Chapter-III

RESEARCH DESIGN

In the previous chapters the background of the present study and review of literature has been provided. This chapter is related with the method and procedure used in the investigation. Therefore, an attempt has been made to provide methodological plan and procedure followed under the following sub-heads.

Locale of the Study

Methodology

Population and Sample

Tools Used

Procedure for Data Collection

Statistical Techniques Used

Locale of the Study

Haryana state is divided into four divisions for administrative purpose viz. Ambala, Hisar, Rohtak, Gurgaon. The present study has been undertaken in one districts and one Edu. block from it; selecting by lottery method. This district is located in Rohtak division and on National Highway of Haryana (NH-1).

Methodology

There are several methods of conducting research. Choice of method of conducting research is determined by the nature of the problem. The present research attempts to study diagnostic testing and remediation in English at upper elementary level of education in Haryana. It is obvious that the diagnostic testing and remediation in Education cannot be studied in any artificial setting nor is it desirable to do so. In the present study the experimental or quasi-experimental method of research is found to be the most appropriate one as it effectively studies educational programme and practices, as they exist.
The quasi-experimental method of research has been found to be the most popular and widely used research method in testing and treating problems in education and sciences because of the ease of this method. Information can be gathered by a diagnostic test. Although quasi-experimental method is appropriate for this type of problems. The method has its own advantages as it is most appropriate for collecting data and involves measurement, classification, analysis, comparisons and interpretation.

Experimental studies in education investigate the phenomenon in their natural setting. This type of research is designed to obtain pertinent and precise information concerning the current status or phenomenon and wherever possible to draw valid general conclusions from the facts discovered. That is why quasi-experimental method is adopted for the present study. In this method data collected at a particular point of time with the intention of interpreting the nature of existing conditions or identifying standards against which existing conditions can be compared or determined.

**Design of the Study**

The design of the study outlines the research plan. It describes in detail what would be done and how would it be done; what type of sample would be selected and what data collecting devices would be used. The present study employed control group pre-test and post-test field experimental design. The sample of the study was bifurcated into two groups i.e. control group and experimental group. The study involved three operational stages as diagnostic testing stage, treatment stage and post-testing stage. In the first stage the diagnostic test was used to identify errors and weakness of students in reading and writing components in English language. This test was developed by the researcher himself.

In the second stage, the experimental group was exposed to treatment i.e. self-instructional programme. This self-instructional programme was developed by the researcher on the basis of feedback received from stage one. It was of three weeks duration. The components of self-instructional programme comprised exercised seats printed in dot font. The third stage dealt with post-testing of the control and experimental group using diagnostic test. There are statistical techniques like analysis of covariance to
overcome the difficulties, even if we do the experiment in the natural classroom groups. The graphical representation of the design of the study is given in Figure.

**Graphical Description of the Study under Reference**

```
HARYANA (State)  ↓
SONIPAT (District)  ↓
GOHANA (Tehsil)  ↓
GOHANA (Education Block)  ↓
SCHOOLS  ↓
DIAGNOSTIC TESTING
310 Students
↓
Control Group  (156 students)  ↓
Conventional Treatment
↓
Post-Testing
Experimental Group  (154 students)  ↓
Treatment for 21 days
```
Variables

In experimental studies the condition that is varied is referred to as the dependent variable. If the effect of the teaching strategy is measured by means of achievement test, then the scores on the test is referred to as the dependent variables (Travers, 1964, p. 130). In the present study, the self-instructional material was to be tested experimentally for their effectiveness by comparing with that of conventional method. Therefore the independent variable (experimental variable) is self-instructional material.

Experimental Variable

Self-instructional material

Student performance, diagnostic testing is the dependent variable. There is every chance of many extraneous variables to affect the experiment. Among them intelligence, personality were statistically analyzed as to their influence on the achievement (remediation).

Population and Sample

A population is usually defined as “all the members of any well defined class of people, events or objects.” It represents a complete enumeration in which all the units are listed or at least theoretically conceived to have been reached. The population needs to be defined clearly by identifying the nature and form of units than it consists of.

Thus, for the present study all the students of 7th class in government schools and self-financing schools constitute the population.

Sample refer to a small number of individuals, events or observations selected / drawn from population under study. Within all approaches to research, researcher uses sampling for very practical reasons. In majority of studies, it is just not feasible to collect data from each and every subject. In addition, to work on a sample saves time, labour and money. Moreover, sampling makes it possible to draw valid generalization by studying a relatively small proportion of the population selected for observation and analysis. In the present investigation, Sonipat district’s Gohana Educational Block of Haryana was the field of the study. As far as sample of the study was concerned two stage sampling
technique was used: one in the selection of blocks and the other, in the selection of classes for the study.

**Selection of Block**

In order to select the block for the study under reference, the investigator prepared a list of districts, tehsils of Haryana. Out of this Gohana block was selected with the help of lottery method.

**Selection of Schools**

In order to select the schools for the study the investigator prepared a list of government and self-financing schools of Gohana educational block. Out of which six schools were selected with some method as of blocks.

For experiment adopted for the study, experimental and control groups of students were selected from six schools following the state’s structure of education. The investigator selected six schools by lottery method in cluster form from 73 schools from Gohana educational block and one block from three blocks of Gohana tehsil and one tehsil from three tehsil of Sonipat district and one district from twenty one districts from Haryana. The initial sample of all the students studying in the standard in the selected schools (N = 310). While selecting the sample, care was taken to give due representation to variables like sex, locality and management. The intact classroom groups in cluster form were selected for the experiment. This helped the investigator not to disturb the natural setting of the classes and class schedules.

The institution chosen and the number of each student in each of experiment and control group is given in the table.
<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of School</th>
<th>Sex</th>
<th>Locality</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>F</td>
<td>Urban</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ct</td>
<td>Ex</td>
<td>Cont</td>
</tr>
<tr>
<td>1.</td>
<td>GSSS Gohana (Mandi)</td>
<td>19</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>2.</td>
<td>Mukhi SSS Gohana</td>
<td>19</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>3.</td>
<td>GSSS Rukhi</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>4.</td>
<td>SSS Moi Hooda</td>
<td>9</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>5.</td>
<td>Sanskar Vidyapeeth</td>
<td>10</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>6.</td>
<td>Raj Public School</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

**Tool Used For the Experiment**

Diagnostic Test (developed by the Investigator)

Self-instructional Material (developed by the Investigator)

MPI (Mondsley’s Personality Inventory Prepared by S. Jalota and S.D. Kapoor)

Samuhik Mansik Yogayata Priksha by R.S. Tandon

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Variable</th>
<th>Tool</th>
<th>Prepared By</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Diagnostic Testing</td>
<td>EDT</td>
<td>By Researcher</td>
</tr>
<tr>
<td>2</td>
<td>Self-instructional Material</td>
<td>SIM</td>
<td>By Researcher</td>
</tr>
<tr>
<td>3</td>
<td>Personality</td>
<td>MPI</td>
<td>S. Jalota &amp; S.D. Kapoor</td>
</tr>
<tr>
<td>4</td>
<td>Mansik Yogayata</td>
<td>Samuhik Mansik Yogayata Pariksha</td>
<td>R.S. Tandon</td>
</tr>
</tbody>
</table>
1. **Construction of Tools**

   For the construction of above-mentioned tool, a pilot survey was conducted by visiting a number of schools. Heads, teachers, students, experts and parents in the field were contacted and their opinion was taken into consideration in order to get an insight into errors of student in reading and writing in English language. For this purpose informal interviews with above-mentioned group of people were carried out. The main focus of informal interviews with these people was to explore areas where students faced difficulties. The interviews yielded significant information and an initial pool of items were obtained. Additional items were taken from existing literature also. The pilot survey thus enabled the researcher in discerning information from the actual field setting and helped in exploring the diverse facts of the problem for preparing the above-mentioned tools for the present study.

2. **Diagnostic Test**

   To identify the errors and weaknesses of students in reading and writing in English a diagnostic test was developed by the investigator for the students of class VII.

3. **Construction of Test Items**

   On the basis of the study of literature, information gathered during the pilot survey and personal experiences a pool of items was prepared about the errors and weaknesses of students in English language. Majority of the items were intended for average pupils. Items were scrutinized by experts for suggestions for improvement.

   The items were arranged according to their expected level of difficulty. The easiest items were included in the beginning for motivating pupils. The draft was printed in the form of a booklet and necessary directions were printed on the first page.

   The initial draft was given to some faculty members of Education Department of M.D. University and five teachers teaching English language for their suggestions. The tool was modified in light of their valuable suggestions. Then, the initial draft was given to the language (English) experts for vetting and it was then considered fit for try-out.
4. **Try-Out**

The initial draft of the diagnostic test thus prepared was given to a small group of students concerned for the purpose of removing ambiguities and to see if the items properly communicated what the same were intended to. This initial try-out let to the further revisions and refinement of the test for its effectiveness. After the initial try-out and revision, the final try-out of the test was administered to a group consisting 50 students and it was also given to some faculty members of Education Department. In the light of their responses, the necessary modifications were made and the final draft of the tool was prepared for the purpose of data collection. The final draft of diagnostic test was divided into various abilities viz. reading and writing (Reading and writing were clubbed together and four areas were taken for writing ability viz. grammar, vocabulary, composition and comprehension of prose and poetry).

5. **Item Analysis**

It is the process of establishing the suitability of an item for inclusion in the final test. The quality of each item was ascertained by analyzing two important characteristics of the item namely: (i) difficulty index (ii) discriminating power for the present study. Kelley’s (1939) method was used to calculate the difficulty index and discriminating power (pp. 17-24). Based on the scores obtained, pupils were arranged in descending order or magnitude i.e., from highest to select. Then the first 27% and the last 27% were used for item analysis. The difficulty index and discriminating power were calculated.

Items having difficulty index between 0.25 and 0.75 and discriminating power above 0.25 were selected for the final test.

**Preparation of the Final Test**

Out of the 90 items included in the tryout 40 items were selected for the final test on the D.I. and D.P. of the items. The selected items were arranged according to the difficulty level. Final test was printed with all necessary instructions. A sample diagnostic test and key is given in the index.
Reliability of the Diagnostic Test

The reliability of the diagnostic test was set up by test-retest method. The test was administered to a sample of 50 students out of the main sample and after the interval of 15 days it was again administered on the same group of 50 students. The obtained reliability co-efficients were found to be 0.72, 0.69, 0.70, 0.72 and 0.72 for reading, writing of grammar, vocabulary, composition and comprehension of prose and poetry. Reliability was calculated by product moment method. The average reliability of the test was found 0.71.

Validity (Statistical)

The empirical validity of the test was calculated by correlating the scores of the test with marks obtained for the first testing. The correlation coefficient obtained was 0.83. This obtained value shows that the test has good empirical validity.

Scoring of the Diagnostic Test

To evaluate the ability of students in reading and writing in English language, scoring was done with the help of answer key given in the appendix. One mark was assigned for each correct answer and no credit was given to an incorrect answer or an unattempted language item. No credit was given for more than one answer to a single item. All the areas of the test were scored separately. There were some of the objective type question and some of the subjective type questions. Objective type answers were scored according to criteria given against each question. One mark was assigned for each correct answer and no credit was given to an incorrect answer or an unattempted language item. No credit was given for more than one answer to a single item. Subjective answers were scored according to criteria given with each subjective question in the answer key. Both areas of the test were scored according to total marks given below:

Reading ability carries 35 marks in total and the areas of writing ability – grammar carries 22 marks, vocabulary 14 marks, composition 19 marks and comprehension of prose and poetry carries 10 marks in total. Then the data was analyzed with the help of purposed criteria given below regarding student’s performance.
Those students who scored 0 to 35% marks were placed in below average category, who scored 36% to 50% marks were placed in above average category. Percentage which is generally used in schools was considered for assessing the performance of the students. The main focus of the researcher was to identify those areas in which students performed below average. Hence in those areas where student scored 0 to 35% marks have difficulties in reading and writing in English language.

**Self-Instructional Material**

The investigator referred to different available programmed learning materials in English language. Since the topic ‘Reading and Writing Skill’ was not found among them; the investigator decided to prepare it by analyzing the content to suit the needs of the children.

The topic was analyzed in terms of behavioural objectives. In order to test the prerequisite skill of the student a test of entering behaviour was prepared. The learning material was then divided into frames. Each frame was a small segment of content that called for particular student responses. The student was asked to make the response in every frame. Prompts were provided on the programme frame to guide the student for making correct responses.

The programme was shown to three subject experts, a language expert and checked the inaccuracies in the content. It was then edited and tested on twenty students of Mukhi Senior Secondary School Gohana. Responses were studied in detail and the programme was finally edited. A number of books were consulted.

A number of examples and activities, as far as the content permits, have been included to help pupils for better understanding. The technique adopted for drill would prevent as far as possible rote learning. It, on the other hand, would encourage meaningful drill.

**Development of Self-Instructional Material**

The steps to develop the material are given below:

(i) Selection of topic (ii) formation of broad objectives (iii) specifying objectives in behavioural terms (iv) development of control outline (v) analysis of objectives (vi)
Selection of Topic

It was decided to develop the material on reading and writing components as prescribed by the problem.

Formulation of Broad Objectives

The student should be able to frame good handwriting and how to read the sentences: especially words of English language.

Specific Objectives

Based on the broad objectives, specific objectives in terms of observational and behavioural outcomes were formulated. For example the student should be able how to from letters, alphabets in different forms and how connect them and how to read words with the help of minimal pairs and knowledge of syllabus to read words.

Development of Content Outline

After the behavioural objectives were developed, the content outline suitable for the attainment of objectives has been developed. The content selected is given below.

For reading and writing twenty six letters were in centen. Small and capital both forms is used. Especially for reading minimal pairs are framed so that the student can read words with their smallest unit. Letters, words, sentences, paragraph and paraphrase is used to arrange to material.

Analysis of Objectives

The objectives were analyzed in terms of their sequence to discover whether there were any gaps or overlaps among the objectives.

Analysis of Content

The content was analyzed and arranged sequentially. All the letters and after the words, sentences and paragraph was used with sequence according to norms and rules.
Development of the Frame

It was decided to follow linear programming as given by B.F. Skinner. The frames consisted of stimuli that called for a specific action or set of actions. Example of a frame: All the letters, words receives the dot form so that student can see what sort of shape and size is proper and words is given in minimal pairs so that the smallest unit of words can be understand and read them properly.

Tryout of the Programme

The programmed material was tried out on a group of twenty students of Mukhi Senior Secondary School, Gohana. This enabled the investigator to improve the material on the basis of the suggestions received from the students and teachers. The programme was finally edited.

Provision for Student Activities

The material was provided with activities to be performed by the students so that the proper attitude and thinking will be developed. These activities also encourage them to have interaction with their classmates.

Feedback

The nature of material provides the opportunity to student so that they can check themselves whether they have improved the reading and writing.

Principle Used in the Module

Self Pacing:

The prepared study modules were developed as self-instructional modules for the class. The pupils can learn the format of letters and words on their own. They can use them in the school as well as at home, they can study at their own will at any time. The fast learner and slow learner both can follow it.

Sequencing:

The modules were arranged in the logical order based on inter-relationship between different formats, similarity and gradation of difficulty.
Evaluation:

At the completion of each unit student can see it whether they have done well or not because for writing exercise dot method is used and minimal pair as well for reading.

Reliability and Validity of Self-Instructional Material

The self-instructional material was developed by the investigator by strictly following the techniques and mechanics suggested by the educationists.

It followed the linear style of programming proposed by B.F. Skinner. The principles involved are (i) the learner works with the materials individually at his own pace, (ii) the students learn through a variety of carefully ordered sequence of materials which ask him to respond in some way or the other, (iii) the material is so designed that the student makes few errors, (iv) the learner is informed that his step is right or not.
S.I.M.
Reading the printed material following the teacher’s model reading as well as independently with proper pronunciation, stress, intonation and rhythm.

INSTRUCTIONS :-

1. The section has been divided into four steps:-
   a. Reading of words according to syllables.
   b. Reading of Simple sentences.
   c. Reading of paragraph.
   d. Reading of passage.
S.I.M.

Reading the printed material following the teacher’s model reading as well as independently with proper pronunciation, stress, intonation and rhythm.

INSTRUCTIONS :-
1. The Section has been divided into four steps :
   a. Reading of words according to syllables.
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<table>
<thead>
<tr>
<th>(Single syllabic)</th>
<th>(Double syllabic)</th>
<th>(Multiple syllabic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>cat</td>
<td>Cap – tain</td>
<td>Mis – Pro – nounce</td>
</tr>
<tr>
<td>she</td>
<td>Tea – cher</td>
<td>Ci – ga – retle</td>
</tr>
<tr>
<td>so</td>
<td>Re – cede</td>
<td>am – bi – tion</td>
</tr>
<tr>
<td>go</td>
<td>Tai – lor</td>
<td>cu – cum – ber</td>
</tr>
<tr>
<td>box</td>
<td>en – gage</td>
<td>be – com – ing</td>
</tr>
<tr>
<td>fox</td>
<td>un – der</td>
<td>Pho – ne – tics</td>
</tr>
<tr>
<td>band</td>
<td>Pen – cil</td>
<td>po – ta – to</td>
</tr>
<tr>
<td>I</td>
<td>Re – mark</td>
<td>Re – mem – ber</td>
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<tr>
<td>eye</td>
<td>te – per</td>
<td>e – du – cate</td>
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<tr>
<td>oh</td>
<td>ma – tter</td>
<td></td>
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<tr>
<td>ah</td>
<td>co – tton</td>
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<tr>
<td>come</td>
<td>mu – tton</td>
<td></td>
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<tr>
<td>some</td>
<td>su – dden</td>
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<tr>
<td>boat</td>
<td>ri – ddel</td>
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<td>gone</td>
<td>ho – nest</td>
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<tr>
<td>bold</td>
<td>ear - nest</td>
<td></td>
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<td>mam</td>
<td>or – der</td>
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<tr>
<td>all</td>
<td>od – our</td>
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<td>up</td>
<td>a – pply</td>
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<tr>
<td>ass</td>
<td>ke – ttle</td>
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<td>state</td>
<td>ca – ttle</td>
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<tr>
<td>slate</td>
<td>li – ttle</td>
<td></td>
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<tr>
<td>spin</td>
<td>sub - tle</td>
<td></td>
</tr>
<tr>
<td>stun</td>
<td></td>
<td></td>
</tr>
<tr>
<td>school</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### (Single syllabic)
- prize
- scream
- spleen
- stream
- screen

### (Multiple syllabic)

|----------------------|------------------------|
Step – II
S.I. M for Reading
(SIMPLE SENTENCES)

1. Rajesh is intelligent.
   Minimal pairs - Ra – jesh
   - is –
   In – telli – gent

2. Rajesh is fond of reading books.
   – Found
   - of -
   Rea – ding
   - books -

3. He is a student.
   - He -
   - a -
   stu – dent

4. Ram is a Farmer.
   Far – mer

5. This is my mouth
   - my -
   - mouth –
   -

6. It is a camel
   ca – mel

7. It is an elephant.
   E – le – pant
8. These are grapes.
    - These –
    are –
    gra – pes –

9. It is my pen.
    - my –  - pen-

10. It is coconut.
    co – co - nut
Rahim, Lalit, Bhawana and Isha are friends. They are very fond of planting trees. They have planted a guava, a sheesham, a rose and a neem sapling in their school ground. They water these sapling everyday.

Minimal pairs :-

Ra’-him, La – lit, Bha – wa – na , - and - , - Isha-, are, - friends - , -
They - , - are - , - very- , fond – of - , plant – ing, - trees - , - They - ,
have - , plant – ed, - a - , - neem - , sap – ling, - in - , - their - , - school
- , - grund - , - they - , wa – ter, - these - , sap – ling, every – day –
It was 15th August last Monday. This day is celebrated as national festival in India. It was on this day in the year 1947 that we won our independence from the British rule after a long struggle.

This year we celebrated this festival in our school with a great zeal. We had been working herd for a week to beautiful our school. We prepared colorful banners and placards with patriotic slogans written on them.
S.I.M.

Learning how to frame letters and write sentences through dotted illustrations and independently

INSTRUCTIONS :-
1. Over write on dots.

2. Write independently.

3. Imitate the given letters and sentences.

4. Don’t write anything extra other than instructed.

5. Use Lead Pencil to write.

6. Don’t erase once written.