CHAPTER III

RESEARCH METHODOLOGY

3.4.4 DESIGN OF TECHNICS OF INTERACTIVE TEACHING

3.5.0 INTRODUCTION TO THE STUDY

3.5.1 CONCEPTUALIZATION OF STATEMENTS FOR STUDENTS

3.5.2 CONCEPTUALIZATION OF STATEMENTS FOR STUDENTS' CONVERSATIONS

3.5.3 ESTIMATING THE VALIDITY OF STATEMENTS FOR STUDENTS' CONVERSATIONS

3.6.0 SUMMARY AND CONCLUSIONS

3.7.0 CONSTRUCTION OF STATEMENTS ON THE STUDY

3.7.1 VALIDITY OF THE STUDY: OPINION OF THE STUDENTS

3.7.2 ADMINISTRATION OF STATEMENTS ON THE STUDY
RESEARCH METHODOLOGY

3.1.0 INTRODUCTION 93
3.1.1 STATEMENT OF THE PROBLEM 93
3.1.2 OPERATIONAL DEFINITIONS 94
3.1.3 VARIABLES USED IN THE STUDY 96
3.2.0 DESIGN OF THE STUDY 97
3.2.1 CAUSAL – COMPARATIVE METHOD 98
3.2.2 SAMPLE SELECTION FOR THE STUDY 99
3.2.3 CLUSTER SAMPLING OR MULTI STAGE 99
3.2.4 DISTRIBUTION OF THE SAMPLE 100
3.3.0 PREPARATION OF LESSON FOR INTERACTIVE TEACHING 101
3.4.0 INTERACTIVE LEARNING METHODS 102
3.4.1 TEACHER INTERACTIVE LEARNING METHOD 102
3.4.2 STUDENT INTERACTIVE LEARNING METHOD 103
3.4.3 INTERACTIVE TEACHING METHODS AND CONTENT KNOWLEDGE 107
3.4.4 ADMINISTRATION OF INTERACTIVE TEACHING 108
3.5.0 TOOLS USED IN THE STUDY 109
3.5.1 CONSTRUCTION OF POST TEST FOR THINKING HISTORY 110
3.5.2 CONDUCTING PILOT STUDY FOR POST TEST FOR THINKING HISTORY 111
3.5.3 ESTABLISHING RELIABILITY & VALIDITY FOR THE POST TEST OF THINKING HISTORY 111
3.6.0 DATA COLLECTION 112
3.7.0 CONSTRUCTION OF OPINIONNAIRE 113
3.7.1 CONSTRUCTION OF STUDENT OPINIONNAIRE 113
3.7.2 VALIDITY OF THE STUDENT OPINIONNAIRE 114
3.7.3 ADMINISTRATION OF STUDENT OPINIONNAIRE 115
3.7.4 CONSTRUCTION OF TEACHER OPINIONNAIRE
3.7.5 VALIDITY OF THE TEACHER OPINIONNAIRE
3.7.6 ADMINISTRATION OF TEACHER OPINIONNAIRE
3.8.0 SCORING PROCEDURE
3.8.1 DATA COLLECTION
3.8.2 STATISTICAL TREATMENT
3.9.0 CONCLUSION

The methodology chapter describes the procedure adopted for the study in selecting the sample of the study, the research instruments developed and the strategies applied for data collection. The research hypotheses underlying the study are developed in the methodology chapter.

The aim of the study is to investigate the effects of interactive teaching methods in teaching thinking history at high school level. The methodology of the present study is described in this chapter under the relevant headings.

3.1.1 STATEMENT OF THE PROBLEM

The study aims to analyze the effect of interactive teaching methods in developing thinking history at high school level.
CHAPTER - III

RESEARCH METHODOLOGY

3.1.0 INTRODUCTION

Investigations are concerned with conditions or relationship that exist, practices that prevail, belief, points of view that are whole, process that are going on, effects that are being felt or trends that are developing in the field of education.

The present methodology chapter describes the procedure adopted by the researcher in selecting the sample of the study, the variables used, the tools developed and the strategies applied for gathering necessary research data. The research hypotheses are also stated on the methodology chapter.

The present study is to study the effect of interactive teaching in developing thinking history at high school level. The methodology of the present study is described in this chapter under different headings.

3.1.1 STATEMENT OF THE PROBLEM

This study as "THE EFFECT OF INTERACTIVE TEACHING IN DEVELOPING THINKING HISTORY AT HIGH SCHOOL LEVEL"
3.1.2 OPERATIONAL DEFINITIONS

Effect: The world encyclopedia Dictionary gives the meaning of effect "The power to produce a desired result".

INTERACTIVE TEACHING

The interactive learning provided opportunities for students to do the same sort of thickening. It encourages the students to use their prior knowledge to predict the ideas that may appear in a text. Interactive teaching strategies could be successfully modified so that students would employ interactive learning strategies in co-operative learning groups.

The interaction learning assumes a strong interaction between content knowledge and strategic knowledge. In interactive learning strategies, strategic knowledge was closely tied to content knowledge. In the interactive learning strategies students first focused on their background knowledge for the content and then used this knowledge along with text information to support their strategic actions. This invites student to set purposes for learning that are both strategy and content based.
DEVELOPING

It means a gradual growth or advancement through progressive changes.

The term developing refers to the progressive changes that take place with time in the behaviour of the organism and which lead to maturity.

It means a progressive form a simpler or lower to a more advanced, mature or complex form or stage. A process in which something passes by degrees to a different stage (especially a more advanced or matured stage).

THINKING HISTORY

Many educational resources define thinking, as a set of reasoning skills that students of history should learn as a result of studying history. Sometimes called historical reasoning skills, historical thinking skills are frequently described in contrast to history content such as names, dates and places. This dichotomous presentation is often misinterpreted as a claim for superiority of one form of knowing over the other. In fact, the distinction is generally made to underscore the importance of developing thinking skills that can be applied when individuals encounter any history content. Most educators agree that together, history content--or facts about the past--and historical
thinking skills enable students to interpret, analyse and use information about past events.

HIGH SCHOOL STUDENTS

Indian education Commission states that the high school students who are studying from VI to X standard in the age group 11 To 15.

3.1.3 VARIABLES USED IN THE STUDY

The present study is attempted to study the effect of interactive teaching in developing thinking history at high school level. It is to be noted that there are only few studies available in the area of thinking history. The investigator of the study reviewed most of the studies of this kind and selected the necessary variable for the study. In the light of research studies of the past and on the basis of personal experience, the investigator selected gender, nature of school, medium, opinion of teacher, opinion of students as independent variables of the study.

In this study interactive teaching method, test on history thinking are located as the dependent variables of the study. The table presents the different types of variables used in this study in terms of various level of corresponding variables.
3.2.0 DESIGN OF THE STUDY

VARIABLE USED FOR THE STUDY

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Types</th>
<th>Dependent Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interactive Teaching</td>
<td>Teacher interactive</td>
<td>Performance of students in thinking history</td>
</tr>
<tr>
<td></td>
<td>Student interactive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Self Learning</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td></td>
</tr>
<tr>
<td>Nature of School</td>
<td>Government</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td></td>
</tr>
<tr>
<td>Medium of the Class</td>
<td>Tamil</td>
<td></td>
</tr>
<tr>
<td></td>
<td>English</td>
<td></td>
</tr>
<tr>
<td>Opinion</td>
<td>Teacher</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Student</td>
<td></td>
</tr>
</tbody>
</table>

The investigator used post-test experimental design for the present investigation. Post-test was conducted in both experimental and controlled group of government school Boys and Girls, boys and girls of private schools of Tamil medium and English medium of X standard students of both rural and urban.
<table>
<thead>
<tr>
<th>Nature Of Group</th>
<th>Pre Test</th>
<th>Treatment</th>
<th>Post – Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controlled Group</td>
<td>-</td>
<td>-</td>
<td>Conducted</td>
</tr>
<tr>
<td>Student interactive</td>
<td></td>
<td>Student</td>
<td>Conducted</td>
</tr>
<tr>
<td>method</td>
<td></td>
<td>interactive</td>
<td></td>
</tr>
<tr>
<td>experimental group</td>
<td></td>
<td>method</td>
<td></td>
</tr>
<tr>
<td>Teacher interactive</td>
<td></td>
<td>Teacher</td>
<td>Conducted</td>
</tr>
<tr>
<td>method</td>
<td></td>
<td>interactive</td>
<td></td>
</tr>
<tr>
<td>experimental group</td>
<td></td>
<td>method</td>
<td></td>
</tr>
</tbody>
</table>

3.2.1 CAUSAL - COMPARATIVE METHOD

Experimental studies are most suitable for testing the casual hypothesis. A hypothesis of causal relationship asserts that a particular characteristic or occurrence (X) is one of the factors that determine another characteristic or occurrence (Y).

The purpose of experimental studies is to test a hypothesis of causal relationship between variables. For an experimental study, two groups are required and compared in terms of the assured effect of experimental variable. The validity of an experiment depends on the equivalence between the control
group and the experimental group chosen. The two groups are chosen in a way that they do not differ from each other in significant respects (affecting the hypothesized relationship among variables) expect by chance. Any one of these groups may be chosen as the “Experimental group” and is exposed to the assumed causal (independent) Variable while the control group is not. The two groups are then compared in terms of the assumed effect (dependent) variable.

3.2.2 SAMPLE SELECTION FOR THE STUDY

Defining the variables provide specific direction regarding the selection of the sample. The investigator used cluster sampling techniques.

3.2.3 CLUSTER SAMPLING OR MULTI STAGE

As the name implies this method refers to a sampling procedures which is carried out in several stages. The population is distributed into a number of first stage sampling units and a sample is taken of these first stage units by some suitable method. Each of these (selected) first sample units is further, subdivided into second stage units and from these again a sample is taken by some suitable method. Further stages may be added if required. The method adopted in the first stage may be the
same or different for subsequent stages. Large grouping within the population (at the first stage) are called clusters. The clusters are the sampling units known as the primary units first stage stare level, 2\textsuperscript{nd} stage district level, 3\textsuperscript{rd} stage village level, 4\textsuperscript{th} stage household level. Where the population is broken into area that constitute the primary sampling units the sample is called an area sample – chunk sampling.

3.2.4 DISTRIBUTION OF THE SAMPLE

TABLE – 3.1

DISTRIBUTION OF THE SAMPLE ACCORDING TO NATURE OF THE SCHOOL, MEDIUM AND GENDER

<table>
<thead>
<tr>
<th>Nature of School</th>
<th>Tamil Medium</th>
<th>English Medium</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boys</td>
<td>Girls</td>
</tr>
<tr>
<td>Government</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Private</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>60</td>
</tr>
</tbody>
</table>

According to Gaud(1952) a sample is a finite number of observations or cases selected from all cases in a particular universe often assumed to be representative of all the total groups of universe of which it is a part. The sample is a small representative portion of the population selected for analysis.
FIGURE - 1
DETAILS OF THE SAMPLE
(ENGLISH MEDIUM)
The investigator selected sixty students from Tamil medium groups of 30 each from Government Boys and Girls school.

The investigator selected another sixty students from both government boys and girls and private Boys and Girls school.

In selecting samples, the investigator ensured equal number of sample from each group and the sample chosen from each group may be proportionate to the population from which the sample was drawn.

PREPARATION OF SAMPLE

The investigator selected a lesson, "India's struggle for freedom" in Tamil medium for the teaching-learning activity. For the...
The investigator selected sixty students from Tamil medium of two groups of 30 each from Government Boys and Girls school and private Boys and Girls school.

The investigator selected another sixty students from English medium of two groups of 30 each from government boys and girls school and private Boys and girls schools.

In selecting samples from the subgroups, the investigator selected equal number of sample from each group and the number selected from each group may be proportionate to the size of the subgroup in the population.

3.3.0 PREPARATION OF LESSON FOR INTERACTIVE TEACHING

SELECTION OF TOPIC
The investigator selected a lesson, "India’s struggle for freedom Gandhian Era" from the X standard textbook for the present investigation since the topic includes the issues.

The investigator selected the above topic for the study and which requires, how to study. Since the investigator is interested to study the effect of interactive teaching model in learning thinking history, the lesson was prepared in sequence including all the issues, which requires thinking.
3.4.0 INTERACTIVE LEARNING METHODS

The interactive teaching methods could be successfully modified so that students would employ student interactive learning strategies in cooperative learning groups. Rather than using a contrast condition, student content learning was compared to a content based post test on the chapter to the performance of the normative comparison group of students who attended the teacher interactive teaching on the same chapter.

3.4.1 TEACHER INTERACTIVE LEARNING METHOD

As with the interactive teaching methods, the content analysis provides the teacher with a framework for structuring the content knowledge and allows the teacher to serve as an informed mediator during instruction. In the teacher interactive teaching the teacher prepares the relationship chart or map. The teacher has to employ the teacher interactive learning methods, develops these organization frames.

In the teacher interactive method of teaching, the teacher was asked to prepare the semantic map for the lesson “India’s struggle for freedom – Gandhian Era”. The teacher was asked to prepare, the concepts for teaching. The teacher was asked to explain each concept through interaction. The teacher observed the students regarding their interaction. Teacher explained the concept for an hour period.
3.4.2 STUDENT INTERACTIVE LEARNING METHOD

The interactive teaching method could be successfully modified so that students would employ student interactive learning strategies in cooperative learning groups. Rather than using a contrast condition, student-content learning was compared to a content based post test on the chapter to the performance of the normative comparison group of students who attended the teacher interactive teaching on the same chapter.

Interactive learning methods are based upon the same theoretical notions as interactive teaching strategies, except that students learn the strategic knowledge needed to cooperatively generate their own chart or map and use it to learn the content (Bos & Reyes, 1989). The steps in the strategies include:

Step-1 Make a brainstorm List using what you know about the topic.

Step-2 Make a clue List using what the text tells you about the topic.

Step-3 Make a Relationship Map or Relationship Chart to predict how the concepts are related.

Step-4 Read to confirm and ingrate your understanding and the relationships.

Step-5 Review and revise the map or chart
Step-6 Use the map or chart to study or write about what you learned.

**STEP-1**

Using interactive learning strategies, students work in cooperative groups to develop a Brainstorm List based on their prior knowledge about the topic. They activate prior knowledge by encouraging each other to discuss what made them think of different ideas. Students write each idea on a post-it and place it on the Brainstorm List.

**STEP-2**

Second, Students survey the text to develop a clue List of key concepts presented in the text. Again students are encouraged through discussion to justify their selections. Meanings are also discussed and clarified through selected reading. Ideas that are found in the text that have already been listed on the Brainstorm List are simply incorporated into the Clue list by moving the post-its.

**STEP-3**

Third, students organize the concepts from the clue list and related ideas from the Brainstorm List into a chart or map predictions the relationships among the concepts. Again, predictions and justifications of the relationships are encouraged.
through discussion. These three steps serve as pre reading activities.

STEP-4

The fourth step, the students read the text to confirm and integrate their understanding of the terms and the relationships among the concepts.

STEP-5

In the fifth step, the students work together making changes on the map or chart based on information obtained from the text.

STEP-6

The sixth step, the students use the map or chart as a tool for studying the content information and writing test.

To teach interactive learning strategies, the teacher models the behaviors and cognitive processes associated with developing a brainstorm, clue list, and map or chart as well as the using the map or chart to guide reading, studying, and writing. The teacher also models and encourages the students to predict, justify, clarify, and confirm their understandings. Thus the declarative and procedural knowledge associated with learning the strategy is emphasized. The teacher also provides feedback concerning the students' use of the strategy, clarifies ideas related to the content knowledge they are studying, and encourages students to
regulate and employ the strategies flexibility. Thus, conditional knowledge is emphasized.

In the student interactive model of teaching the gifted students were asked to prepare the semantic concepts for the selected topic on “India’s struggle for freedom – Gandhian Era”. By discussing with other students. The students were given freedom to interact well with other students. They prepare the semantic map for the lesson and now the lesson is ready for the student interactive strategy. Investigator asked the students to interact with each other in order to learn the concepts through interaction.

As students become adept at using the interactive learning strategies, the role of the teacher moves from that of a “mediator” who provides and maintains the scaffold to that of a “facilitator” with the students providing and maintaining the scaffold in cooperative learning groups.

The prepared concepts for Teacher interactive model and student interactive model were given to educational experts and were asked to validate the lesson. The concepts were validated using face validity and the lessons were made ready for the study.

Interactive learning strategies are employed when the goal of instruction involves the acquisition of strategic knowledge in

106
relation to text comprehension and content learning. The teaching methodology is based on cognitive and met cognitive strategy instruction (see Pris, wasik & Vander Westhuizen, 1988, for recent review) and Vgotskian notions of teaching and learning (1988). Teaching of strategic knowledge is couched within content learning, thereby establishing inherent purposes for learning the strategic knowledge. When using interactive learning strategies, it is important to complete content analysis.

3.4.3 INTERACTIVE TEACHING METHODS AND CONTENT KNOWLEDGE

During the first two stages, the focus was on interactive teaching methods and emphasized content knowledge. For the four studies conducted during these stages, the research design was the same. Students participated in one of three interactive teaching strategies-semantic mapping, semantic feature analysis, or semantic/syntactic feature analysis-or in a contrast instructional condition-definition instruction, Semantic/syntactic feature analysis (SSFA) (Allen, 1985) was similar to semantic feature analysis in that the students and teachers completed the relationship chart; however, students also completed close sentences which required them to use the chart to complete the sentences. The definition instruction (DI) consisted of directly teaching the content-related definitions for the concepts
generated from the content analysis using teaching techniques that emphasized high student engagement through oral recitation, the correct and automatic pronunciation of each concept, the memorization of concise content related definitions, and teacher monitoring and feedback (Engelmann & Carnine, 1982; Pany, Jenkins, & Schreck, 1982).

3.4.4 ADMINISTRATION OF INTERACTIVE TEACHING

Lesson was prepared for interactive teaching. Tenth standard students were grouped into three groups, viz., two experimental groups one experimental group (A) for administering Teacher Interactive model of teaching and another experimental group (B) for administering student Interactive model of teaching and group (C) was considered as the control group.

In the teacher interactive model of teaching, the teacher was asked to prepare the semantic map for the lesson “India’s struggle for freedom – Gandhian Era”. The teacher was asked to prepare, the concepts for teaching and was asked to explain each concept through interaction. The teacher observed the students regarding their interaction. Teacher explained the concept for an hour period.

In the student interactive model of teaching the gifted students were asked to prepare the semantic concepts for the
selected topic on “India’s struggle for freedom – Gandhian Era”. By discussing with other students. The students were given freedom to interact well with other students. They prepare the semantic map for the lesson and now the lesson is ready for the student interactive strategy. Investigator asked the students to interact with each other in order to learn the concepts through interaction.

They learnt the validated concepts through interaction. The students interactive and teacher interactive are ready to attend the test on history thinking.

3.5.0 TOOLS USED IN THE STUDY

John Best observes, “Like the tools in the carpenter’s box, each research tool is appropriate in a given situation to accomplish a particular purpose”. To find out the effect of interactive teaching in developing thinking history at high school level, the investigator used post-test for history thinking and opinionnaire as the tools for the study.

The questions in the post test were constructed in such a way to elicit responses so that the thinking of students can be measured.
3.5.1 CONSTRUCTION OF POST TEST FOR THINKING HISTORY

The post test was constructed by the investigator on the selected topic Gandhian –Era for ix std. The post test contains 50 items on various sub titles as listed below:

1) Thinking on government issues
2) Thinking on issues of diversity
3) Thinking on media issues
4) Thinking on value led issues
5) Thinking on democratic issues
6) Thinking on cognitive issues
7) Thinking on social

Each subtitle carries seven questions.

The post test consisted of total 50 items classified into seven sections. Each question carries two marks. The students were asked to write four sentences for each question. The responses may be related to names, places, time, facts, events and ideas. Each correct sentence carries ½ a mark. The total marks for the post test was 100.
3.5.2 CONDUCTING PILOT STUDY FOR POST TEST FOR THINKING HISTORY

Pilot study is a preliminary study conducted on a limited scale before the original studies are carried out in order to gain some primary information, on the basis of which the main project would be planned and formulated. The preliminary survey or study of the Universe in question helps to acquire a general knowledge about the problem, which ultimately helps to know the nature and different aspects of the problem.

3.5.3 ESTABLISHING RELIABILITY & VALIDITY FOR THE POST TEST OF THINKING HISTORY

To find out the Reliability of the tool Test retest method was adopted. Ten students were selected for the pilot study and the post test for history thinking was given to them. The collected scores were analysed and ’r’ was calculated.

**TABLE NO. 3.2**

**TABLE SHOWS THE r VALUE FOR THE POST TEST OF THE PILOT STUDY**

<table>
<thead>
<tr>
<th>N</th>
<th>ΣX</th>
<th>ΣX²</th>
<th>ΣY</th>
<th>ΣY²</th>
<th>ΣXY</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>280</td>
<td>405</td>
<td>3447</td>
<td>6991</td>
<td>4810</td>
<td>0.74</td>
</tr>
</tbody>
</table>

Validity refers the ability of a tool to measure what it is supposed to measure. The subject experts in History curriculum
and few students were consulted and each item in the questionnaire was analysed to ascertain the suitability, adequacy and validity of the items in the scale.

A tool is said to be reliable to the degree that it measures accurately and consistently, yielding comparable results when administered a number of items. There are a number of ways of using the process of correlation to evaluate reliability.

Validity of the tests was established by correlating the scores obtaining from this test and the scores obtained by the sample from the test conducted for other purpose in the institutions in the same subject.

3.6.0 DATA COLLECTION

The high school students were classified into two groups namely the controlled group and the two experimental groups. In the control group the self learning method was adopted. Where as the experimental group was divided into two groups namely group A in which student interactive method was adopted. In group B teacher interactive method was administered. Both the groups were subjected to post test in the selected topic in History, i.e., “India’s struggle for freedom - Gandhian Era”. This provided the post test measure. The thinking ability developed by the students was evaluated.
3.7.0 CONSTRUCTION OF OPINIONNAIRE

A questionnaire is a form prepared and distributed to secure responses from the sample. It is a device for securing answers to questions by using a form, which the respondent fills by himself. It is a systematic compilation of questions that are submitted to a sample of population from which information is defined.

Questionnaire are also classified as (1) questionnaire of fact, which required certain information of facts from the respondent without any reference to his opinion or attitude about them and (2) questionnaire of opinion and attitude in which the informant’s opinion attitude on preference regarding some phenomena is sought.

3.7.1 CONSTRUCTION OF STUDENT OPINIONNAIRE

The questionnaire for the students contain twenty five questions. each question carries two marks and the total mark is 50.

The questionnaire is divided into nine sub titles namely.

1. Interest of the student in history
2. Opinion of the students about subject history
3. Text books in thinking history
4. Teaching methodology of the teacher
5. Aids models and real experience
6. Historical interpretations
7. Self learning in thinking history

8. Group Discussion and

9. Computer in thinking history

The opinionnaire was prepared and was standardised using Reliability and Validity techniques in the following way.

**Distribution of the Sample (Student Opinion)**

The following number of students were selected for collecting opinion of student.

**TABLE NO. 3.3**

**TABLE SHOWS THE NUMBER OF STUDENTS SELECTED FOR THE ADMINISTRATION OF STUDENT OPINIONNAIRE**

<table>
<thead>
<tr>
<th>Sex</th>
<th>Govt.</th>
<th>Private</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>47</td>
<td>55</td>
<td>102</td>
</tr>
<tr>
<td>Female</td>
<td>51</td>
<td>47</td>
<td>98</td>
</tr>
<tr>
<td>Total</td>
<td>98</td>
<td>102</td>
<td>200</td>
</tr>
</tbody>
</table>

**3.7.2 VALIDITY OF THE STUDENT OPINIONNAIRE**

The opinionnaire constructed was given to a five of experts and requested to give their suggestions. Their remarks and suggestions were incorporated with the guidance of the research guide and thus face validity was established.
3.7.3 ADMINISTRATION OF STUDENT OPINIONNAIRE

Test is the measuring scale of learning. To measure the student interactive model test was conducted for all Tenth standard students selected for the study. It contains 25 two marks questions. This test was taken as the post test.

The validated student interactive model was given to the experimental group of tenth standard student in government schools and private Schools of both Boys and Girls.

3.7.4 CONSTRUCTION OF TEACHER OPINIONNAIRE

The opinionnaire for teachers contain 25 questions. The opinionnaire is divided into four sub title namely

1. Teacher opinion about History thinking
2. Teaching thinking History
3. Teacher’s opinion on teaching method
4. Present application

The sub title i) Teacher opinion about history thinking includes 7 questions ii) Teaching thinking history includes 6 questions iii) Teacher Opinion on teaching method includes 6 questions and iv) Present application includes 6 questions.

Each question carries two marks the total marks are 50.
Distribution of the Sample (Teacher Opinion)

The following number of teachers were selected for collecting opinion of teachers.

**TABLE 3.4**

<table>
<thead>
<tr>
<th>Sex</th>
<th>Govt.</th>
<th>Private</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>17</td>
<td>24</td>
<td>41</td>
</tr>
<tr>
<td>Female</td>
<td>13</td>
<td>26</td>
<td>39</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>50</td>
<td>80</td>
</tr>
</tbody>
</table>

3.7.5 VALIDITY OF THE TEACHER OPINIONNAIRE

The opinionnaire constructed was given to a five of experts and requested to give their suggestions. Their remarks and suggestions were incorporated with the guidance of the research guide and thus face validity was established.

3.7.6 ADMINISTRATION OF TEACHER OPINIONNAIRE

Test is the measuring scale of learning to measure the teacher interactive method was conducted for all history teachers.

The validated teacher interactive method was given to the teachers of government and private school of male and female.
3.8.0 SCORING PROCEDURE

Apart from the main scale there are questions seeking demographic information about the individual were given in the first part of the opinionnaire followed by scale and the last part of the opinionnaire ended with some space in which the respondent is expected to give his perception openly apart from each items given above. The opinionnaire used in the present study is given in Appendix A.

3.8.1 DATA COLLECTION

The investigator personally visited all the schools, Government and private. After getting permission from the respected head of each institution, he visited on the pre planned days. The investigator introduced himself to the students samples and oriented about the purpose of the study and the procedure to fill opinionnaire. If at all any doubt asked by the sample the investigator cleared those doubts then and there while filling the opinionnaire by the students. Thus there were 210 students filled the opinionnaire and only 200 were taken for final analysis, because some of the opinionnaire were not filled in by some students.
The teachers were also given opinionnaire, and asked to fill up the same. The teachers returned the filled in opinionnaires to the investigator.

The filled in opinionnaire were collected from students and teachers were analysed for statistical treatment.

3.8.2 STATISTICAL TREATMENT

Based on the hypotheses fixed earlier by the investigator to test the hypotheses the following statistical techniques were used.

1. Descriptive statistics to find out the mean and standard deviation
2. 'F test
3. The 't' test to find out the significant difference (if any) among the subcategories. and
4. \( \chi^2 \) Test

3.9.0 CONCLUSION

The achievement test scores were collected and analysed. The analysis and interpretations are presented in the ensuing chapter.