Research Design

After identification of research problem and completing some review of the related literature, it is the time to develop a research design a plan or strategy for conducting the research.

The present study explores every side of research problem step by step and gone through into the two phases. High and low reading speed achievers, their language and knowledge achievement have been studied in the first phase and in the second phase remedial teaching and a set of innovative teaching techniques are used.

The present research problem aims to explore language and knowledge achievement of high reading speed achievers and low reading speed achievers. Not only study the language and knowledge achievement of both the groups but also taking some steps for the enhancement. But it cannot be confermly said that which group have highly achiever students in language and knowledge and which group have underachievers. So firstly language and knowledge achievement of high reading speed achievers and low reading speed achievers group have been analysed.

A remedial teaching has been planned in the research work. It is quite clear that the remedial teaching can be applied only on the underachievers group. So after reaching at the stage that which group is in need of remedial teaching, it has been applied only on underachievers.
So the study has been designed and done into two phases. The researcher has tried to find out the basic questions that are:

1. How language and knowledge achievement take place among high reading speed achievers and low reading speed achievers group?

2. Which group is under achiever?

3. Which group is in need of remedial teaching?

For this, a comparison has been made between both the groups in the first phase. After this the researcher reach at the stage that which group is underachiever. High reading speed achievers and low reading speed achievers both the groups are taken for the comparison. After finding out underachiever group in the first phase an experiment has been applied in the second phase.

The remedial teaching has been given only to the low reading speed achievers group, because the study aims to do an experiment in remedial teaching and low reading speed achievers are in need so experiment done only on low reading speed achievers group.

3.1 Methodology of The Study:

Research method have been defined as tools to be used for answering specific questions and for solving different scientific or practical problems. It is the substance of the matter, the questions to be answered that must guide the selection of methods and not vice-versa. Methods should not become straitjackets. In the present study. The method of research is determined by the nature of the research problem. The study has been designed into two phases.

Phase I : Descriptive survey
Phase II : Experimental phase

These phases are described by a flow diagram given in figure 3.1.
Phase-I

Method used - Descriptive survey method

Step: (i) High and low reading speed achievers groups were identified by using a standardized tool.

Step: (ii) A tool has been administered to measure concept attainment of high and low reading speed achievers groups.

Step: (iii) A tool has been administered to measure Hindi language achievement and English language achievement of high and low reading speed achievers group.

Step: (iv) A tool has been administered to measure knowledge achievement (general classroom achievement) of high and low reading speed achievers groups.

Step (v): The problematic group has been identified.

Phase-II

Method used – Experimental method.

Steps (1): Pre-Test, Post-Test central group experimental design has been imposed on selected sample.

Step (2): A remedial plan has been also done on this phase.

Figure 3.1 # Flow diagram of methodology of the study
3.1.1. First Phase of The Study

3.1.1.1. Method used :- Descriptive survey method

Descriptive survey method also known as non-experimental or co relational method deals with the relationships between variables, the testing of the hypothesis, and the development of generalizations, principles or theories that have universal validity. The survey method gathers data from a relative large number of cases at a particular time. It is not concerned with characteristics of individuals. It is concerned with the generalized statistics that result when data are abstracted from a number of individual cases (Best, 1999). A descriptive survey describe and interprets what is? It is concerned with conditions or relationships that exist, opinions that are held, processes that are going on, effects that are evident, or trends that are developing. It is primarily concerned with the present, although it often considers past events and influences as they relate to current conditions.

The method of research is determined by the nature of the problem. The first phase of the present study is based on descriptive survey method. In the descriptive research method detailed description of existing phenomena are collected with the instant of employing data to justify current conditions and practices or to make more intelligent plans for improving the objectives that are not only analyzed, interpreted and reported the status of an institution group or area in order to guide practice in the immediate future, but also to determine the adequacy of status by comparing it with established standards.

1st phase of the study has been based on descriptive survey method. At very first high and low reading speed achievers are shorted out by using a self standardized tool developed by the researcher. After this, two groups are formed that are high reading speed achievers
group and low reading speed achievers group. On both the groups, other tools i.e. concept attainment test, Hindi achievement test and general classroom achievement test has been employed. Hence descriptive survey method has been used in the first phase of the study.

3.1.1.2 Population

Population means the entire mass of observations of which the present group, from which a sample is to be formed. The sample observation provide only an estimate of the population characteristics.

The term population convey a different meaning than a traditional one. In census survey, the count of individuals are known as population but in research methodology population means the characteristics of a specific group.

In research population means the whole and the sample means the part of the whole. Population refers to the whole of the information which comes under view of a statistical investigation. Population is also known as the universe.

The present study deals with the students having high and low reading speed achievement of class 8th studying in intermediate colleges affiliated by U.P. Board of Kanpur city. 525 schools were mentioned in the list of higher secondary schools obtained from D.I.O.S. office.

So only 525 higher secondary schools, affiliated by U.P. Board of Kanpur Nagar were the population of present study for first phase of research study.

3.1.1.3. Sample :

Sample may be defined as the selection of some part of an aggregate or population. The basic requirement of the sample is that it
should be true representative characteristics as far as possible of the population.

Sample refers to a part of the population. It is the selected portion of the population. A sample drawn from a population provides a very valuable information about its population. In most cases it gives almost the same results as that of the whole mass.

It is quite sure that sample gives fairly accurate results and a reliable picture of the total observations under investigation. It is used to measure and estimate the corresponding characteristics of the population.

In order to measure and estimate some of the characteristics of the population, the sample drawn there from must be representative in character. A sample must be representative means that the sample drawn must contain all the properties and possesses all the characteristics of the population in the same proportion as the concerned population contains and possesses.

But in most of the research work it is not necessary to obtain information from each and every unit.

There are various methods of sampling. In the present study random sampling method has been also used. First of all, the schools are selected from the research population.

Selection of schools:

The present research study deals with high & low reading speed achievers studying in class 8th. Firstly the list of higher secondary schools of Kanpur Nagar has been obtained from D.I.O.S. office. There were 525 schools in the list. The schools were numbered on slips of equal size. All these slips were folded and mixed thoroughly. Now schools are shorted out randomly.
Sample selection in Phase-I

Table 3.1

List of selected schools affiliated by U.P. Board of Kanpur Nagar

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<th>S. No.</th>
<th>Name of Schools</th>
<th>No. of Student</th>
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<td>2.</td>
<td>Ram Kirshna Mission Higher Secondary Schools, Kanpur</td>
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After selections of the schools, data of 500 students has been collected from the schools above mentioned.

![Sample Flow Diagram](image)

**Figure 3.2 # Flow Diagram Showing High and Low Reading Speed Achievers Group**

In the phase-I of the study data of 500 students has been collected through all the four tests used in the present study.

After collecting the required data of 500 students high reading speed achievers group (131 students) and low reading speed achievers group (137 students) are identified through the self constructed test of reading speed ability.
In this way the required sample for phase-I of the study has been obtained.

**Sample of the present study can be shown by the flow chart.**

**Sample**

**On 1st PHASE**

- Total students 500
  - High reading speed achievers 131
  - Low reading speed achievers 137

**On 2nd PHASE**

- Experimental phase
  - Total 100 students
  - 50 students on each group

- Control group
  - 50 students

- Experimental group
  - 50 students

**Figure 3.3 # Flow diagram of sample selection**

from the total 137 low reading speed achievers, only 107 students are available at the time of intervention because some are moved away and some are dropped out from the school so only 100 students out of 107 are taken for the experimental phase.
3.1.1.4 Identification of Two Groups:

Firstly the raw data has been collected and arranged in ascending order and converted into percentage, so they obtained scores became comparable. It has been obtained after arrangement of data in ascending order, 131 students are found as high reading speed achievers group and 137 students are found as low reading speed achiever group.

**High reading speed achiever group:** After analysis of scores, 131 students are found as high reading speed achievers group. The highest scorer among all the students has obtained 97.6% score in total marks. Among the total high reading speed scorer students, the lowest percentage are 67.65. Subject no. 69 has scored 97.6 % and the subject no. 69 is the best scorer among all the students. Subject no. 442 has obtained 67.65% of marks, is the lowest scorer among the high reading speed achievers group.

**Low reading speed achiever group:** 137 students in total were found as low reading speed achievers group. Subject no. 40 to 472 are the highest scorer among all the students of low reading speed achievers group. They have obtained 36.76% marks and the lowest scorer of the group obtained 2.94% marks. Subject no. 179 scored lowest marks among all the students of both the groups of high and low reading speed achievers.

For the formation and identification of two groups, firstly data has been arranged into ascending order and 27% upper and 27% lower group are shorted out. After that all the scores are converted into percentage to obtained comparable scores. By this high reading speed achievers group and low reading speed achievers group are found out.
Table : 3.2
Data converted into percentage

Showing High Reading Speed Achievers Group (N=131)

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Showing Two Identified Groups of High and Low Reading Speed Achievers-

Total students = 500
High reading speed achievers = 131  26.20%
Low reading speed achievers = 137  27.40%
Average reading speed achievers = 232  46.40%

Figure 3.4 # Graphical representation of high, low and average reading speed achievers.
3.1.1.5 Tools used:

A discussion on the nature of reading and reading speed ability (Chapter-1), and all the variables involved in the present research study and the review of the related literature (Chapter-2), the researcher has come to know that there are four variables involved in the present study.

Since test construction is a time consuming and expensive job. It is not feasible for any researcher to undertake construction of all the test needed for an investigation. A researcher has to make a thorough survey of the available tools and has to select the suitable ones available for the investigation.

However, in some cases a preliminary try-out of such test’s or tools may be necessary before actually using them in the main investigation. New tests/tools should only be constructed when no suitable tests or tools are available. This point has been kept in view while planning and implementing the present investigation i.e. identifying those tools which are available and appropriate to provide measures of some of variables under investigation and constructing tools to secure measures of those variables for which proper appropriate tools are not available.

The variables involved in the present study are high and low reading speed achievers, language achievement, knowledge achievement and concept attainment. To find out high and low reading speed achievers Silent Reading Speed Ability Test (SRSAT) has been developed by the researcher. To measure language achievement, Hindi language achievement and English language achievement tool has been used and knowledge achievement has been measured by a tool of
general class room achievement and a tool of concept attainment is also used.

Four tools are used in the present investigation. The tool to measure general classroom achievement, also contain English achievement tool, so four tools are mentioned in the list.

i. A Reading Speed Ability tool.

ii. A Hindi achievement test.

iii. (a) A general classroom achievement test. (This tool also contain English language achievement.)

(b) English language achievement test.

iv. A concept attainment test.

The information about various tools constructed by private agencies, state institutions and individuals is available in the first mental measurement handbook for India (Long & Mehta).

Over and above this the national test library and Department of School education of the N.C.E.R.T. too had some test and scales. An attempt has been also made to go through the documented information regarding various test and scales, and to look up manual of directions for some of the available tests before selecting tools for the present investigation.

After going through all the test and tools available, the researcher has selected the test which are suitable for the nature of present investigation. There tests/tools are mentioned in the following pages.

**Description of the tools:**

(i) **Hindi Achievement test (HAT):** By-L.N. Dubey a test of educational achievement is one, designed to measure knowledge, understanding or skill in a specified subject or group of subjects. To
measure language achievement Hindi language achievement test of L.N. Dubey has been used. The test contained 100 questions and total time taken for completion of the test is 30 minutes. One mark has been given for every correct answer given by testee.

**Reliability :**

The calculated reliability of the test is 78. The reliability is calculated through spearman rawh method.

**Validity :**

Calculated validity of the test is 0.67

**Ability is determined according to the standard scores :**

<table>
<thead>
<tr>
<th>Ability</th>
<th>Class interval of standard scores</th>
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<tr>
<td>Bright</td>
<td>124-138</td>
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<tr>
<td>Above average</td>
<td>106-122</td>
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<tr>
<td>Average</td>
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<td>58-72</td>
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<tr>
<td>Very dull</td>
<td>31-56</td>
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</tbody>
</table>

**Scoring of the test :**

After every question there is space for writing the answer on the answer paper. Besides this space there is a column for making whether the question is correct or wrong. Every correct answer should be marked with a tick (✓) and every wrong answer or any omission should be marked with a cross (x).

Every correct answer should be given one mark. In the end all the marks should be added column wise and total should be written on the space given in the end of the answer sheet.

Total marks are 100.
II. General classroom achievement test (GCAT) by Dr. A.K. Singh & Dr. A. Sen Gupta

General classroom achievement refers to performance in class or in the examination. Achievement in school subjects is wholly learnt by conscious efforts.

In the present tool general classroom achievement has been defined as success in social studies, English, Science and Maths. Social studies measures knowledge in the areas like history, geography and civics.

Total number of questions in the test were (30 questions in English + 17 questions in Maths and Science + 30 questions in social studies) 77 on all the four subjects. Total time consumed to complete the test is 30 minutes.

Reliability:

The test – retest reliability of the General Classroom Achievement Test with a gap of 14 days on a sample of 100 students is 0.821 and the split-half reliability of the General Classroom Achievement Test is after full length correction is 0.673.

Reliability Coefficient for General Classroom Achievement Test

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<th>Split half reliability after correction</th>
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<td>673</td>
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<td>Achievement Test (N=100)</td>
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</table>

All correlation values are significant (P=01)

Validity:

The present test has been validated against the following criteria:

(i) Examination Marks
(ii) Teacher’s opinion

(iii) Ratings in interview

The score of 40 students reading in class VIII has been knowledge of were separately correlated against the last annual examination these students likewise, teachers opinion in terms of 4 point rating (Best (4) Good (3), Fair (2), Poor (1) of each of 40 students has been obtained. The number of teachers are 12. Each of 49 students rating after being converted into score is correlated with their score on the present text. The same sample is individually interviewed by a group of experts who rated them on 4 point scale (Best (4) Good (3) Fair (2) and Poor (1) and their ratings are converted into score against which the scores on the present test are correlated.

**Validity Coefficient for General Classroom Achievement**

<table>
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<th>Teachers’ opinion</th>
<th>Rating in interview</th>
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<td>0.592</td>
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</table>

All correlation values are significant.

**Norms:**

Percentile norms have been constructed for the General Classroom Achievement Tests. For this, the test is administered on a fresh heterogeneous sample of 300 students studying in class VIII. Samples are taken from urban as well as rural areas. Their age ranged between 10 to 12 years. The samples are tested in terms of sex difference before constructing norms. It is found that sex difference is not significant in either class. However sample differed in terms of rural urban variable.
**Norms : (GCAT, VIII)**

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*Significant

**Scoring :**

The maximum possible score on this test is 100. The test, consists of three sections, namely English achievement test (EAT) Science Achievement Test (SAT) and Social Studies Achievement Test (SSAT). The EAT has a maximum of 35 score, SAT has a maximum of 35 score and the SSAT has a maximum of 30 score. The details of giving score to each correct answer of item on the test has been presented in Table of scoring key. Each incorrect answer is awarded a score of zero.

**Scoring Key**

*(Correct answers have been shown in parenthesis)*

A zero score is awarded for each incorrect answer.

**English achievement test (EAT)**

A score of +1 is given for correct answer of each item ranging from 1 to 15.

1 (a) 2(a) 3(b) 4(a) 5(a)
6(b) 7(a) 8(a) 9(a) 10(a)
11(c) 12(a) 13(a) 14(a) 15(b)

A score of +2 is given for correct answer of each item ranging from 16 to 20.

16(a) 17(b) 18(a) 19(b) 20(a)
A score of +1 is given for correct answer of each item ranging from 21 to 30.
21(b) 22(b) 23(b) 24(b) 25(b)
26(a) 27(a) 28(b) 29(b) 30(b)

**Science Achievement Test (SAT)**

A score of +2 is given for correct answer of each item ranging from 1 to 9.
1(a) 2(c) 3(a) 4(a) 5(c)
6(a) 7(a) 8(a) 9(a)

A score of +3 is given for the 10th question
10(b)

A score of +2 is given for correct answer of each item ranging from 11 to 17.
11(c) 12(a) 13(a) 14(b)
15(c) 16(a) 17(a)

Maximum score on Science Achievement Test (18+3+14 = 35)

**Social Studies Achievement Test (SSAT)**

A score of +1 is given for each correct answer [shown in parenthesis from 1 to 30]
1 (c) 11 (c) 21 (c)
2 (c) 12 (c) 22 (b)
3 (a) 13 (b) 23 (b)
4 (b) 14 (a) 24 (c)
5 (a) 15 (a) 25 (b)
6 (b) 16 (a) 26 (b)
7 (b) 17 (b) 27 (c)
8 (b) 18 (c) 28 (b)
9 (b) 19 (a) 29 (a)
10 (a) 20 (c) 30 (a)
iii. Concept attainment test (CAT):
By Dr. (Mrs.) Anuradha Joshi & Miss Ratnamala Arya.

To develop the personality of an individual and to communicate well, concept attainment ability plays an important role. So the test is prepared for the adolescents. It means that the test is applicable for the students of 12 to 17 years. The test consists total 36 questions and time taken to complete the whole test is 40 minutes.

Reliability:

Reliability of the test of concept attainment is determined through test and retest method.

(i) Test – Retest Reliability

For establishing the reliability of the test the test is administered on 90 students of class IX belonging to Malva Kanya Higher Secondary School, Indore and 60 students of Kasturba Higher Secondary School, Indore. Same test is administered after the gap of 30 days to the same students. The correlation coefficient is worked out between the scores of the two tests with the help of product moment method. The correlation coefficient is found to be 0.74. The correlation coefficient is quite high. It reflects that the test is reliable.

(ii) Split Half Reliability:

For this purpose the correlation has been calculated between odd and even items by numbering as 1 to 36. The correlation coefficient is found to be 0.72. It is significant at 0.01 level.

Validity:

Validity of the test is determined by three methods.

(i) Content validity:

The content validity involves essentially the systematic examination of the test contents to determine whether they cover a
representative sample of behaviour desired to be measured. The content validity of the test is established by having discussion with the experts.

(ii) **Face validity** :

To establish the face validity the reactions of the subjects on whom the test is administered are noted.

(iii) **Concurrent validity** :

The results of the tests are to be correlated with the results of the persons performance or a task which the test presumably assess. As there is no test available for the measurement of concept attainment, the concurrent validity is established against the concept formation test. Because the concept takes the shape gradually through concept formation. It is the initial stage of concept attainment as described by Joyce and Well in their book. Models of teaching (1985). The concurrent validity is found to be 42. It is low because the test of concept formation has different types of items and items are not based on similarity of content. Hence it is OK.

**Scoring Key**

<table>
<thead>
<tr>
<th>Part I</th>
<th>Part II</th>
<th>Part III</th>
<th>Part IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.</td>
<td>Ans.</td>
<td>Q.</td>
<td>Ans.</td>
</tr>
<tr>
<td>1</td>
<td>d</td>
<td>1</td>
<td>d</td>
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<tr>
<td>2</td>
<td>c</td>
<td>2</td>
<td>d</td>
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<td>3</td>
<td>a</td>
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<td>c</td>
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<td>a</td>
<td>7</td>
<td>c</td>
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<tr>
<td>8</td>
<td>a</td>
<td>8</td>
<td>c</td>
</tr>
<tr>
<td>9</td>
<td>c</td>
<td>9</td>
<td>c</td>
</tr>
</tbody>
</table>

According to scoring key one mark is awarded for every correct answer given by testee. The answers are checked by the researcher by the help of scoring key.
3.1.2. Second phase of the study

3.1.2.1. Method Used :- Experimental method

Experimental research provides a systematic and logical method for answering the questions, “If this is done under carefully controlled conditions, what will happen?” Experimenters manipulate certain stimuli treatments or environmental conditions and observe how the condition or behaviour of the subject is affected or changed. Their manipulation is deliberate and systematic. They must be aware of other factors that could influence the outcome and remove or control them so that they can establish a logical association between manipulated factors and observed effects.

Experimentation is the classic method of the science laboratory where elements manipulated and effects observed can be controlled. It is the most sophisticated, exacting, and powerful method for discovering and developing an organized body of knowledge.

Although the experimental method finds its greatest utility in the laboratory, it has been effectively applied in nonlaboratory settings such as the classroom, where significant factors or variables can be controlled to some degree. The immediate purpose of experimentation is to predict events in the experimental setting. The ultimate purpose is to generalize the variable relationship so that they may be applied outside the laboratory to a wider population of interest.

There are four essential characteristics of experimental research: (i) Control (ii) Manipulation (iii) Observation (iv) Replication.

Experimental method, provides much control and therefore, establishes a systematic and logical association between manipulated factors and observed effects. The researcher defines a problem and proposes a tentative answer or hypothesis. He or she tests the
hypothesis and accepts or rejects it in the light of the controlled variable relationship that she has observed.

The researcher has also followed the essential steps of the experimental method which are not different from those of a scientific method.

For the sake of clarification and have a clear framework within which the experiment is conducted, has been described in the forwarding pages.

3.1.2.2. Population

The remedial teaching programme has been planned for the problematic group. As the researcher come to know after going through the first phase of the study that low reading speed achievers are underachievers in knowledge and language achievement. So the low reading speed achievers are taken for IInd phase (Experimental phase). 137 students are in the low reading speed achievers group. But at the time of intervention, some students are move away from the school, some are not present in the class and some students are dropped out. After this only 107 students are available for the further study. So, for making two groups with equal number of students the researcher has taken 100 student in total.

3.1.2.3. Sample

Phase-II of the study has been based on Quasi - Experimental method.

Under incidental sampling technique, two group are formed which consists of 50 students within each group. Two groups are selected from schools, after matching them on low reading speed ability.
The 100 students for both the groups are selected from the schools, situated in Kanpur Nagar. In this way two groups are formed consist of 50 students within each group for IIInd phase of the study.

3.1.2.4. Remedial teaching plan:

The researcher has found in the first phase of the study that low reading speed achievers are in great difficulty in developing their reading skills and they make no or a very little progress in reading, in spite of the best efforts of their classroom teachers.

Traditional teaching methods are not seem to be fruitful for these students. So there is a great need to give a special assistance to these students, by this they can overcome from their difficulties.

According to the remedial teaching plan the researcher has used a set of four innovative teaching techniques to overcome from the reading difficulties of low reading speed achievers.

As the findings of the Ist phase of the study shows that low reading speed achievers have low language achievement, knowledge achievement and concept attainment. So low reading speed achievers group has been found the underachiever group. So remedial teaching has been given only on low reading speed achievers group.

Because the results of the 1st phase shows that the poorer results in achievements are principally caused by a fall in ability of speed reading.

Second phase of the study focused on Diagnostic Teaching and had involved the Teacher Researcher, A set of teaching techniques and 100 students in the teaching programme. This intervention focused on how a set of teaching techniques can help the teacher researcher to seek solutions to the problem and how the approach facilitates the learning of reading techniques by students.
The remedial process involves –
Planning ------------> imposing techniques ------------> Taking action
-------------> Observing and reflecting ------------- as well as remedial teaching

![Flow diagram showing remedial process](image)

**Figure 3.5 # Flow diagram showing remedial process**

### 3.1.2.5. Innovative teaching techniques used:

Designing the study in the classroom situation has an advantage of assessing the effectiveness of a teaching techniques in real conditions. At the same time it may not fulfill the requirement of a true experimental design, control of extraneous variables, nature of control group, in built impact of the instructional treatment, low generalisability and so on.

Hence, the study is based on Quasi-experimental design. The set of innovative teaching techniques includes four techniques i.e. Rapid Word Recognition Chart, Choral Reading or neurological
impress techniques, Repeated reading technique and speed drill techniques are employed on experimental group. The detailed description of these techniques are given in the forwarding pages.

**A set of innovative teaching techniques:**

1. **Repeated reading technique:** The repeated reading technique is designed for children who read slowly and not accurately.

**Administration:**

For this procedure, the child reads the same passage over and over again. To begin, select a passage that is 50-100 words long from the book that is slightly above the student’s independent reading level. The words pronounced incorrectly are recorded. A realistic goal was set for speed and number of errors.

![Figure 3.6 # Picture showing a passage selected for Repeated Reading.](image)

Two different colour of pencils can be used for recording time and errors.

Firstly students are asked to look over the selected passage, than the researcher read it and practice words that caused difficulty in the
initial reading. When the students are ready, the researcher given him or her to read the same passage one by one. Once again the time and number of errors are recorded.

The students repeatedly practice reading the selection as the chart progress after each trial, until predetermined goal has been reached or until the student is able to read the passage fluently with few mistakes.

![Table showing repeated reading data](image)

**Figure 3.7 # Picture showing the process of recording time and error in repeated reading.**

Research on repeated reading suggests that fluency can be improved as long as students are provided with specific instructions and procedures are used to monitor their progress.

By this technique when the performance of students improves, the time to perform the initial reading should decrease. Repeated reading provide repeated exposures that facilitate word mastery and automaticity.
2. Choral reading or neurological impress teaching technique:

The neurological impress technique was used firstly by Heckelman, 1969, 1986 to help students to build reading speed. This technique is for choral or concert reading.

**Administration:**

For the implication of this technique on students the researcher read aloud together with a student for 10 to 15 minutes daily. To began the researcher has selected a high interest story book from the classroom. Sit next to the student and read aloud as pointing to the words with finger. The reading should be at a slightly faster pace than the student and encourage them to try and keep up with the researcher. Reading aloud with students can help them to practice phrasing pronunciation.

3. Rapid word recognition chart: This technique can help the students, who struggle to memorize words with irregular orthographic patterns. In this process a form has been used with 5 rows and each row containing the same six words in a different order.

**Administration**

After a brief review of the words, students are timed for one minute as they read the word in the squares aloud. Students can then count and record the number of words read correctly.

<table>
<thead>
<tr>
<th>Mountain</th>
<th>Weak</th>
<th>Knowledge</th>
<th>Capital</th>
<th>Country</th>
<th>Ticket</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ticket</td>
<td>Country</td>
<td>Capital</td>
<td>Knowledge</td>
<td>Weak</td>
<td>Mountain</td>
</tr>
<tr>
<td>Country</td>
<td>Ticket</td>
<td>Weak</td>
<td>Mountain</td>
<td>Knowledge</td>
<td>Capital</td>
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<tr>
<td>Capital</td>
<td>Knowledge</td>
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<td>Ticket</td>
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<tr>
<td>Knowledge</td>
<td>Mountain</td>
<td>Ticket</td>
<td>Country</td>
<td>Weak</td>
<td>Capital</td>
</tr>
</tbody>
</table>

**Figure # 3.8 : Picture showing Rapid word recognition chart**
4. **Speed drill technique**: Speed drill technique for increasing reading rate have several common features:

i. Students listen to test as they follow along with the book.

ii. Students follow the print using fingers as guides, and

iii. Reading materials are used that students would be unable to read independently.

In the speed drill technique, students are said to read a lists of words with a speed drill and a 1-minute timing.

**Fischer (1999)** suggested using the following general guidelines: 30 correct word per minute (WPM) for first and second grade children; 40 wpm for student of third grade; and 80 wpm for students in fourth grade and higher.

![Image of Fischer chart of correct reading rate](image)

**Figure 3.9** # Graphical representation of Fischer chart of correct reading rate

**Administration**

To conduct a speed drill programme, the students are given to read a list of words for 1-minute. The number of errors are recorded. These drills are designed to develop automatic sight recognition of words.
This technique may be used for the students who have acquired some proficiency in decoding skill but whose level of decoding skill is lower than their oral language abilities.

A student’s reading rate can be calculated by dividing the number of words read correctly by the total amount of reading time. 100 words are counted with in a passage and then the time is recorded, when students read the passage.

3.1.2.6 Construction of the experimental plan:

Experimental plan refers to the conceptual frame within which the experiment is conducted. It represents all elements, conditions or phenomena, and relations of consequences so as:

(i) To identify all non-experimental variables that might contaminate the experiment and determine how to control them;
(ii) To select the research design;
(iii) To select the sample of subjects to represent a given population assign subjects to groups, and assign experimental treatments to groups;
(iv) To select the instrument to measure outcomes of the experiment;
(v) To outline procedures of collecting data; and
(vi) To state the null-hypothesis.
(vii) In order to conduct the experiment and assign subjects to different experimental treatments to measure the outcomes of experiments, the researcher has to select a suitable research design that is the first step of the experimental process.
Selection of Experimental Design:

Experimental design is the blueprint of the procedures that enable the researcher to test hypothesis by reaching valid conclusions about relationship between independent and dependent variables. Selection of a particular design is based on the purpose of the experiments, the type of variables to be manipulated, and the condition or limiting factors under which it is conducted. The design deals with such practical problems as how subjects are to be assigned to experimental and control groups, the way variables are to be manipulated and controlled the way extraneous variables are to be controlled, how observation are to be made, and the type of statistical analysis to be employed in interpreting data relationships.

There are various types of experimental designs. They vary in complexity and adequacy. Although the designs can be combined into various ways, the researcher had taken all the facts into consideration those are mentioned above and selected the design which is totally appropriate according to the need of the study.

The true experimental design, provide full experimental control through the use of randomization procedures. In the field of research in social sciences, there are many experimental situations in which it is not possible for the experimenter to assign subjects randomly to groups or exercise full control over the scheduling of experimental conditions. Because of such situations, the researcher has used quasi experimental design.

Quasi Experimental Design:

This design is often used in classroom experiments when experimental and control groups are such naturally assembled group as intact classes, which may be similar.
Control Group:

The main purpose of control in an experiment is to arrange a situation in which the effect of variables can be measured.

Since human nature is complex, there are many variables present while dealing with human beings in an experimental setting. For the study the researcher had to frame two groups of subjects who are identical in every respect, except the way in which selected group of innovative teaching techniques are applied on the students. Since it is impossible to have two absolutely identical groups of subjects. The researcher had tried to establish two groups that are as identical as possible as in respect to those variables that are related to the reading speed ability.

Controlled variables

The researcher has selected the variables of achievement motivation and interest.

In experimental studies in education the researcher has, therefore, to direct her effort towards controlling the variables which are significantly related to the dependent variable. Such variables are responsible of any relevant pre-existing differences between the subjects used in the experiment. In social science research, variables cannot be fully controlled. But researcher has tried to make equivalent groups. Two equivalent group are formed to conduct the experiment. To form control group 50 students are taken as the subjects of Group I. All the students, taken in control group are from low reading speed achievers group.

Experimental group:

To form experimental group, low reading speed achievers have been taken as subjects. 50 students have been also taken in
experimental group.

**Process of making equivalent groups:**

For a good experimental setting, it is essential that both the experimental and control group should be equal. It is an essential condition for pure experimental research. But it is already mentioned in the study that it is a quasi-experimental research. A pure experimental research hardly fit for social science. So the researcher has taken quasi experimental setting for the present study. The researcher firstly form two groups with 50-50 students in each group.

After that ‘t’ test has been imposed. So that it can be measured that is there any significant difference exist between both the groups or not. It has been found that both the groups are not different significantly with each other.

**Intervention:**

To conduct the experimental plan, a pre-test, post-test control group design has been employed on both the groups. Experimental group has been taught through different type of innovative teaching techniques, whereas control group by traditional method.

**Experiment No. 1**

![Figure 3.10 # Pre-test, Post-test Condition for Group no. 1]
In the Experiment no. 1, 50 students has been taken in the experimental group and 50 students in the control group.

Pre-Test: In the process of experiment no. 1, at very first a pre-test has been administered on both the control and experimental group. Test of Reading Speed Ability has been administered on both the groups and necessary data has been obtained.

Application of Repeated Reading Teaching Technique on Experimental Group:

In the experiment no. 1, The experimental group has been taught through Repeated Reading Technique. For the application of this technique on subjects, Firstly the researcher has selected a passage that contain 50 words from the book that is slightly above the student’s independent reading level. After that the student said to read the same passage over and over again until the student will not became able to read the passage correctly.

A record form has been used to record the words, pronounced incorrectly. 4 minutes have been given to every student to read the given content. A realistic goal has been set for speed and number of errors.

Two different colour has been used to record time and errors.

Post-test:

After application of repeated reading teaching technique, a post-test has been administered. Reading speed ability test has been employed again on Experimental Group by which, It can be determined that is these any noticeable change took place in experimental group or not.

Time taken: 150 minutes per day (for one week)

Skill developed: Develop accuracy level and comprehension power.
Experiment No. 2

Experimental Design No. 2
(Pre-Test, Post-Test Control group)

In the Experiment No. 2:- 50 students has been also taken in experimental group and 50 students in the control group.

Pre-test: Firstly, a pre-test has been done on both the groups. The test of reading speed ability has been administered on Experimental group and essential data has been obtained.

Application of choral reading or neurological impress technique on experimental group:

In the experiment no. 2, the experimental group has been taught through choral reading technique.

For the implication of this technique on subjects firstly the researcher has selected a high interest story book from the classroom. After that the researcher sit next to the student and read aloud as pointing to the words with finger. The reading should be faster pace than the student and encourage them to try and keep up with the researcher. Reading aloud with student can help them to practice phrasing and maintaining good speed. For the proper implementation...
of this technique on students the research read aloud together with a student for 10 minutes daily.

Figure 3.12 # Picture showing a student and teacher researcher reading within choral reading teaching technique

Post-test: After execution of pre-test and implementation of technique, post-test has been administered. Experimental group has been taught through choral reading or a neurological impress teaching technique. Again a test of reading speed ability test has been administered to determine whereas any noticeable change has taken place in the experimental group (EG) as against the Control Group (CG), or not.

Time Taken: One week (2 hours daily).

Skill developed: For practice phrasing and maintaining good speed.
In the Experiment No. 3 firstly two groups (with equal number of subjects) have been formed. One group is formed as experimental group whereas other group become the control group.

The total no. of 50 students of experimental group have been taught through rapid word recognition chart and the students of control group has been taught through traditional teaching method.

Pre-test

Firstly a self constructed test of reading speed ability has been administered on both the control and experimental group.

In this way, reading speed ability has measured of both the experimental group (EG) and Control Group (CG) and essential data has been collected in the pre-test.

Application of Rapid Word Recognition Chart Technique on Experimental Group:

The experimental group has been taught through Rapid Word Recognition Chart.
In order to employ rapid word recognition chart a form has been used by the researcher which contain 5 rows and each row contained the same six words in a different order.

Firstly, the researcher has distributed the form no. 1 to one student from all the 50 students of experimental group. It has been said to the student to make a brief review of the words, given in the chart with an another student. Students are timed for one minute as they read the words in the squares aloud.

The researcher has made the pair of all the 50 students. 25 pairs have been made and no student is left alone. From every pair, one student is said to read aloud the words and the another record and count the number of words read correctly. To read the words and record and count the words the research has used the same form. A tick mark has given for every correct answer.

Four different type of Rapid Word Recognition Chart has been used for the experiment.

Figure 3.14 # Picture showing two students reading within word recognition chart
Post-test:

Reading speed ability test has been administered on both the groups to know that is there any noticeable change take place or not.

Time Taken: One Week (60 Minutes per day)

Skill Developed: To help the students to memorize words with irregular orthographic patterns.

Experiment no. 4

Figure 3.15 # Pre-test, Post-test Condition For Group No. 4

In the Experiment no. 4, 50 students has been taken also in Experimental group and 50 students in the control group.

Pre-test: In the experiment no. 4 a pre-test has been also done on both the experimental group (E.G.) and control group (C.G.). A test of Reading Speed Ability has been administered on both the groups very first.

Application of Speed Drill Teaching Technique on Experimental Group:

In the experiment No. 4, the experimental group having 50 students has been taught through speed drill teaching technique.
In this teaching technique, first of all the researcher has developed a form, that contained a list of words which has the difficulty level according to the class of subjects.

After that one minutes has been given to every student to read the list of words given. After that correct words are counted, read within a minute. A record from has been also maintained. That exercise has done again and again.

Figure 3.16 # Picture showing a record form maintained for speed and error in speed drill

Post-test:

After application of speed drill techniques post-test has been administered. A test of reading speed ability has been administered. So essential data can collected to know that is there any noticeable change take place or not.

Time taken: One week (60 minutes)
Skill developed: For development of pronunciation and word recognition power.
3.2 Construction of Silent Reading Speed Ability Test (SRSAT):

The test constructed for the present study is according to the need of the study. The test construction has been carried out in three stages as given below:

(a) The Exploratory stage
(b) The preliminary stage
(c) The final stage

(a) The Exploratory stage:

Reading is a psychological process obtaining meaning from the printed words. The reader must make an active contribution if he/she is to acquire the available information.

To read is to understand a given content and comprehend it but one may do it at a slow rate or at a relatively more rapid rate. Thus speed of reading has value in its own right and should be investigated as a separate value.

There may be fast readers, average readers and slow readers. Approximately, the fast reader is reading as rapidly as his/her comprehension abilities allow, and when the slow reader is reading more slowly than his/her comprehension permits.

However a good reader is a flexible reader. He/she does not create gap between his/her reading rate and thinking rate. He/she seeks to increase its understanding without sacrificing speed unnecessarily.

Thus a good reader reads fast with complete accuracy, otherwise he/she will acquire wrong ideas from what he/she reads.

Therefore a test is required which could measure the speed of a student’s reading with accurate understanding of a given content.
So a number of available tools has been consulted. The researcher has made a thorough survey of the available tools to select the suitable one available for the investigation.

The researcher has gone through information about various tools constructed by private agencies, state institutions and individuals that was available in the first mental measurement handbook for India, Over and above this the National Test library and department of school education of the N.C.E.R.T. too has some tests and scales. An attempt has been made to go through the documented information regarding various tests and scales and to lookup manual of directions for some of the available tests before selecting tools for the present investigation.

NCERT lists a number of test constructed and adopted. According to available information, the following tests have been listed :-

**Oral reading speed tests:**

I. R. Swerdlini - Elementary Reading Speed and Comprehension.

II. Davis and Davis (1962) – Davis Reading test (Leved and speed of comprehension)

**Silent reading speed test :**

I. Greene and Kelley (1943) IOWA silent reading test (vocabulary, speed and comprehension).


III. Bate (1973) – Reading test – EH 1-3 (vocabulary, speed and comprehension)

IV. Michigan – Speed of reading test (SOR)
In order to get a viable measure of reading speed ability of class VIII students, Silent Reading Speed Ability has been thought to be much more suitable.

As all the surveyed tools of reading speed ability were developed by foreign investigators and only a single test has been found which measures reading speed ability separately and this test is also developed by foreign investigators and Indian norms of the test are not available so the researcher has to develop a tool suitable to the need of the study.

**Operational definition:**

“Silent reading speed ability test will be used to measure the ability of reading silently a given content with understanding and accuracy without reducing the appropriate speed.” It is to be scored by correct answering to the questions based on the material being read i.e. the scores obtained on the test would indicate the speed of reading within a given time limit.”

II. Preparation of the test:

In the process of preparation of the test, the very 1st step is to decide the criterion situation.

(a) **Criterion situation** – The selection of the criterion situation has been performed in such a way that it falls within the experience of the students selected as the sample. Silent reading speed ability test (SRSA) has been development by the investigator according to the level of class VIII students.

(b) **Preparation of items**- The SRSA test consisted of items based on pure reading skills. The items should not be knowledge based. Multiple choice questions are taken for the test. Bearing this in mind the test to provide measures for the ability of reading for
general significance. The very short story, an event or situation has been composed to provide background material for preparing the test items. A statement indicating the general significance of the passage has been constructed in the form of a key sentence. That word of sentence has been picked up which stood for the most significant representation of the situation in the passage. It has been put below the passage with three more distracters. The testee had to read the passage and select the appropriate word out of the four given words, that would complete the blank given in the key sentence.

उदाहरणः

सभी जीवित प्राणी सौंस लेते हैं। इसी प्रकार पेड़—पौधे भी जीवित प्राणियों में गिने जाते हैं।

अर्थात् वे भी ......................लेते हैं।

क. भोजन    ख. सौंस    ग. पानी    घ. मिट्टी

कहानी के अनुसार वाक्य के रिक्त स्थान पर ‘सौंस’ व्यंग का प्रयोग ही उचित है।

अतः वाक्य के यांगी ओर को ठक में ‘सौंस’ व्यंग का क्रम (ख) लिख दिया गया है। अतः उत्तर (ख) होगा।

Thus, 68 items has been constructed for silent reading speed ability test. The total scores on the test has been the number of correct responses achieved on all the item by the testee within a limited time.

(B) The Preliminary stage:

1. Item selection:

To measure reading speed ability the researcher has done deep observation of the nature of the test items available and constructed the items which are more suitable and appropriate to measure reading speed ability of class VIII students. So firstly the content area is selected for the study. The researcher has planned to investigate class
VIII students. So according to the need of the study the syllabus and books of class VIII are observed to decide content which is suitable for the students of class VIII. After that 68 items were constructed by the researcher from the content which is equivalent to the books of class VIII. To assess the items suitability the researcher has also send the form to teachers and educationist to assess that is there any grammatical mistake and item vividity. The researcher has constructed 70 items for the test.

2. Pilot study : Very first it has found out that is there any embiguness and lake of clarity in the language of test items and the instructions according to the level of the students or not. At first all the students have given as much time as the students can complete all the test items given in the form. It has been observed that average time taken to complete one item is 30 seconds. On the basis of pilot study the time for the test is decided 20 minutes and maximum number of test items which can be solved within 20 minutes is 68 items. So the researcher has made a test form contain 68 items.

3. Test Reliability : To find out Test-Retest reliability 100 students are taken. In the process of test construction finding out test reliability is a very important step. The test reliability refers to consistency of scores obtained by the same individual when re-examination with the same test on different occasions. The test reliability is found out by two methods. The present test is mostly have the qualities of speed test. To find out reliability two methods parallel forms method and test re-test methods has been applied.

1st method: Parallel form method : The researcher has divided all the 68 items into two equivalent forms. Both the forms, form A and form B contained 34 items each. The items distributed randomly within
both the forms. It is also taken into consideration that both the forms should be kept similar type of items.

r= shows the subjects have scored same amount of scores on both the forms. There is variations or no variation within the subjects.

t-ratio-shows significant difference between mean scores obtained in form A and form B. t-ratio is calculated to compare is there any significant difference exist between both the forms. It is 0.03 at the 0.05 level of significance and degree of freedom is 48. It shows that there is no significant difference between form A and form B. Reliability coefficient is find out 0.89 and index of reliability is 0.94 where N is 50. Obtained scores of form A and form B has been given in table no. 1, given in appendix.

**IIInd method : Test re-test method:** The researcher has also adopt test re-test method to find out reliability of the test. In the second stage the researcher adopt the method to know that is there any limitations of test method to find out the reliability. Memory and practice may also influence the test scores. Because of these reasons the researcher adopt the second method.

When both the forms, form A and form B became merged the length of the test is also automatically increased and the new form contained 68 items that is used for test re-test method. So a new sample of 100 students is also selected again to find out reliability. It is also quite clear that leanth of the test and test reliability is closely connected. As well as the test leanth is increased the reliability of the test is also increased.

Reliability co-efficient is calculated to know that is there any significant difference in between 1st test administration scores and 2nd
test administration scores. Reliability coefficient is found 0.99 where N is 100. Table no. 2 shows scores of this method, given in appendix.

3. Discrimination power:

The second characteristic which is essential for a standardized test is its discrimination value. Discrimination value is an Index of a test value which indicates the power with which it can differentiate between students having relatively greater and relatively lesser amount of some trait or ability or achievement. Many measures of discrimination value have been suggested.

Next step for the test construction is to calculate discrimination power. The discrimination power for the whole test has been calculated instead of a single item because the test is meant for measuring speed of reading and it is assumed that all the test items have same difficulty level so all the scores of 100 students have been taken by the test paper (contained 68 items) and arranged in descending order. The discrimination power has been calculated with upper and lower 27% of the sample, the upper and lower index for discrimination (ULI) could be worked out as suggested by Johnson (1951) according to the following formula: \[ \text{ULI} = \frac{\text{Rh} - \text{RI}}{F}. \]

The scores are arranged from high reading speed achievers scores to low reading speed achievers scores. Then 27% upper scores which are 31 in total number of students because of repetition of scores and shorted 27% lower scores are shorted out. These scores are showed in table no. 3 in appendix.

t-ratio is also calculated to know that is there any significant difference in difficulty level between both the forms. It is found that there is no significant difference between both the forms.

4. Validity of the test:
**Face validity**: Face validity refers to knowing whether the test looks valid to the subjects who takes it. The present test going to measure reading speed ability so the nature of item and Difficulty level should be same for all the items contained in the test. t-ratio is found 23.67 which is significant at 0.01 level. Degree of freedom is also found 63.556.

The test has high level of discrimination power so the present test has high level of validity. It shows that the present tool exactly measures the quality for which it has been meant.

**C. The Final stage:**

(i) **Scoring procedure:**

Since all the items of the reading tests have been structured, the testee has to select the correct response out of the four given responses. The total scores on the test are the number of correct responses achieved on all the items by the testee within a limited time. One work will be given for every correct response given by the testee. Scoring key is given in appendix.

(ii) **Time limit:**

Liberal time limits given for the completion of the test form has been fixed so that reading speed achievers can be discriminated with one another.

Thus the time given for completing the test has been calculated for the final form of test. The time has been given on the front page of each test booklet that is 20 minutes.

All the values of Reliability, Validity and Discrimination power showed in table no. 5 given in appendix. High reading speed achievers and Low reading speed achievers are also presented in table no. 4 in appendix.
3.3 Administration of the tools:

After construction of the reading speed ability test and selection of three other tests viz. Hindi achievement test of L.N. Dubey, General classroom achievement of Dr. A.K. Singh & Dr. A. Sen Gupta and concept attainment test of Dr. Anuradha Joshi and Ratnamala Arya, the next step is to administer these tools upon 8th grade students of Kanpur Nagar. For this purpose a decision regarding the selection of schools has to be taken.

Through the random sampling procedure schools were shorted out for data collection.

It has been decided to conduct the test administration programme before the final examinations of the 8th class in the schools. The reason for this decision is that the students have more or less completed the course of studies prescribed for them and in view of coming examination could be presumed to have revised the course by themselves.

The tests are administered in two sessions. The time taken for each test are:-

1. Reading speed ability – 20 minutes
2. Concept attainment – 40 minutes
3. General classroom achievement – 30 minutes
4. Hindi achievement test – 30 minutes

The total time taken for completion all the four tests is 120 minutes. So the researcher has decided to administer all the four test in two sessions. The reading speed ability test and concept attainment tests have been administered in first session and general classroom achievement and Hindi achievement tests have been administered in
the second session. The second session has been held on after lunch break.

**Administration of reading speed ability test:**

The instructions in case of reading speed ability test are more or less the same as in the case of tryout of this test. Firstly the instruction for the testee was explained to the students. 20 minutes has been given to complete the test booklet for every student. Firstly the researcher has given instructions to the students after that a stopwatch has been used to measure exact time limit given to complete the test papers after completing 20 minutes the students has been told to drop their pencils after that the response sheets can be collected.

After this all the other three tests were also administered by the researcher.

In the 2nd phase of the study pre-test, post test control group design has been employed. Reading speed ability has been measured in pre-test and scores are obtained. After the administration of pre-test a set of innovative teaching techniques has been employed on experimental group in post-test and it is measured by obtained scores that is there any noticeable change took place or not.

**3.4 Collection and Organization of the Data:**

To facilitate data collection, whole programme has been planned and organized in successive steps.

**1st Phase:**

For this first of all, the researcher visited to the institution as mentioned in the sample selection and told the principal of the institution the purpose of her visit. When the permission has been granted, the researcher has selected one section of 8th class students randomly and then the researcher went to the respective classroom.
Necessary information regarding tests has been briefed to the students with the help of class teacher. Students of the class are given one test first in the first session. After the completion of first test sheets and booklets were collected and after that second test has been given to them. Maximum time taken by the students for the completion of all the four tests was two hour. When students filled their responses, test booklets have been collected from them. In this way data has been collected.

2nd Phase:
In the second phase of the study firstly the whole programme has been planned and the pre-test and post test has been scheduled and regarding this the principal of that particular institution has been told the purpose of researcher visit and procedure of the data collection. When the permission has been granted than researcher firstly gone through the pre-test.

Firstly two groups are formed of 50 students each, in every group. All the 100 students are selected from low reading speed achievers group. After formation of two group control and experimental reading speed ability test has been administered on both the groups and data has been collected for pre-test.

After completion of pre-test, post-test has been administered. Before this a four week programme has been conducted on experimental group. In both the groups control group (C.G.) and experimental group (EG), control group has been taught through traditional method, so the researcher had no need to teach control group. The experimental group (EG) has been taught through a set of innovative teaching techniques for four weeks. After this data has been
collected that, Is there any noticeable change took place? This is also a remedial teaching package for low reading speed achievers group.

**Scoring of test:**

Test administration in all the schools has been completed and the total number of students tested during this period was 530. After completing the test administration, the test booklets of reading speed ability test, and concept attainment test, general classroom achievement test and answer sheets of Hindi achievement test were checked.

Out of 530 students either some have not appear in all the tests or some of them have not complete all the tests. These booklet are rejected. Out of 530 students only 500 students are needed for the present study.

Hence few cases from each school, whose answer sheets have found having any short coming or irregularity in answer sheets are dropped to make the final selection of 500 students from all the schools. Thus the answer sheets of 500 students are finally scored. Since all the test were of multiple choice response, scoring has been done with the help of scoring keys. All the tests scores of reading speed ability, concept attainment. General classroom achievement and Hindi achievement are written on the sheet separately, according to the every students who scored on all the four test and raw scores are obtained.

**3.5 Statistical Treatment of The Data :**

Statistics is that science which deals with the collection, analysis organization and generalization of the data.
The classification, explanation, expansion and generalization of the data is necessary in the research work and for the field of investigation.

Statistics as a method has been defined as a science which provides tools for analysis and interpretation. These methods are applied on the data collected for the purpose of decision making in various fields of scientific inquiry.

The main function of statistics is to simplify unwieldy and complex data and to make them easily understandable because the raw data is often complex. The purpose of statistical methods is to simplify large bodies of numerical data to make them more intelligible.

The purpose of present investigation is to calculate raw scores and convert it into meaningful data. The present study has been planned into two phases. In the first phase of the study data has been collected through descriptive survey method. So in the first phase a comparison has been made and correlation has been also found out. To make a comparison between two groups ‘t’ test was employed and to find out that is there any relationship between two variables correlation is also find out.

So in the first phase of the study t-test and correlation has been employed.

In the second phase of the study experiments have been done. So in the pre-test and post-test procedure raw data has been collected and a comparison has been also made in second phase. So t-test has been also employed in the second phase. For making the comparison among five groups (four experimental and one control group) ANOVA has been also employed.
3.6 Mode of Calculations:

In the present study, all the major calculations and the statistical techniques has been carried out with the help of computer.

3.7 Variables:

The following predictor variables are used in the study :-

1. Independent variables
2. Dependent variables:

The variables involved in the present study are high & low reading speed achievement, Hindi language achievement, English language achievement, concept attainment and general classroom achievement. The criterian variable for the study is reading speed ability.

High reading speed achievers and low reading speed achievers are independent variables. Hindi language achievement; English language achievement, concept attainment and general classroom achievement are dependent variables in the first phase of the study. Innovative teaching techniques are the independent variable in the second phase of the study.