CHAPTER - IV

PROCEDURE OF THE STUDY
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4.0.0 INTRODUCTION

For the proper construction of massive building, blue prints are prepared by the architects. Immaculate and rigorous planning is required before determining and applying any policy by the government. The monthly household budgets keeps the mistress away from the economic crisis. In the same way the clear and systematic statement of the procedure avoids all the difficulties in the way of research and helps the investigator to achieve the aims and objectives of the study. Hence in the present chapter the investigator has described the actual procedure that she has followed while collecting and analyzing the data and drawing conclusions from it in the light of aims, formulated for the present study. The present chapter deals with the sample, its selection procedure and construction of the research tools.

4.1.0 SELECTION OF THE SAMPLE

The present study was confined to parishadiya and non-parishadiya primary schools of Achchnera Block of Agra District. Thus the sample selected for this study included the headmasters, teachers and learners and parents of children of primary schools. The detailed description of the sample has been given in the table 4.1.1.

Table - 4.1.1
Sample of the Study

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Sample</th>
<th>Types</th>
<th>Parishadiya</th>
<th>Non-Parishadiya</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>School</td>
<td></td>
<td>18</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>2.</td>
<td>Head Masters</td>
<td></td>
<td>18</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>3.</td>
<td>Teachers</td>
<td></td>
<td>76</td>
<td>31</td>
<td>107</td>
</tr>
<tr>
<td>4.</td>
<td>Learners</td>
<td></td>
<td>842</td>
<td>270</td>
<td>1121</td>
</tr>
<tr>
<td>5.</td>
<td>Parents</td>
<td></td>
<td>350</td>
<td>82</td>
<td>432</td>
</tr>
</tbody>
</table>
4.1.1 Selection of the Locality for the Study

In this study Achhnera Block of Agra District was selected for the collection of the data. The investigator took 16 villages of almost all areas of Achhnera Block. These villages were Abhuapura, Achhnera, Gopau, Kachora, Kirawali, Naglalal Das, Pali Sadar, Puramana, Rasoolpur, Rayabha, Runakta, Sahta, Sahai, Sandhan, Vidyapur and Vyara. The situation of these villages is pointed in the map of Achhnera Block. Both the types of schools parishadiya and non parishadiya were taken from these villages. The sample selected is representative of Achhnera Block of Agra as the members of the sample comprised all areas of the Block. The map of Achhnera Block (page No.98) gives the clear picture of these localities.

Table - 4.1.2

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name of the School</th>
<th>Name of Village</th>
<th>Type of School</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Prathmik Vidyalaya, Abhuapura</td>
<td>Abhuapura</td>
<td>Parishadiya</td>
</tr>
<tr>
<td>2.</td>
<td>Prathmik Vidyalaya, Achhnera</td>
<td>Achhnera</td>
<td>Parishadiya</td>
</tr>
<tr>
<td>3.</td>
<td>Prathmik Vidyalaya, Gopau</td>
<td>Gopau</td>
<td>Parishadiya</td>
</tr>
<tr>
<td>4.</td>
<td>Prathmik Vidyalaya, Kachora</td>
<td>Kachora</td>
<td>Parishadiya</td>
</tr>
<tr>
<td>5.</td>
<td>Prathmik Vidyalaya, Kirawali - I</td>
<td>Kirawali</td>
<td>Parishadiya</td>
</tr>
<tr>
<td>6.</td>
<td>Prathmik Vidyalaya, Kirawali - II</td>
<td>Kirawali</td>
<td>Parishadiya</td>
</tr>
<tr>
<td>7.</td>
<td>Prathmik Vidyalaya, Naglalal Das</td>
<td>Naglalal Das</td>
<td>Parishadiya</td>
</tr>
<tr>
<td>8.</td>
<td>Prathmik Vidyalaya, Pali Sadar</td>
<td>Pali Sadar</td>
<td>Parishadiya</td>
</tr>
<tr>
<td>9.</td>
<td>Prathmik Vidyalaya, Puramana - II</td>
<td>Puramana</td>
<td>Parishadiya</td>
</tr>
<tr>
<td>10.</td>
<td>Prathmik Vidyalaya, Rasoolpur</td>
<td>Rasoolpur</td>
<td>Parishadiya</td>
</tr>
<tr>
<td>11.</td>
<td>Prathmik Vidyalaya, Rayabha</td>
<td>Rayabha</td>
<td>Parishadiya</td>
</tr>
<tr>
<td>12.</td>
<td>Prathmik Vidyalaya, Runakta - I</td>
<td>Runakta</td>
<td>Parishadiya</td>
</tr>
<tr>
<td>13.</td>
<td>Prathmik Vidyalaya, Runakta - II</td>
<td>Runakta</td>
<td>Parishadiya</td>
</tr>
<tr>
<td>14.</td>
<td>Prathmik Vidyalaya, Sahai</td>
<td>Sahai</td>
<td>Parishadiya</td>
</tr>
<tr>
<td>15.</td>
<td>Prathmik Vidyalaya, Sahta</td>
<td>Sahta</td>
<td>Parishadiya</td>
</tr>
<tr>
<td>16.</td>
<td>Prathmik Vidyalaya, Sandhan</td>
<td>Sandhan</td>
<td>Parishadiya</td>
</tr>
<tr>
<td>17.</td>
<td>Prathmik Vidyalaya, Vidyapur</td>
<td>Vidyapur</td>
<td>Parishadiya</td>
</tr>
<tr>
<td>18.</td>
<td>Prathmik Vidyalaya, Vyara - I</td>
<td>Vyara</td>
<td>Parishadiya</td>
</tr>
<tr>
<td>20.</td>
<td>Bhagwati Shishu Mandir, Sadia</td>
<td>Sadia</td>
<td>Non Parishadiya</td>
</tr>
<tr>
<td>21.</td>
<td>Geeta Shishu Mandir, Rayabha</td>
<td>Rayabha</td>
<td>Non Parishadiya</td>
</tr>
<tr>
<td>23.</td>
<td>Saraswati Shishu Mandir, Achhnera</td>
<td>Achhnera</td>
<td>Non Parishadiya</td>
</tr>
</tbody>
</table>

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4.1.2 Selection of the Schools

As the table-4.1.2 indicates that out of the 24 schools selected for the study, 18 were parishadiya and only 6 were non-parishadiya. This discrepancy is because of the availability and existence of the schools in those areas.

The selection of the areas was based on the consideration of (I) contiguity of the area, (ii) availability of at least one parishadiya and one non-parishadiya primary schools in that area and willingness of the headmasters and their cooperation in the collection of the data.

In a way the selection of schools was complete when the areas were selected, as all the schools located in the selected block constituted the sample for the study. But this criteria could be strictly followed in the Runakta, Sahta, Rayabha, Pali Sadar and Achnaha blocks. But only parishadiya schools could be taken in other localities due to non-availability of the other type in those areas. The table - 4.1.2 depicts the number of schools taken from the various villages of Achnaha Block.

4.1.3 Selection Procedure of the Respondents

The sample selected under different categories has already been sown in table - 4.1.1. The sample was limited in view of the intensive field work inherent in the study. Large samples indicate higher reliability and validity but the sample was restricted keeping in mind ease of access or approach to these villages. The following procedure was adopted to select the sample in various categories.

4.1.4 Selection of Learners

Keeping in view the focus of the study, learners in Classes IV and V constituted the sample. For achievement test all the students studying in grade V were selected. Following flow chart shows the sample of learners.
SAMPLE OF THE LEARNERS

FLOW CHART SHOWING THE SAMPLING DESIGN OF THE LEARNERS OF THE PRESENT STUDY
The flow chart shows that strength of students in non-parishadiya schools was less than parishadiya schools. For taking achievement of students of class IV marks in mother tongue (Hindi) and Mathematics in their final results were taken. A scrutiny of the number of students in the various selected schools revealed wide variations. In the parishadiya schools learners studying in classes IV and V were found relatively more in number and all of them were included in the sample. In the non-parishadiya schools, number of learners in class IV and class V were found to be quite less. It may be noted that the selection of students of these schools were not based on any ability grouping, age, sex, socio-economic status or any other special consideration. These learners had been taken for the achievement test and learners questionnaire also.

4.1.5 Selection of the Teachers

After specifying the sample of learners, teachers teaching these learners were identified. All the teachers teaching mother tongue (Hindi) and Mathematics were selected for gathering the related data. In this study 107 teachers were taken as a sample (76 parishadiya and 31 non-parishadiya schools). In most of the rural government schools a single teacher teaches both the subjects and at times in all the classes. Contrary to this, in some of the non-parishadiya schools, there were specialized teachers teaching only Mathematics or Hindi and for different classes. The following table depicts the number of single or general teacher and specialized teachers in various schools.
Table - 4.1.3
Number of Single teacher and specialized teacher for Hindi and Mathematics

<table>
<thead>
<tr>
<th>Schools</th>
<th>Single Teacher</th>
<th>Specialised Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parishadiya</td>
<td>16</td>
<td>2</td>
</tr>
<tr>
<td>Non-Parishadiya</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

The table shows that only two parishadiya schools had specialized teachers for Hindi and Mathematics. And 16 schools had single teacher for both the subjects but non-parishadiya schools had the equal ratio for general teachers and specialized teachers. Thus it is true that in most of the parishadiya schools a single teacher teaches both the subjects.

4.1.6 Selection of the Parents

The sample included around 432 parents. Parents were of the following categories: (1) Parents of class I students, (2) Parents of class V students, (3) Parents of drop out students, (4) Parents of non school going children. Table - 4.1.4 shows the number of parents of each category included as the sample. The sample of parents was selected keeping in mind the other two points: (i) availability and (ii) willingness to respond. The investigator approached the parents of classes I and V students. Information collected from parents was used mainly in developing the area profiles of the respective locality.

Table - 4.1.4
Parents of the children of Parishadiya and Non-Parishadiya schools

<table>
<thead>
<tr>
<th>Parents</th>
<th>Parishadiya</th>
<th>Non-Parishadiya</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I students</td>
<td>150</td>
<td>59</td>
<td>209</td>
</tr>
<tr>
<td>Class V students</td>
<td>150</td>
<td>25</td>
<td>175</td>
</tr>
<tr>
<td>Dropout students</td>
<td>30</td>
<td>7</td>
<td>37</td>
</tr>
<tr>
<td>Non school going children</td>
<td>--</td>
<td>--</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>330</td>
<td>82</td>
<td>412</td>
</tr>
</tbody>
</table>

Parents of four categories were taken in the study. 200 parents of class I students, 175 parents of class V students, 37 parents of dropout students and 20 parents of
non-school going children were taken for the study. As the table depicts, the number of parents in 3rd and 4th categories is less compared to the first two categories. The investigator is justified on the ground of non-availability and unwillingness.

4.1.7 Selection of the Headmasters

The headmasters of all the selected schools were taken for data collection. Table-4.1.5 depicts the number of headmasters in both the types of schools. In all the selected schools male members were appointed as headmasters.

Table - 4.1.5

Headmasters of Parishadiya and Non-Parishadiya Schools

<table>
<thead>
<tr>
<th>Type of School</th>
<th>Number of Headmasters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parishadiya Schools</td>
<td>18</td>
</tr>
<tr>
<td>Non-Parishadiya Schools</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
</tr>
</tbody>
</table>

4.2.0 JUSTIFICATION OF THE SAMPLE

The active involvement of students is highly necessary for knowing their achievement. Without including students in the sample, a comprehensive study of quality of primary schooling is not possible.

The present study is confined to the parishadiya and non-parishadiya schools of Aghnera Block of Agra District. The quality of the primary schooling is totally based on the functioning of primary schools, which to a great extent depends upon the capabilities of these administrators i.e. headmasters and teachers. The headmaster and teachers can supply maximum information about the primary schools. Therefore, keeping in view the nature of data and information required, the investigator selected the headmasters and teachers as a part of sample for the study.

Learners can supply maximum real information about the facilities provided by the schools. The participation of student's parents (parents of class I students, class V
students, dropout's children and parents who were not sending their children for study) was necessary for knowing the real information about them and their children. After collection of information from parents, the investigator could know the reasons, why they did not send their children and why their children were unable to continue their studies. Parents of students studying in class I were found to be unaware of school activities and showed less interest hence parents of those students studying in class V were taken. They were more concerned with school activities and what the school is giving to their children. Because of longer association with school (about four to five years) they were familiar with school officials. The parents' involvement was highly necessary for knowing the activities of school and teachers and for developing their area profiles for the Achhnera Block.

4.3.0 TOOLS FOR DATA COLLECTION

In order to collect the relevant data, the investigator developed nine instruments in the form of questionnaires, interview schedules, observation schedule and achievement test. Questionnaire were designed for the teachers, headmasters and students of the classes fourth and fifth of primary schools of Achhnera Block of Agra District. The interview schedules was prepared for the parents of the students of these schools. An observation schedule was prepared for obtaining information related to various aspects of these schools. Student's literacy was measured by a set of two achievement tests. One test was related to Hindi language and the other was to Mathematics of class fifth students. Achievement test was prepared keeping in mind their syllabus and courses of study.

The investigator developed and used the following tools.
4.3.1 QUESTIONNAIRE -

Various types of questionnaires prepared were:

4.3.1.1 Questionnaire related to school information:

It was meant to provide information on the size and locality of the schools, infrastructure, other facilities and financial provisions available with the schools.

4.3.1.2 Questionnaire related to information about the headmaster:

It was designated to obtain information related to the number of teachers, headmaster's perspectives on various aspects of the school and its functioning. Support from local communities, and the management strategies followed in the schools.

4.3.1.3 Questionnaire for obtaining information related to teachers:

It was primarily meant to capture the teacher characteristics — personal, educational, family background, teaching style and their perceptions regarding the school and its functioning.

4.3.1.4 Questionnaire for learners:

It was used to examine the socio-economic background of the children and their educational aspirations.

4.3.1.5 Questionnaire for parents:

Parent's questionnaire was used to know the perceptions of parents (those who are sending and not sending their children to school) regarding the school, its functioning and their support and involvement.

4.3.2 OBSERVATION SCHEDULE -

Following two types of observation schedules were prepared.
4.3.2.1 School-based process observation schedule:

It was used to capture the activities that take place on a typical day of the functioning of school.

4.3.2.2 Class-room observation schedule:

It provided framework for observation and recording the nature of the teaching-learning process in the class-room situation.

4.3.3 ACHIEVEMENT TESTS:

Achievement tests are used in measuring present level of knowledge, skills, competence etc. Two achievement tests consisting of the following elements were prepared.

i. Achievement test in Mathematics.

ii. Achievement test in Hindi language.

4.3.4 SCORE CARDS:

The achievement of students of fourth class in mother tongue (Hindi) and Mathematics was taken from their final results which was entered in their score cards.

4.4.0 JUSTIFICATION FOR THE TOOL USED

In order to obtain data from subjects of the sample, various types of tools were used. Data from headmasters, teachers, and students was received through questionnaires. Questionnaires are economical from the point of view of time and comprehensiveness of information which can be received.

In order to collect data from parents of the students, interview schedule was used. Schedule was used in a face to face situation with the respondents. The investigator thus had an opportunity to explain the purpose of the study. This enabled the investigator to get relatively complete and useful returns. This schedule was very useful especially with those parents, who were illiterate. In rural areas through this schedule reliable and valid information was obtained by the investigator. Students achievement was measured by the self-
constructed achievement test. This achievement test consisted of two sub-tests i.e. literacy and numeracy. As already developed reliable and valid test for this purpose was not available to the investigator, she therefore had to develop her own test.

4.5.0 DEVELOPMENT OF DATA GATHERING TOOLS

4.5.1 PLANNING FOR DATA GATHERING TOOLS

4.5.1.1 Questionnaires and Schedules:

Good and Halt (1962) state that "In general the word-questionnaire refers to a device for securing answers to questions by using a form which the respondent fills himself. Whereas schedule is the name usually applied to a set of questions which are asked and filled in by an interviewer in a face to face situation with another person".

The first step in the construction of a good questionnaire and schedule is to obtain a thorough grasp of the field and of the nature of data needed. Keeping in view the objectives of the present study and the nature of data required, the investigator thoroughly studied the related literature. All possible care was taken to make the questionnaires and schedules reliable and perfect.

4.5.1.2 Achievement Tests

Although the measurement of achievement in schools, is traced back to many centuries, the objective measurement dates, as already referred to, from the work of Thorndike and his pupils. In 1918 Thorndike published a paper, the first of its kind on measurement. It begins with the dictum "Every thing that exists, exists in some amount, and that, if it exists in some amount, it can be measured". It counteracted the opinion of those who believed that ideas and emotions could not be measured.

John W. Best (1977) states that "Tests of ability or achievement tests attempt to measure, what an individual
has learnt and his present level of performance. Achievement test scores are used in evaluating the influences of courses of study, teachers' teaching method and other factors considered to be significant in educational practice”.

Achievement testing forms one of the core aspects of this research project in understanding the quality of the primary schools. The levels of achievement of the pupil have been tested in two subjects: (i) Mathematics and (ii) Language (Hindi). The tests were given to the students studying in grade V of the selected schools toward the end of the academic year 1997-98.

As the first step in preparing the achievement tests, the text books prescribed for the study in Mathematics and Hindi language titled ‘Bal Ankganit’ and ‘Gyan Bharti Bhag 5’ in primary schools of Achhnera Block of Agra District, were scrutinized and a list of competencies was drawn up, which could reasonably correspond to the learning outcomes expected at the end of class V. The competencies were classified so as to represent three levels of achievement as level-I, level-II and level-III. While the three levels specified could not be exactly equated with any of the grade level in the primary school curriculum. In Mathematics achievement test level-I broadly included competencies expected at the end of class II, level II corresponded to competencies at the class III and level III was designed to include expected learning outcomes at class IV of primary school in Achhnera Block of Agra District. The achievement test of Hindi was based on listening and writing competencies of the children. The list of competencies thus drawn was examined by experts and primary school teachers and suitable modifications were made.

Two specific observations on the list of competencies were pertinent: One, the competencies do not
exhaustively represent all the learning outcomes expected in language (Hindi) and Mathematics at the primary school stage. Secondly the competencies only refer to those outcomes which can effectively be measured through paper pencil tests. These limitations had to be tolerated keeping in view the limited time available for testing. The achievement scores were obtained through the test developed on the basis of these competencies.

4.5.2 PREPARATION OF THE TEST FRAME

Keeping the list of competencies specified, a draft set was developed for each of the competencies. The first draft of the tool was developed in consultation with experts in the field of primary education, economics of education and measurement in education, Assistant Basic Shiksha Adhikari (ABSAs), Primary schools’ Principals and Teachers. The various areas of primary schooling on which the data was required were explored from the review of related literature and with consultation of experts. This information was available at various sources. Thus the investigator classified the areas of information received from the respondents. Items were then prepared on the basis of discussion with experts in education and evaluation.

The main purpose of this discussion with experts was to obtain their suggestions with respect to -

i. Inclusion of any other item/items in the tool if possible.

ii. Deletion or omission of any item/items which is/are not relevant.

iii. Examination of the distribution of marks among the items of achievement tests, and getting suggestions for improvement.

iv. Examination of the scoring method.

v. Examination of the relationship between the items and the objectives.
After preparing the preliminary draft of the test, tryout was done for improvement in the instrument.

4.5.3 PILOT TESTING OF QUESTIONNAIRES

Questionnaires for (i) headmasters, (ii) teachers, (iii) parents, (iv) learners were administered on a small group (2 headmasters, 5 teachers, 10 parents and 10 learners) for try-out.

Observation schedules were made for classroom observation and school-based process observation. It were administered only on two schools, named Prathmik Vidyalaya Thapi and Prathmic Vidyalaya Bichpuri-II.

4.5.4 PILOT TESTING FOR ACHIEVEMENT TESTS

Pilot study was conducted to ensure that the tests developed could effectively reflect the levels of achievement of the students of the respective classes and also to ensure the feasibility of test administration in terms of language used, instructions, number of items, total time requirement and such other factors. All the two achievement tests were administered on a small group of 30 students. Table 4.5.1 shows the number of students for pilot testing in both the subjects.

Table - 4.5.1
Sample of students for Pilot testing of Achievement tests

<table>
<thead>
<tr>
<th>SUBJECTS</th>
<th>STUDENTS</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BOYS</td>
<td>GIRLS</td>
<td>TOTAL</td>
<td></td>
</tr>
<tr>
<td>Hindi Language</td>
<td>15</td>
<td>15</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td>15</td>
<td>15</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>30</td>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>

The investigator felt that administration of Hindi as well as Mathematics achievement test on the same day would cause fatigue in the student and distort their performance. Hence the investigator did not administer both the tests on the same
day. The students were encouraged to express any difficulty faced in understanding the specific items in the tests or instructions given. All the observation were properly recorded. The test were scored by the investigator and an item-wise analysis of the performance of the students was carried out.

4.5.5 ITEM ANALYSIS

The typical item analysis of a test of ability yielded two kinds of information. It provided an index of item difficulty and an index of validity, where the term validity is used in a very broad sense. The index of validity may mean how well the item measures or discriminates in agreement with the rest of the test or how well it predicts some external criterion.

After tabulating the scores for each item (in terms of pass/fail) for all students, the answer sheets were divided into three piles of high, middle, and low score groups on the basis of total marks obtained. The upper and lower scores groups consisted of 27% of the sample whereas the middle group contained the remaining 46%. The two extreme groups were used for the analysis in which the following statistics were calculated.

4.5.5.1 Difficulty Value (DV)

4.5.5.2 Discrimination Index (DI)

4.5.5.1 The DV of each item is the pass percentage of subjects in that item. It was calculated by using the formula:

\[
DV = \frac{P(u) + P(l)}{N(u) + N(l)} \times 100
\]

where:

\( P(u) \) = Number of subjects passing the item in the upper score group.

\( P(l) \) = Number of subjects passing the item in the lower score group.

\( N(u) \) = Number of subjects in the upper score group.

\( N(l) \) = Number of subjects in the lower score group.
4.5.5.2 The Discriminative Index of each item represents the extent to which it can discriminate between high and low achievers, its value lying in the range ±1. DI was calculated by the formula.

\[ DI = \frac{P(u) + P(l)}{N} \]

where:

\( P(u) = \) Number of subjects passing the item in the upper score group.

\( P(l) = \) Number of subjects passing the item in the lower score group.

\( N = \) Number of subjects in the upper and lower group.

Achievement test's items were selected for the final draft on basis of their DV and DI values.

Items with DV's lying between 30-80% were selected. Those with DV under 30% or over 80% were rejected as being too difficult and too easy respectively for the test. Item with DI values lower than one were selected being reasonably good discriminators between high and low achievers.

Following modifications were made in the tools.

1. The language in some item was simplified.
2. Instructions were made more clear.
3. The scoring method of the item was modified.
4. Some items were deleted.
5. Some of the items were modified.

4.5.6 DESCRIPTION OF THE FIRST DRAFT AND FINAL DRAFT OF THE DATA GATHERING TOOL

4.5.6.1 School Questionnaire

This questionnaire consisted of 26 items in first draft and 32 items in final draft divided into three sections.

Table - 4.5.2 shows number of these items.
Table - 4.5.2

Number of items in School Questionnaire

<table>
<thead>
<tr>
<th>Section</th>
<th>Particulars</th>
<th>No. of Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>First Draft</td>
</tr>
<tr>
<td>A</td>
<td>Situation of school</td>
<td>6</td>
</tr>
<tr>
<td>B</td>
<td>Infrastructure and other facilities</td>
<td>13</td>
</tr>
<tr>
<td>C</td>
<td>Financial Provision</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>26</td>
</tr>
</tbody>
</table>

Table shows that 5 questions were increased in section B and 1 question was increased in section C in the final draft.

4.5.6.2 Headmasters’ Questionnaire

This questionnaire consisted of 24 items in first draft and 27 items in the final draft.

Table - 4.5.3

Number of items in Headmasters’ Questionnaire

<table>
<thead>
<tr>
<th>Particulars</th>
<th>No. of Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Personal Information</td>
<td>6</td>
</tr>
<tr>
<td>2. Information about the school</td>
<td>5</td>
</tr>
<tr>
<td>3. Information about the teacher</td>
<td>7</td>
</tr>
<tr>
<td>4. Information about the teaching</td>
<td>3</td>
</tr>
<tr>
<td>5. Information about the management and administration of the school.</td>
<td>3 6</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
</tr>
</tbody>
</table>

Table shows that only 3 questions were increased in management and administration of the school in the final draft.

4.5.6.3 Teachers’ Questionnaire

This questionnaire consisted of 29 items in the first draft and 30 items in the final draft divided in three sections. Table shows number of these items.

Table - 4.5.4

Number of items in Teachers’ Questionnaire

<table>
<thead>
<tr>
<th>Section</th>
<th>Particulars</th>
<th>No. of Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>First Draft</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Personal, Educational background</td>
<td>12</td>
</tr>
<tr>
<td>B</td>
<td>Professional background</td>
<td>5</td>
</tr>
<tr>
<td>C</td>
<td>Teaching style and job satisfaction</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>29</td>
</tr>
</tbody>
</table>
The table shows that only one question was increased in the 'A' section and 2 questions was increased in 'C' section. Some items were modified in this questionnaire.

**4.5.6.4 Learners' Questionnaire**

This questionnaire consisted of 23 items in the first draft and 27 items in the final draft. The table shows the number of these items.

**Table - 4.5.5**

<table>
<thead>
<tr>
<th>Number of items in Learners' Questionnaire</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Particulars</strong></td>
<td><strong>No. of Questions</strong></td>
</tr>
<tr>
<td></td>
<td><strong>First Draft</strong></td>
</tr>
<tr>
<td>1. Personal background</td>
<td>6</td>
</tr>
<tr>
<td>2. Educational and parent's background</td>
<td>10</td>
</tr>
<tr>
<td>3. Facilities provided by home</td>
<td>2</td>
</tr>
<tr>
<td>4. Facilities provided by school</td>
<td>2</td>
</tr>
<tr>
<td>5. Information about learners satisfaction</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>23</td>
</tr>
</tbody>
</table>

The table shows that only 4 questions were increased in the final draft.

**4.5.6.5 Parents' Questionnaire**

This questionnaire consisted of 22 items related to parents educational qualifications, participation in school activities, their opinion about the teachers and school and how far they are concerned for their children's progress. The numbers of questions of the first draft and final draft of this questionnaire were same.

**Table - 4.5.6**

<table>
<thead>
<tr>
<th>Number of items in Parents' Questionnaire</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Particulars</strong></td>
<td><strong>No. of Questions</strong></td>
</tr>
<tr>
<td></td>
<td><strong>First Draft</strong></td>
</tr>
<tr>
<td>1. Personal background</td>
<td>3</td>
</tr>
<tr>
<td>2. Educational qualification</td>
<td>4</td>
</tr>
<tr>
<td>3. Participation in school activities</td>
<td>7</td>
</tr>
<tr>
<td>4. Opinion about teachers</td>
<td>6</td>
</tr>
<tr>
<td>5. School satisfaction</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>22</td>
</tr>
</tbody>
</table>

All these questionnaires were written in simple Hindi. Since a poor design of the format creates a poor
attitude in the respondent, hence the investigator tried her best to make them attractive, legible and free from errors.

4.5.6.6 School-based process observation schedule

This observation schedule consisted of 22 items in the first draft and 22 items in the final draft. It consisted of items related to activities that take place on a typical day of the functioning of school. The number of item related to the dresses wore by students on the functions were increased in the final draft. This schedule provides student’s participation in the programme, place of programme, subject of the programme, teachers and students participation, students discipline and other facilities provided in the school.

4.5.6.7 Class-room observation schedule

This observation schedule consisted of 16 items in the first and final draft. It provided the frame work for observing and recording the nature of the teaching learning process in the class room situation. It consisted essentially qualitative information which could help in understanding the functioning of the school in terms of the teaching-learning process.

4.5.6.8 Achievement test

Achievement tests attempt to measure what an individual has learnt or what is his or her present level of performance. Most tests used in schools are achievement test. They are particularly helpful in determining individual or group status in academic learning. Achievement test scores are used in placing, advancing, or retaining students at particular grade levels. Frequently achievement tests scores are used in evaluating the influences of course of study, teachers’ teaching method and other factors considered to be significant in educational practice. Two achievement tests were developed for the following subjects.
(1) Hindi
(2) Mathematics.

Achievement test's items were selected for the final draft on the basis of their DV and DI values. In Achievement test of Mathematics there were 60 questions in the first draft in all the three levels. In final draft, 30 questions were deleted. In the achievement test of Hindi, 30 questions were there in the first draft. 10 questions were deleted on the basis of DV and DI values. Items with DV's lying between 30-80% were selected those with DV under 30% or over 80% were rejected as being too easy or too difficult respectively for the test.

Item with DI values one under were selected being reasonably good discriminators between high and low achievers.

Finally achievement test of Hindi consisted of 20 questions and test of Mathematics of 30 questions.

4.6.0 VALIDITY OF TESTS

Validity of a data gathering tool refers to the degree to which it measures what it was intended to measure. Before using any measuring device, its validity must be assessed, otherwise the effort will prove futile. In general, a test is valid if it measures what it claims to measure. Validity can also be thought of as utility.

In the words of Mouly (1970) “The validity of a questionnaire must be established prior to its use for validation as an aspect of its development, not of its use in solution of the problem.” Regarding the method of establishing of validity of questionnaires Mouley (1970) stated “At the most elementary level it is necessary for all the questionnaires to have content validity i.e. each question must be related to the topic under investigation. There must be an adequate coverage
of the overall topic, the questions must be clear and unambiguous etc. A more adequate approach to validation consists of checking the agreement between the responses elicited by the questionnaire and criterion" (p. 254).

Validity is typically defined as the degree to which the test actually serves the purposes, for which it is intended. In effect, this definition says that there are many different kinds of test validity. As the purpose of the test changes, so does the degree to which it is valid. A test may be highly valid for one purpose and, moderately valid for other purposes, and totally invalid for still other purposes. A clear picture of this must be examined before proper administration and interpretation can take place.

The investigator went through different research reports and books on the related topic to prepare the questionnaires, observation schedules and achievement test.

In order to bring content validity in the measuring devices the researcher made a detailed study of the literature concerning quality of primary schooling and for preparation of the first draft of the tools employed in the investigation. The tools were ultimately modified in the light of suggestions thus obtained by the educational experts.

4.7.0 RELIABILITY OF ACHIEVEMENT TEST

The second most important characteristic of a measuring tool is reliability. Green (1955) says, “A test is said to be reliable when it functions consistently.” So in other words, “Reliability means consistency or accuracy, to which the test agrees with itself”. A test cannot be valid unless it is reliable, but it may be reliable without being valid.

Regarding the method of establishing reliability of the test Mouly (1970) says that “the test-re-test method is only feasible approach for the establishment of the reliability of a test.”
After the preparation of the final draft of the achievement test, the investigator administered the achievement test over a sample of 25 students, of Vth grade. Scoring was done according to the scoring key. The investigator, after fifteen days, re-administered the achievement test over the same sample. Scoring was done again using the scoring key.

The investigator thus received two sets of scores of the Vth grade students in each of the two sub-tests. The degree to which a test is reliable can be represented by a coefficient of reliability. The investigator therefore, correlated the two sets of scores by product moment method. The statistical formula used to calculate the co-efficient of correlation \( r \) in a small group (when the \( N \) is below 30) has been given by Garrette (1971) (p. 142).

\[
 r = \frac{\sum xy - NMxMy}{\sqrt{[\sum x^2 - NM^2x][\sum y^2 - NM^2y]}}
\]

where -
\( x \) and \( y \) are obtained scores.
\( M_x \) and \( M_y \) are the means of \( x \) and \( y \) scores.
\( \sum x^2 \) and \( \sum y^2 \) are the sum of the squared \( x \) and \( y \) values.
\( N \) is the number of cases.

The values of \( r \) found for the two tests are given below -

<table>
<thead>
<tr>
<th>Test</th>
<th>value of ( r )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hindi</td>
<td>.72</td>
</tr>
<tr>
<td>Mathematics</td>
<td>.919</td>
</tr>
</tbody>
</table>

The corresponding value of \( r \) in Hindi and Mathematics between pre and post tests were high and very high which suggests high reliability of the test.

Split half method of reliability was also used. This can be accomplished in two different ways. Scores on the odd numbered items can be correlated with the scores on the even numbered items. The first half of the test can be correlated
with scores on the second half of the test. Split half validity score of the test is as given below—

<table>
<thead>
<tr>
<th>Test</th>
<th>value of ‘r’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hindi</td>
<td>.78</td>
</tr>
<tr>
<td>Mathematics</td>
<td>.89</td>
</tr>
</tbody>
</table>

The values of ‘r’ were .78 and .89 in Hindi and Mathematics which again verify the test is reliable.

4.8.0 PROCEDURE OF DATA COLLECTION

All the data for the study were collected by the investigator by personally administering the various instruments to respective respondents. The actual data collection was organised in three phases. The first phase related to collection of necessary data mainly from secondary sources for the preparation of area profile. In the second phase data were collected in respect of various questionnaires and observation schedules developed for the study. The third phase of data collection involved the administration of achievement test.

While the data collection work in relation to phase-I could be individually carried out by the investigator, data collection in the second phase required additional support of local teachers.

The arrangement for achievement test administration remained more or less the same as in the previous round of data collection. Care was taken to ensure that the achievement tests were administered toward the end of the academic year and just before the annual examinations to take place. Marks of IVth grade students were taken from their final result.

4.9.0 ADMINISTRATION OF VARIOUS TOOLS

For the administration of various tools in different institutions, principals of the respective institutions were approached. The investigator introduced herself, explained the
purpose of her study and requested for their cooperation. All the principals took interest and granted permission.

First of all, the investigator fixed date and time on which the students of these institutions were to be contacted in their respective class-rooms.

All the data for the study were collected by the investigator by personally administering the various instruments to the respective respondents. The actual data collection was organised in three phases. The first phase related to collection of necessary data mainly from secondary sources for the preparation of area profiles. In the second phase data were collected in respect of the various questionnaires and observation schedules developed for the study. The third phase of data collection involved the administration of achievement tests.

4.9.1 PHASE-I

The data collection work in relation to phase-I was individually carried out by the investigator. Mainly the information were gathered from the Achhnera Block of Agra District and B.S.A. Office of Agra District.

4.9.2 PHASE-II

4.9.2.1 Rapport establishment and creating task oriented environment

Before starting the actual work, rapport with learners, teachers and parents was established by the investigator by introducing herself to the learners, teachers and parents and by giving a short orientation talk to them.

4.9.2.2 Administration of School Questionnaire

Information in the school questionnaire, were provided by the principals and other staff members. Only one questionnaire was given to be filled by them in each of the school.
4.9.2.3 Administration of Headmasters’ Questionnaire

One questionnaire was given in each school to be filled by the principal of one school. Necessary information was received from the principals of 24 schools.

4.9.2.4 Administration of Teachers’ Questionnaire

All the teachers teaching mother tongue and mathematics were selected for gathering the related data. Questionnaires were given to the teachers with a request to give complete information. After the teachers completed their questionnaires, they were requested to return the same to the investigator.

4.9.2.5 Administration of Learners’ Questionnaire

To administer learners questionnaire students were asked to sit in the group at a satisfactory distance from one another. Ensuring that the students were properly seated, a set of question and answer sheets were supplied to them and were asked to give their required bio-data printed on the answer sheets. After the learners supplied the information required, instructions (written on the overleaf of the questionnaire) were read by the researcher to the students. Special stress was given that they should not leave any item un-attempted. After the learners completed their work, the test booklets were collected.

4.9.2.6 Administration of Parents’ Questionnaire

To administer parents questionnaires to the students of class one and class five parents, students were given invitation cards for the parents who were invited on a particular day in the school premises with preliminary permission and cooperation of the principals concerned. Researcher reached the school before the appointed time and taking help and support of some staff members explained the
purpose for filling the questionnaire. The investigator gave personal help to them to carry out this work satisfactorily.

Illiterate parents were unable to give answer, so the researcher read the questionnaire to the parents and received their answers individually and filled these information in the answer sheet herself. For data collection from parents of illiterate and dropout students, the researcher approached local community to receive information about their residence and visited them to fill up the questionnaire herself.

4.9.2.7 Administration of School-based process Observation Schedule

To administer school-based process observation schedule, the researcher took the help of some of her co-workers. They assisted her in filling up the observation schedule in different selected schools on a typical day like 15th August, 2nd October and 26th January etc. With the help of her co-workers the researcher could collect information from all the schools.

4.9.2.8 Administration of Class-room process Observation Schedule

To administer this schedule the researcher observed the class-rooms of the schools of Achnnera Block. In the class-room the researcher observed the teacher's capability, teaching-learning process, seating arrangement, students' number and various other things.

4.9.3 PHASE-III

4.9.3.1 Prior Arrangement

Before starting the actual work, rapport with students of the selected class was established by the investigator by introducing herself to the students and by giving a short orientation talk to them. They were told that the investigation was designed to study some factors related to
their achievement in Mathematics and Hindi language. Then they were asked to sit in group of 10 at a fair distance from one another, so that their writing work would not be disturbed. Ensuring that the students were properly seated, a set of question and answer-sheets were supplied to them and they were also asked to give their required bio-data printed on the answer sheet.

4.9.3.2 Administration of Hindi Language Achievement Test

This test consisted of 20 questions in three parts. In the first part of the test, one paragraph was dictated to the students. In the second part of the test, one paragraph was read by the researcher, after listening this, the students were asked to answer the questions. In the third part, students' skills in grammar were evaluated. After the students completed all the parts of their test, their booklets were collected. Care was taken to ensure that the achievement tests were administered towards the end of the academic year (1997-98) and just before the commencement of their annual examination.

4.9.3.3 Administration of Mathematics Achievement Test

This test consisted of 30 questions in three levels. 10 questions in each level. Instructions were read by the researcher to the students. They were asked to do rough work on the left side of the test paper. After the subjects completed their test, all the booklets were collected.

4.10.0 STATISTICAL TECHNIQUES TO ANALYSE THE DATA

After administration of the above noted tests and evaluating the answer sheets the next step is the analysis and interpretation of the data and for this purpose statistical techniques were applied to manage the large corpus of data and present findings in an understandable and intelligible manner. In the present study the investigator used descriptive as well as inferential statistics for the analysis of data.
4.10.1 Descriptive Statistics

Certain descriptive statistics were computed in order to describe the nature and distribution of scores obtained through various tests and as a base for inferential statistics. The preferred technique were-

4.10.1.1 Mean

The mean value was computed as a measure of central tendency of achievement scores of Hindi and Mathematics of grade IV and V students to describe the average of the groups.

Mean was calculated by the formula given below:

\[
\text{Mean} = \text{A.M.} + \frac{\sum f d}{N} \times i
\]

where -

AM = Assumed Mean
\(\Sigma\) = Sum total
\(f\) = Frequency
d = Deviation from assumed mean
\(N\) = Number of total score
i = Size of class interval

4.10.1.2 Standard Deviation

Standard Deviation of the achievement scores of both the subjects were computed to study the variation in the scores and to do further statistical calculations. The formula used for this purpose was as under:

\[
\text{S.D.} = i \sqrt{\left(\frac{\Sigma f d^2}{N}\right) - \left(\frac{\Sigma f d}{N}\right)^2}
\]

where -

i = Size of the class interval
\(N\) = Number of frequencies
\(\Sigma\) = Sum total of
\(f\) = Frequency
D = Deviation

**4.10.1.3 Percentage**

The formula of calculating percentage is:

\[
P = \frac{\text{Obtained Scores}}{\text{Maximum Scores (total)}} \times 100
\]

**4.10.2 Inferential Statistics**

The following inferential statistics were used in the present investigation to draw definite conclusion on the basis of the obtain results.

**4.10.2.1 't' test**

't' test were calculated to test the factorial difference of the achievement scores. The formula used:

\[
t' = \frac{M_1 - M_2}{\sqrt{\frac{(N_1 - 1)\sigma_1^2 + (N_2 - 1)\sigma_2^2}{N_1 + N_2}}} \times \frac{(N_1 + N_2)}{N_1 \times N_2}
\]

where -

- \(M_1\) = Mean of the first group
- \(M_2\) = Mean of the second group
- \(N_1\) = Total number of the students of the first group.
- \(N_2\) = Total number of the students of the second group.
- \(\sigma_1^2\) = Square of the standard deviation of the first group.
- \(\sigma_2^2\) = Square of the standard deviation of the second group.