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8.0 Introduction

In the fourth chapter of this report the planning and preparation of the Reading Comprehension Test in Gujarati have been described in detail. The preparation of Reading Improvement Programme (RIP) have also been described in detail in chapter VII of this report.

This is the second part of the investigation. It is mentioned earlier in this report that the present investigation is an experimental study. Therefore, the investigator studied the experimental designs from the books on research methodology.

In order to prepare a good design of an experiment the investigator, first of all, formulated the hypotheses. This was done keeping in view the objectives stated in the first chapter.

8.1 Formulation of Hypotheses

A sound research must make the use of carefully formulated hypothesis. So, it was decided to formulate the following operational forms of null hypotheses for the present investigation which could be tested statistically.
1. The pupils of experimental group taking the treatment of RIP would not score significantly higher on test of reading comprehension in Gujarati than the pupils of control group.

2. The pupils of experimental group taking the treatment of RIP would not score significantly higher on test of reading speed in Gujarati than the pupils of control group.

3. The sixth grade pupils having I.Q. 105 and above would not score significantly higher on test of reading comprehension in Gujarati after taking RIP than the pupils having I.Q. 105 and above who would not take the RIP.

4. The sixth grade pupils having I.Q. 77 and below, would not score significantly higher on test of reading comprehension in Gujarati after taking RIP than the pupils having I.Q. 77 and below, who would not take the RIP.

5. The sixth grade pupils falling in the first quartile \( (Q_1) \) of SES would not score significantly higher on test of reading comprehension in Gujarati after taking RIP, than the pupils in the same quartile \( (Q_1) \) of SES score distribution who would not take RIP.
6. The sixth grade pupils falling in the upper quartile \((Q_3)\) of the SES score distribution would not score significantly higher on test of comprehension in Gujarati after taking RIP than the pupils falling in the same quartile \((Q_3)\) of SES score distribution who would not take RIP.

7. The sixth grade pupils falling in the upper quartile of the reading comprehension score distribution would not score significantly higher on the test of reading comprehension in Gujarati after taking RIP than the pupils falling in the same quartile \((Q_3)\) of reading comprehension score distribution who would not take the RIP.

8. The sixth grade pupils falling in the first quartile \((Q_1)\) of the reading comprehension score distribution would not score significantly higher on the test of reading comprehension in Gujarati after taking RIP, than the pupils falling in the same quartile \((Q_1)\) of reading comprehension score distribution who would not take the RIP.

The formulation of operational null hypotheses warrants to go through the most popular methods for conduction of experiment and look into carefully which of the methods is suitable for the present investigation. In the
field of education the following three methods are most widely used by the educational researcher:

i. One group method
ii. Equivalent group method
iii. Rotational group method.

Out of these three methods, the second method, that is Equivalent Group Method, is widely used because it provides better chances to control some of the variables functioning as control variables in the experiment. Before describing the steps of the method it would be in the fitness of things to consider the basic requirements of the experiment.

8.2 Basic Requirements of the Experiment

In order to test the hypotheses formulated earlier, the following requirements are essential for the present experiment:

1. Representative sample of the population (schools)
2. An appropriate experimental design.
3. A reliable test of reading comprehension in Gujarati for Std. VI for obtaining reading ability scores of the sample.
4. I.Q. scores of the sample.
5. Scores on SES of the sample.
6. Reading Improvement Programme in Gujarati for the students of Std. VI.

The requirements no. 3 and 6 have already been described in the previous chapters. The other requirements are described in the following paragraphs.

8.3 Sample of Schools

It is impossible to arrive at reliable, valid and relevant conclusions without a representative sample and therefore it is decided to have a representative sample for the study. The main purpose of the study is to investigate the impact of RIP in Gujarati on reading comprehension of pupils of class VIth of schools of Anand Taluka. In selection of the school for the sample of the present investigation, the following criteria were kept in view.

8.4 Criteria for Selection of Schools

i. The area in which it is located - whether urban rural.

ii. Type of school whether girl's, boy's or mixed school.

iii. Management - whether private or run by Jilla Panchayat.
Twelve schools were selected from Anand Taluka in such a way that six pairs could be matched keeping in view the criteria first cited. The students studying in these schools could be considered as representative sample as well as randomised sample because it was found from the talk with the principal that the pupils are generally admitted in the school, on the 'first come, first served', basis. There are no special selection criteria for their admission. In the same way there is no definite criteria for the formation of divisions of a Std, if there are more students than the required number for a class. Therefore it could be said that the pupils are generally allotted to different divisions of the class at random. Hence it is said that there is a randomization of students in the group itself.

The classes upto VIIth grade, is conducted and managed by District Panchayat administration without charging tuition fees at the primary stage also. Hence parents from lower income group also can afford to send their children to get them educated. Moreover the rising awareness on the part of these parents of importance of formal education in the lower income group has made them to send their children to school. Therefore, the students group in the primary school stage is constituted of different castes, religions, income, sex and abilities.
Therefore the sample of school selected for the present investigation is by all means a representative sample containing all sub-units of the population. Thus the sample could be treated as quite representative and members of the groups called, 'subjects' are randomly assigned to divisions of Std. VI.

Looking to this, it was presumed that the sample taken represents the population of sixth grade pupils of the schools in Anand Taluka adequately.

6.5 Formation of Equivalent Groups

In order to test the hypotheses of the research, an experimental method of 'equivalent groups' was contemplated. For the formation of equivalent groups, initially 543 pupils of twelve classes from twelve schools were administered a reliable and valid reading comprehension test in Gujarati for class VI, constructed by the investigator herself. The reading comprehension test in Gujarati for Std. VI is given in 'Appendix A'. On the basis of the scores on this test, the classes were matched for mean and standard deviation (SD) of the groups. These 12 classes were divided into 6 pairs of equivalent groups. In each of the pairs of equivalent groups, one class was treated as the control group while the other as the experimental class/group. In all there were six control groups and six
experimental groups. So there were six replications of the experiment. Table no. 8.1 shows the mean scores and standard deviations (SD) of control and experimental groups with their respective critical ratio.

Table 8.1

<table>
<thead>
<tr>
<th>Re. No.</th>
<th>Groups</th>
<th>No. of pupils</th>
<th>Mean</th>
<th>S.D</th>
<th>M.D</th>
<th>C.R</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Experimental</td>
<td>47</td>
<td>29.9</td>
<td>12.5</td>
<td>1.6</td>
<td>0.73</td>
<td>N.S.</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>46</td>
<td>31.5</td>
<td>8.83</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Experimental</td>
<td>46</td>
<td>36.7</td>
<td>10.2</td>
<td>1.4</td>
<td>0.67</td>
<td>N.S.</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>43</td>
<td>35.3</td>
<td>9.49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Experimental</td>
<td>30</td>
<td>27.5</td>
<td>7.9</td>
<td>1.2</td>
<td>0.66</td>
<td>N.S.</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>29</td>
<td>26.3</td>
<td>6.65</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Experimental</td>
<td>42</td>
<td>18.50</td>
<td>7.91</td>
<td>0.05</td>
<td>0.03</td>
<td>N.S.</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>46</td>
<td>18.45</td>
<td>5.75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Experimental</td>
<td>25</td>
<td>22.8</td>
<td>8.32</td>
<td>0.7</td>
<td>0.31</td>
<td>N.S.</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>29</td>
<td>23.5</td>
<td>7.98</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Experimental</td>
<td>57</td>
<td>24.5</td>
<td>9.22</td>
<td>1.05</td>
<td>0.59</td>
<td>N.S.</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>41</td>
<td>25.5</td>
<td>8.40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>Experimental</td>
<td>247</td>
<td>27.05</td>
<td>11.20</td>
<td>1.05</td>
<td>1.07</td>
<td>N.S.</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>234</td>
<td>26.06</td>
<td>10.29</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N.S. = Not significant
The study of table 8.1 reveals that none of 6 pairs of schools have significant C.R. At the same time the total mean of all the experimental schools and that of all the control school is also not significant. Hence it could be taken for granted that initially the schools are by and large equal with respect to reading comprehension.

8.6 Steps of the Design

To know whether the reading improvement programme would increase the reading comprehension of pupils of class VI, the following steps were undertaken, which are stated by Van Dalen.

1. Administer a test to the groups for measuring the dependent variable (score on reading comprehension test) and find the mean of the pre-test scores for experimental and control group. ($T_1^E$ for Experimental and $T_1^C$ for Control group).

2. Keep all the conditions identical for the groups except for exposing the experimental subjects with the exercises of reading improvement programme and the control subject with usual work in the class.

3. Administer a test to the groups for measuring the dependent variable and find the mean of the post-test scores for each replications ($T_2E$ and $T_2C$).

4. Find the mean difference between $T_1E$ and $T_2E$ and $T_1C$ and $T_2C$ for each replication DE and DC.

5. Compare DE and DC to determine whether the application of $x$ (treatment variable) caused a significant change in the experimental groups scores.

6. Apply the appropriate statistical procedure to ascertain whether the difference in the scores is sufficiently great to be a real difference, or whether it is only a chance occurrence.

All these steps may be depicted as follows:

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-Test</th>
<th>Treatment</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>(R) Exp.</td>
<td>$T_1E$</td>
<td>$x$</td>
<td>$T_2E$</td>
</tr>
<tr>
<td>(R) Ctrl.</td>
<td>$T_1C$</td>
<td>$-$</td>
<td>$T_2C$</td>
</tr>
</tbody>
</table>

The treatment be randomly assigned to groups:

(1) Experimental Group

$T_2E = T_1E = D_E$

(2) Control Group

$T_2C = T_1C = D_C$

The investigator followed the above steps with all possible precautions and exactness required for conducting
the experiment. With this fundamental concept the study proceeded to test the hypotheses mentioned earlier in this chapter.

8.7 Procedure of the Experiment

The experiment was carried out from the first week of August, 1981 to October, 1981 for a period of about 2 months that is five period a week were devoted for implementing the RIP. Each period was of 40 minutes. The RIP was given to the students of experimental groups with the help of the teachers in-charge of class VI of that particular school. Thus the conduction of the experiment consists of four main things namely:

i. Treatment given to the groups.

ii. Administering the test at the end of the treatment.

iii. Observation made during the period of experiment.

iv. Training given to the experimenting teachers.

8.8 The Training to Teachers

Before starting the experiment it was thought to give a training to the teachers, for implementing the material prepared for improving reading comprehension. First
the meeting was held with the Head-Masters of experimental schools to discuss the implementation aspects of the programme. Also it was discussed with the Head-Masters that a one-day meeting will be organised to acquaint and train the teachers participating in implementation of the reading improvement programme. The Head-Masters co-operated whole heartedly and agreed to send the teachers. Accordingly the second meeting was held for teachers, to acquaint them with the objectives of the experiment and the material to be implemented in the class-room. Besides this, actual demonstration and practice for administering the programme, were given. So that they can implement the programme in proper way. The teachers were also instructed to keep the record of their observations.

8.9 Treatments Given to Groups

The students of the experimental groups were given the treatment for improving reading comprehension. For that, students were given reading improvement programme in Gujarati, specially prepared for the purpose as described earlier in the chapter VII.

The reading improvement programme was closely followed by exercises, where in, the pupils were expected to answer questions on what they have read. In order to see that the exercises of the reading improvement programme go on
simultaneously the treatment schedule was prepared and given to each participating teachers.

The schedule is given in table 8.2.

Table 8.2

<table>
<thead>
<tr>
<th>No. of the periods</th>
<th>Description of work to be done</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 periods</td>
<td>Part I : 8 Ex. for Perception</td>
</tr>
<tr>
<td>15 periods</td>
<td>Part II : 13 Ex. for Vocabulary</td>
</tr>
<tr>
<td>13 periods</td>
<td>Part III : 11 Ex. for Comprehension</td>
</tr>
</tbody>
</table>

According to this schedule the teachers were instructed to give the treatment to the group. During the implementation of this programme, Schools were often visited by the investigator with a view to guiding the teachers on the spot and discussing their difficulties. Here it should also be mentioned that after the completion of group of exercises from RIP the teachers were asked to give their observations and difficulties they had if any while conducting the experiment, Thus during the course of the treatment it was seen that the programme is implemented in the right spirit. At the end of the experiment the post test was administered to pupils of experimental and control groups. The test was then scored as mentioned earlier some were in this report.