CHAPTER IV

Administration of the Test.

The sample.

The efficiency of an investigation depends largely on a proper selection of the sample on which the test is to be administered. The term sample is used to designate the part of a population while the whole is called the Statistical universe or Statistical population. The statistical population in this investigation is all the high school II year students of the area of the old Mysore State. As it is almost impossible for a single investigator to launch on this stupendous task, a portion of this total population was selected. The portion selected is called the sample. This sample must represent the population truly. The method of selecting the sample is called the sample design or sampling process. The quality of the investigation depends upon proper sampling. In proper sampling every individual in the statistical population will have an equal chance of selections and the sample chosen gives a correct idea about the population.

If the sampling is defective "even the best statistical technique cannot make bad data yield valid results".1

In drawing the sample design in this investigation the total number of pupils to whom the final test, to be administered

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had to be a representative of the whole group of High School II Year students, the area of the old Mysore State. High School II Year students had to be selected, because they had studied the old syllabus, in I Year last year, and the present I Year students have a slightly, modified syllabus. The choice of schools and pupils had to be made with great care. There are many methods, of getting a representative sampling.

1. Random sample.

Random sampling "does not mean, that the sample has been chosen in an off hand, careless, or haphazard fashion. Instead it means that we rely upon a certain method of selection (called 'random') to provide an unbiased cross section of the larger group or population. The criteria - for randomness in a sample are met when (1) every individual in the population or supply has the same chance of being chosen for the sample; and (2) when the selection of one individual or thing in no way influences the choice of another." 1 Random sample can also be drawn by drawing similar and well shaken-up slips out of a hat. Random sampling is the best method of sampling. Even a systematic

selection of an accurately listed population by taking every one fifth or every one tenth name written in an alphabetical order gives approximately a random sample.

2. Stratified - Random Sampling.

This is also called controlled sampling. It is a technique designed to ensure representativeness to avoid bias by using a modified random sampling method. It consists of two or more random samples drawn from two or more sub-divisions or strata of the total population. The different strata or sub-divisions are based upon socio-economic status, education, skin colour, and nativity background.

Area Sampling.

This is a new method of designing samples. In this method the entire area is sub-divided into small sections each of which is a sampling unit, and certain of these area units are drawn at random to constitute a sample.

In this investigation the sample design was drawn - according to Stratified Random sampling. The total area of the old Mysore State was studied under three strata - the urban, the rural and the industrial. Mysore and Bangalore were considered urban, Mandya, Bhadravati and K.O.F. industrial and the other parts as belonging to the rural group. Schools in the different areas mentioned above
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<td>80</td>
<td>00</td>
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<td>14</td>
</tr>
</tbody>
</table>

**Schools:**
- Mount Royal High School
- Mountain High School
- St. Joseph's Convent High School
- Government High School
- Municipal High School
- District Court High School
- Government Boys High School
- St. John's High School
<table>
<thead>
<tr>
<th>Region</th>
<th>High School</th>
<th>Medium</th>
<th>Student Population</th>
<th>Home of the School</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Adyar High School</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>2</td>
<td>Ramanathapuram High School</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>Mantralaya High School</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>4</td>
<td>Central High School</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>5</td>
<td>St. Philemon's High School</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>6</td>
<td>Government Girls School</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>7</td>
<td>Government Boys School</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>8</td>
<td>Government Boys School</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>9</td>
<td>Government Girls School</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>10</td>
<td>Rajeevara Girls School</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>

Institutional distribution of the sample number according to region and schools and medium of instruction.
were listed and selected by Random selection with the help of the Fisher's Table and keeping in view the number of students to be drawn into the sample from each area and the type of management like Government, Private and local bodies.

It was decided to draw a sample of roughly about 30 per cent from the urban area, about 10 per cent from the Industrial area and about 60 per cent from the rural area. It was decided to have 10 schools from the urban area representing different strata of society, four schools from the Industrial area and 13 schools from the rural area. This number had to be spread over schools under different managements. The number was spread as shown below.

<table>
<thead>
<tr>
<th>Managements</th>
<th>Urban</th>
<th>Industrial</th>
<th>Rural</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boys</td>
<td>Girls</td>
<td>Boys</td>
<td>Girls</td>
</tr>
<tr>
<td>Government</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Local Bodies</td>
<td>1</td>
<td>1</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Private</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>7</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

The schools in different areas and different management were selected by Random selection as mentioned earlier. The sample selected was distributed over the various schools as shown in the Table.

Rossi recommends the consideration of the following questions for ensuring proper administration of the test.

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1. When should the test be administered?

This test had to measure the achievement of High School II Year pupils in the first year portion of General Science. This was not taken up during the early period of the academic year as the pupils responses would not be normal and as they would be disinclined to take the examination soon after the summer holidays. The best time in the opinion of the investigator was when they were ready for the promotional examination. Therefore the last week of January was regarded the optimum period for the test to commence. The test programme commenced from the 23rd of January and it lasted till the 13th of February.

This was quite in consonance with the opinion of Ross who says "There is also the fact that many studies have shown a considerable decline in knowledge at the end of summer vacation. This would seem to favour giving the test at the end of the school year when the pupils status is more normal."

2. Who should administer the test?

In the ordinary testing programme it is enough if the classroom teacher administer the test. When the tests are

used for purposes of research, or when they are used to compare one grade, class or school with other they should be given by one person or a group of persons specially trained for this purpose. In the present investigation the investigator himself administered the test in all the schools to ensure uniformity of procedure. However the willing help of the teachers and Head Masters was made use of for the healthy conduct of the test.

3. What procedure should be followed?

Ligon argues that the conditions for the test must be favourable. The test should be given in the familiar environment of the pupils own class rooms. The test should be given at regular class time without permitting to run over the lunch time or play time. He is even against having the test administered just before or after an important event in the school like a holiday, a school party or an athletic contest. He emphasizes that unnecessary distraction and interruptions should be avoided. The words 'Test going on. Please do not disturb' should be written on a card and should be hung outside the class room. The time limit should be maintained. When the test is in progress the examiner must be alert to see that pupils neither help nor hinder each other nor are distracted by external disturbances. According to Ligon the necessary requirements of the group

1. Ligon: "Measurement in To-day's School", page 228.
2. Ibid. 230.
testing are "That all the subjects understand the instructions, that they all work throughout the assigned time at their optimum level of achievement, that they do not quit trying or omit any section of the test, that examiners give instructions adequately and in a stimulating effective tone of voice - not a dull bored monotone - and that proctors are observing every movement of the group, stimulating lagging souls, inhibiting wandering eyes and detecting failure to instructions". However when a pupil forgets any instruction he should be permitted to raise his hand and get the necessary help.

**Administration of the Test.**

**Programme:** The administration had to be carried according to certain programme to avoid unnecessary inconveniences and impediments in the work. A programme for conducting the test in the various schools selected was chalked out with the following details:

- Date, time and place of conducting the test and the number of students required in either of the media of instruction. A copy of the programme is found in Appendix D.

Intimations were sent to the respective heads of the institutions well in time requesting them for permission and necessary help. The letter of request contained the following details.

1. Date and time of administering the test.
2. Time required for work.

3. Number of candidates required in each medium of the class.

4. Information required about each candidate taking the test.

   a) The test marks and the first terminal marks of the candidates in general science.

   b) The names of 10 best and 10 worst pupils as per the estimate of the subject teachers.

A copy of the proforma is found in Appendix E.

The test was administered in January - February 1961, in all the 27 schools as per schedule.

The test was administered to 2023 students. Of this 1501 were boys and 522 were girls. The distribution of the number in English medium and Kannada medium was as follows.—

<table>
<thead>
<tr>
<th>English Medium</th>
<th>Kannada Medium</th>
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<tr>
<td>845</td>
<td>1178</td>
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The administration of the test was carried in person as already referred to. The suggestions of Ligon quoted above were kept in view and the method of motivation, directions, instructions and securing examination conditions for the test were the same as followed during the try-out. During this stage there was a slight modification in the method.
of motivation. The pupils were told that their promotional examination was fast approaching. They were informed that they had to answer a set type of questions which are very easy and interesting. Answering these would revise the General Science portion of the previous year. The method of answering the different types of tests were explained by working out the examples given at the beginning of each type of test on the black board. Their doubts were clarified. The method of recording the answer was also explained. In short the advice of McFall "An ounce of demonstration is worth a pound of words -- probably due to primordial practice, children, not to mention adults can initiate better than they can comprehend and follow linguistic directions -- --. Demonstration was still further advantage of securing better attention especially from the young children". 1 was followed.

The students were asked to carefully fill in the blanks on the facing sheet. The directions given on the facing sheet were explained to them. The total time required for working out samples and explanation was 15 minutes. They were asked to begin at the signal "start" and "stop" answering at the signal "Stop" 45 minutes were allowed for answering all the test items.

Scoring of the Test.

"The results of a test possessing scorability should

should be obtainable in as simple, rapid, and routine a manner as is commensurate with their importance. There are many methods of securing accurate scoring. In America where tests are administered to many thousands of students they make use of machine scoring. The International Test Scoring Machine scores pupils' answer sheets by means of an electrical current flowing through the lead deposited by the pupils electrographic pencil on the answer sheet.

Hand Scoring.

There are many types of Hand scoring keys. The strip keys, cut out stencils and transparent stencils. In this investigation the strip key method was used. Answers for each page of the test book let were written in red ink and these were pasted on a card board sheet. The answers were spaced in such a way that they correspond in spacing with the items of the test. Except in the case of enumeration and the diagram tests the answers were secured on the left hand side of each page in a columnar manner. The key was placed by the side of each page and the items of that page were scored.

As there is complete objectivity in scoring an objective test, even a clerk or a student can score a test as there will be no room for variation when the scoring is as per the key provided. Inspite of these facilities of getti-

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ing the test scored by a clerk in order to avoid a re-check
the investigator himself undertook the scoring of all the
2023 booklets. A score of one mark was allowed for each
correct response except in the case of the enumeration and
the diagram tests where a score of half a mark was given for
each correct response. Each correct response was ticked
off with a pencil. A cross mark was put against each wrong
response.

The total number of odd and even items answered correctly
were noted. The correction formula \( S = R - W \) was
applied to the True False Test. This was not applied to
the other tests as there is difference of opinion about
- effecting correction to other kinds of tests. Lindquist is
of opinion: "The frequency with which a certain wrong response
is selected will depend upon the degree to which the item
written succeeded in making that response highly plausible
in the light of whatever (inadequate) knowledge or ability
the examinee does possess. If the item writer achieved
his aim the wrong responses will always appear more plausible
than the correct response to the examinee who does not
possess the desired knowledge or ability." He is of opinion
that the greater the number of choices per test item, the
less important it is to correct for guessing.

The correct scores of each individual item were found
out for calculating reliability by the method of National

The raw scores thus obtained were tabulated into different groups.

The scores of the pupils of various schools are given in the Appendix.