material to collect and organize ideas. Then they were told to write the paragraph after organizing the collected ideas.

e) **Edit Paragraph with Support**: Students were told to edit the written paragraph with the teacher’s support and by using scaffolding material named ‘Chart for Editing and Revising the Paragraph’ (appendix II).

f) **Rewriting Independently**: In this step, students were motivated to rewrite the final draft of the paragraph independently. For this they were provided another scaffolding material named ‘Final Draft Sheet’ (appendix II).

**Scaffolding Material**

It is that material which provides support or help to the students during learning process. Scaffolding material for the present study was developed in the following forms:

(i) Think Sheet for ‘Answer 6 W’ Strategy

(ii) Format for Paragraph Writing Sheet

(iii) Chart for Editing and Revising the Paragraph

(iv) Final Draft Sheet

This material was developed for all twelve paragraphs in English composition of IX class to execute adapted self-regulated strategy model including self-regulated strategy ‘RCOWER’. The developed scaffolding material is given in the appendix II.

**B) Lesson Plans for Conventional Method**

The students of control group (G2) were taught using lesson plans. This was done to avoid any discrimination in providing the instruction to both groups. These lesson plans were also prepared on three paragraphs each on different topics of four
types of paragraphs i.e. in total twelve paragraphs of English composition of IX class. Herbart’s approach and RCEM approach was followed for planning lessons for conventional teaching. The steps for developing the lesson plans were:

a) Identification Detail

The identification data of the students was mentioned in this step. It helped in identifying the target group for planning lesson. It consisted of entries like subject, class, section, period, duration etc.

b) Specific Objectives

The specific objectives were formulated to carry out the teaching activities accordingly. These were determined to clear the objectives of the lesson. These were concerned with the lesson to be taught.

c) Teaching Aids

Teaching aids were the teaching aids used in classroom teaching-learning. These aids included the always available common classroom equipments and objects. Apart from these general aids which were already present in classroom, some specifically planned and prepared teaching aids were also used in teaching paragraph writing in classroom.

d) Previous Knowledge Assumed

For teaching paragraph writing skill on a particular topic, the previous knowledge, skills and experiences of the students were assumed. This acts as a base for planning the lesson to a great extent.

e) Previous Knowledge Testing

The previous knowledge of the students which was assumed in previous step was now tested. This testing was done using questioning skill. This step also helped in linking the previous knowledge of students with the content to be taught. It also prepared students for learning new topic.

f) Announcement of the Topic

In this step, the topic to be taught was announced in classroom when students were unable to give any response to the question in previous knowledge testing.
g) Presentation

Here the planning of the content was done for the purpose of its presentation. Presentation means the activities performed in class to achieve the prefixed objectives.

h) Home work

At the end, Homework was given to the students. It was given on the basis of learnt knowledge in class.

The development of lesson plans are mentioned in detail in chapter IV entitled “Development of Instructional Material” and the developed lesson plans for conventional teaching are given in the appendix III.

3.5.2 Measuring Tools

Measuring tools are instruments which are used by researchers for evaluating various variables in their subjects under study. For measuring the knowledge of language, achievement and retention of paragraph writing skills of students, measuring tools were developed. Following measuring tools were used for the present study:

(a) English Language Assessment Test (ELAT)

This test was developed by the researcher for sample selection. With the help of this test, researcher assessed the students’ knowledge of language aspects like grammar, vocabulary, spelling, and syntax. The test consists of eleven questions with sub-parts. The total marks allotted to this test are thirty. The development of English Language Assessment Test (ELAT) is mentioned in detail in chapter V entitled “Development of Measuring tools”. The developed ELAT is given in appendix IV.

(b) Criterion Referenced Tests (CRT)

Instructional objectives are specified first before planning and providing any instruction. To measure the achievement of students on the basis of specified instructional objectives, criterion referenced tests were developed, validated and used related to each paragraph. So in total, twelve criterion referenced tests were developed and administered on students. All these criterion referenced tests
were concerned with the testing of mastery of the content. Marks allotted to each criterion referenced test were different. The range of marks allotted to all criterion referenced tests was 25-30. The criterion referenced test developed for one paragraph was same for self-regulated strategy model and conventional method.

In each CRT, scoring was based on the marks indicated against each test items. The steps followed for the development of CRTs are given in detail in chapter V entitled “Development of Measuring tools”. Developed CRTs for each paragraph along with their scoring keys are given in appendix V.

(c) Retention Tests

Retention is the memorization and recalling of the taught content after a certain fixed period. The retention of students is measured by using retention tests. In the present study, in juxtaposition to twelve criterion referenced tests, twelve retention tests were developed. One retention test related to each paragraph was developed. Like criterion referenced tests, in each retention test different marks were allotted. The range of marks allotted to all retention tests was 25-30. The retention test developed for one paragraph was same for self-regulated strategy model and conventional method. In each retention test, scoring was based on the marks indicated against each test items. The number of test items in each retention test was equal to the number of items in each corresponding CRT. For example, the number of test items in retention test developed for paragraph ‘Pollution’ were similar to the CRT developed on ‘Pollution’. The steps followed for the development of retention tests are given in detail in chapter V entitled “Development of Measuring tools”. Developed retention tests for each paragraph along with their scoring keys are given in appendix VI.

(d) Raven’s Standard Progressive Matrices

To measure the intelligence of students, Raven’s Standard Progressive Matrices (2005) test was used. it is a standardized non-verbal test. The instructions given in this test are simple and easy. Moreover this test can be administered under normal classroom situations and therefore no elaborate arrangements are required. The students can proceed at their own pace and hence they do not feel
any stress and strain of completing the test in specified time. And above all, the test is aimed at testing ability rather than efficiency. In the present study, this test was used to measure the intelligence of the students of IX class. On the basis of scores obtained in the intelligent test, students were matched and equally distributed in experimental and control group.

This test consists of sixty problems which are divided into five (A, B, C, D, E) sets. These five sets contain twelve problems each. In each set, the first problem is as nearly as possible self-evident. Every problem in the test is the source of thought for the next. The problem which follows, becomes progressively more difficult, hence the name “Progressive Matrices”. The order of the test provides standard training in the approach of doing work. The five sets provide five opportunities for grasping the method and five progressive assessments for a person’s capacity for intellectual activity. The scale has a test-retest reliability varying with age from 0.83 to 0.93. Its scoring key is given in appendix IV.

3.6 Data Collection

Data were collected on the basis of selected research design. In this study, the research design which was followed for experimentation was Pre-test-post-test experimental design. So, the collection of data was done in three stages:

(a) Stage I (Pre-test Stage)

Before the exposure of instructional material to both groups experimental group (G1) and control group (G2), their knowledge of the content to be taught was measured using CRT. This was the pre-test stage and the scores collected on this stage were termed as pre-test scores.

(b) Stage II (Experimental and Post-test Stage)

The Experiment was conducted at this stage. The CRT was again administered after exposing instructional material to experimental group (G1) and control group (G2). This was done to collect scores of their mastery over the taught paragraphs. Thus the scores obtained during this stage were termed as post-test scores.
(c) Stage III (Retention Stage)

To measure the retention of the taught paragraphs by both experimental and control groups, retention test was administered after the expiry of seven days. This gap was chosen on the basis of retention study by Bourne and Healy (1991). The scores on the retention test were termed as retention scores.

3.7 Statistical Techniques Used

Statistical tools used in this study also depended upon the objectives and research design of this study. In this study, following statistical tools were used:

(i) The measure of central tendency and the measures of dispersion such as mean and S.D were worked out to know the nature of the data; and

(ii) t-test was used to compare the effect of Self-regulated strategy model and conventional method.