RESEARCH METHODS AND PROCEDURE

The agendum is comparable to the blueprint which the architect prepares before the bids are let & building commences.

- John. W. Best
"A method is the means or manner of determining whether a theoretical construct or proposition is true or false. Each of the specific discipline has developed criteria and conventions about what constitute legitimate tests of theory and what lines of development researchers are to follow as they move from data to knowledge claims. Methodology has as much to do with reasoning as it does with data. There are rules for testing knowledge, and it is the set of rules that define methodology in a discipline." - Rychlak (1968)

3.1 Method and Procedure:

Research methodology is a way to systematically investigate the research problem. It gives the various steps in the conduct of the research in a systematic and logical way, both empirical and replaceable. It is essential to define the problem and state the objectives and hypotheses clearly at the outset. The research design provides the details regarding what, where, when how much and by what means, concerning an inquiry.

The plan and procedure spell out the description of the sample, the measures used and the steps taken in carrying out the investigation. A detailed description of the sample is needed in order to the reader to assess the general stability of research findings. This is also helpful to determine the degree to which the research sample is representative of the population. The population from which the sample is drawn should be defined clearly and a detailed description needs to given of the procedure for selecting the sample.

Plan and procedure basically highlight the details of the work carried out by the investigator and determine in turn, its destiny. It is the character of the technique on which the degree of precision, objectivity, reliability and validity of results depends. The selection of the technique and devices by an investigator is determined by the nature of the problem, objectives of the study, cost, time, function, availability of the subjects and other resources at the disposal of the investigator, followed by a presentation of the steps of the procedure adopted
for the conduct of the study. The statistical techniques required to be used at various stages of the study need also to be briefly described.

3.1.1 Research Design:

Research is a systematic activity and as a process, it employs a scientific methodology. A research design provides a framework within which the activity is conducted.

According to Johada and Cook (1957), "A research design is the arrangement of conditions for the collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure".

As a blue-print of the research design involved in this study, the following components would constitute the format of the investigation.

- Methods of the study.
- Sample of the study.
- Tools of the study.
- Data collection.
- Techniques used for Data Analysis.

3.1.2 Method of the Study:

The decision about the method to be employed for accomplishment of aims and objectives of research depends upon the nature of the problem selected and kind of data necessary. In practice the following methods have been accepted in the field of educational research, namely:

1. Historical.
2. Descriptive.
3. Experimental.

1. Historical research describes 'what was'. The process involves investigating, analyze and interpreting the events of the past for the purpose of discovering generalization that are helpful in understanding the past and the present, and to a limited extent in anticipating the future are dealt with this method.

2. Descriptive research describes what is describing a recording and interpreting conditions of that exist. It involves same type of comparison or contrast and attempt to discover relationship between manipulated variable.
3. Experimental research describes what will happen when certain variables are carefully controlled or manipulated. The focus is any variable relationship as defined here. Deliberate manipulation is always a part of experimental methods.

The decision about the method depends upon the nature of the problem and objectives to be achieved. The problem here under investigation is "A comparative study of personality and teaching aptitude of govt. and private secondary school teachers."

The present study does not deal with the past, nor is concerned with what will happen in certain variables. For this study the investigator used the descriptive survey method. This method is useful in finding out the facts of the situation in a most precise way. In this study the investigator enquired about the personality and teaching aptitude of govt. and private secondary school teachers.

* Descriptive Method:

"Descriptive research is concerned with hypothesis formulation and testing, the analysis or relationship between non-manipulated variables and the development of generalizations." - Best and Kahn

Descriptive research methodology has been classified differently by various authors.

According to Best and Kahn, descriptive research includes case studies, ethnographic studies, follow-up studies and causal-comparative approaches.

Koul (1984) classifies descriptive studies as survey studies, inter-relationship studies and developmental studies.

Survey studies are conducted to give an accurate description of the existing phenomenon so as to justify current conditions and practices.

Developmental studies refer to those investigations which research into a subject or a phenomenon over a period of time.

Inter-relationship studies describe not only the existing phenomenon but also attempt to ascertain relationship among variables.

Inter-relationship studies can be further classified as follows:
Case study, which attempts to examine an individual unit in detail and analyses the various factors/dimensions of the unit.

Causal comparative or ex-post-facto studies attempt to ascertain the relationships between two variables where one may be the cause of another.

Correlation and prediction studies usually attempt to find relationship among variables with the help of co-efficient or correlation, on the basis of which predictions are also made about the variables.

Cross-cultural and comparative researches compare to simultaneous phenomena or societies on a particular aspect/factor/dimension.

3.1.3 The Method Followed:

* Descriptive Survey Method

The present study follows the descriptive survey method of research.

Descriptive research is concerned with the present conditions, situations, events and practices and deals with relationship among variables.

Survey studies are conducted to given accurate description of the existing phenomenon so as to justify current conditions and practices.

The present study attempts to enquired about the personality and teaching aptitude of govt. and private sec. school teachers. Therefore it follows the descriptive survey method of research.

3.1.4 Paradigms of Research:

Research methodology has two major paradigms, namely, the qualitative and quantitative paradigms. The qualitative paradigm makes use of a logical analysis of rich, soft, verbal, descriptive data that are obtained, whereas the quantitative paradigm makes use of statistical techniques to describe the sample, to test the hypothesis and to draw inferences based on hard, quantifiable data. The quantitative paradigm is aimed at making generalizations.

The present investigation obtains hard, numerical data and makes use of statistical procedures to test and verify preconceived hypotheses. Therefore, it employs the quantitative paradigm of research.

3.1.5 Variables of the study:

Variables of a study are of two types:
A. **Dependent Variables:**

The dependent variables are the conditions or characteristics that appear, disappear or change as the investigator introduces, removes or changes independent variable. In this study, there is no any dependent variable.

B. **Independent Variables:**

An independent variable is the conditions or the characteristics that the investigator observes or controls in attempt to ascertain its comparison to observed phenomena. The independent variables of the study refer to various conditions, characteristics and factors related to-

(i) Personality: and

(ii) Teaching Aptitude

The present investigation attempts to study the personality and teaching aptitude of govt. and private secondary school teachers.

3.1.6 **Sample of the Study:**

A sample refers to the sub-group of a larger population under study from which inferences are drawn about the larger population. The present study aims to describe personality and teaching aptitude of teachers. Therefore, it requires that data be collected from the concerned categories of all teachers who from the population of the study.

The present study was conducted on 500 teachers including 250 govt and 250 private secondary school teachers. The sample was drawn from rural and urban area. Both male and female teachers were selected. The sample was selected randomly from four districts (Bhiwani, Jhajjar, Punchkula, and Gurgaon) of Haryana state.

* **Sampling Techniques:**

According to Vockell, (1983) “Sampling refers to the strategies which enable the researcher to pick a sub-group from a large group and use this as the basis for making judgments about the large group.”

The various types of sampling techniques that can be generally employed to obtain a representative sample are as follows:

* **Simple Random Sampling:**

Here individuals are chosen in such a way that each unit has an equal chance of being selected through the use of random number tables or the lottery technique.
* **Stratified Random Sampling:**

When the units in a sample are proportional to their presence in the population, the sample is said to be stratified. The population is sub-divided into smaller homogeneous groups or strata and individuals are then chosen at random from each of the sub-groups to get a more accurate representation from each stratum.

* **Systematic Sampling:**

When the frame of the population can be listed as infinite, the researcher starts by selecting a unit at random from the first $K$ unit and then every $K^{th}$ subsequent unit is selected.

* **Cluster Sampling:**

When the population is infinite or spread over a vast geographical area, this method is used where the entire area is divided into smaller groups and simple random sampling is done from each of the sub-areas.

* **Incidental Sampling:**

This is a non-probability sampling technique where the subjects that are readily available are included in the sample.

### 3.1.7 The Sampling Technique Used:

In the present study, multi-stage the random sampling technique was used to select the subjects from the population. Haryana state was divided into four zones namely North, South, East and West. Out of each zone, one district was picked up randomly, used the lottery technique. Thus, in all the four districts formed the sample of the study. A list of govt. and private sec. Schools was obtained from the concerned D.E.O. of the selected district and 20 schools from each district (10 Govt. and 10 Private) were selected at random making total schools to 80 as shown in Table 3.1

**Table: 3.1**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Districts</th>
<th>No. of schools taken from each district</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Bhiwani</td>
<td>20</td>
</tr>
<tr>
<td>2.</td>
<td>Jhajjar</td>
<td>20</td>
</tr>
<tr>
<td>3.</td>
<td>Panchkula</td>
<td>20</td>
</tr>
<tr>
<td>4.</td>
<td>Gurgaon</td>
<td>20</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>80</strong></td>
</tr>
</tbody>
</table>
The study was conducted on 80 schools. From each school 4 to 8 teachers were taken depending upon the number of teachers available in the school.

Table 3.2
Sample of teachers

<table>
<thead>
<tr>
<th>Govt. School Teachers</th>
<th>Private School Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Sample – 500</td>
<td></td>
</tr>
<tr>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>(i) 139 Rural – 111 Urban</td>
<td>(i) 112 Rural – 138 Urban</td>
</tr>
<tr>
<td>(ii) 143 Male – 107 Female</td>
<td>(ii) 129 Male – 121 Female</td>
</tr>
<tr>
<td>(iii) 118 &gt;10 yrs - 132&lt;10 yrs</td>
<td>(iii) 98 &gt;10 yrs – 152 &lt;10 yrs.</td>
</tr>
<tr>
<td>Teaching Experience</td>
<td>Teaching Experience</td>
</tr>
<tr>
<td>(iv) 144 Degree+ B.Ed.–106 B.Ed.+</td>
<td>(iv) 119 Degree+ B.Ed.–131 B.Ed.+</td>
</tr>
<tr>
<td>Qualification</td>
<td>Qualification</td>
</tr>
</tbody>
</table>

3.1.8 Tools Used:

“If the tools used possess all the necessary and desirable attributes then the potential for the sound research is present.”

- F.J. Fox

The selection of tools is very important in research because right selected tools make the half work done. Findings of any research study are based on data collection; data collection in turn depends on the tools used. The research tools should have reliability, validity, availability, appropriateness, easy in administration, scoring and objectivity.

Keeping in view the above, the following tools which were readily available and suited the requirements of the study in hand, and had also been tested on the touchstone of various test requirements on reliability, validity etc. by their authors, were preferred to be employed for collection of the data for the study.

1. For measuring Personality, Cattell’s “16 P.F. Questionnaire (Hindi version by S.D. Kapoor, 1970) is used.

2. For measuring teaching aptitude, Teaching Aptitude Test developed by Dr. Jai Parakash and Dr. R.P. Shrivastava (1973) is used.
3.1.8.1 Description of the Tests:

Description of 16 PF Test:

In the present study, Indian adaptation by (S.D. Kapoor, 1970) Form B of the sixteen personality factors test (16 PF Test) was used to measure the personality of the subjects. The 16 PF test is an objectively score able test devised by basic research in psychology to give the most complete coverage of personality possible in a brief time. This test was prepared by Cattell, Eber and Tatsuoka (1970) originally it was published in English version and later it was adapted by S.D. Kapoor who translated both the instructions and items into Hindi.

This test consists of 187 questions and takes approximately 45 minutes to complete. Two scoring keys are available to find out the raw scores of the respondents on the 16 personality factors, and norms are provided to convert these raw scores into sten scores. On the basis of these sten scores the profile of each respondent can be prepared to have a quick glance at the 16 traits he/she possesses.

The sixteen factors/dimensions measured by 16PF test are essentially independent i.e. any item in the test contribute to the score on one and only one factor so that no dependencies were introduced at the level of scale construction. Moreover the experimentally obtained correlation among the 16 PF scales are generally quite small so that each scale provides some new piece of information about the person being tested.

Description Of the Cattell's Sixteen Primary Personality Factors.

<table>
<thead>
<tr>
<th>FACTOR - A</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIZOTHYMIA  VS. AFFECTOTHYMIA</td>
</tr>
</tbody>
</table>

RESERVED, DETACHED, CRITICAL, COOL: - The person who scores low (Sten of 1 to 3) on factor A tends to be stiff, cool skeptical and aloof. He likes things rather than people, working along, and avoiding compromises of viewpoints.

OUTGOING, WARMHEARTED, EASY-GOING, PARTICIPATING: - The person who scores high (Sten of 8 to 10) on factor A tends to be good natured, easy-going, emotionally expressive (hence naturally Affectothymia) ready to
cooperate, attentive to people, soft hearted, kindly, adaptable. He likes occupations dealing with people and socially impressive situations.

**FACTOR B**

| LOWER SCHOLASTIC MENTAL CAPACITY | VS. | HIGHER SCHOLASTIC MENTAL CAPACITY |

*LESS INTELLIGENT. CONCRETE-THINKING:* The person scoring low on factor B tend to be slow to learn and grasp, dull, given to concrete and literal interpretations.

*MORE INTELLIGENT. ABSTRACT-THINKING. BRIGHT:* The person who scores high on factor B tends to be quick to grasps ideas, a fast learner and intelligent.

**FACTOR C**

| LOWER EGO STRENGTH | VS. | HIGHER EGO STRENGTH |

*AFFECTED BY FEELINGS. EMOTIONALLY LESS STABLE. EASILY UPSET:* The person who scores low on factor C tends to be low in frustration tolerance for unsatisfactory conditions, changeable and plastic, evading necessary reality demands neurotically fatigued, fretful, easily emotional and annoyed, active in dissatisfaction, having neurotic symptoms. (Phobias, sleep disturbances, psychosomatic complaints etc.)

*EMOTIONALLY STABLE. FACES REALITY. CALM. MATURE:* The person who scores high on factor C tends to be emotionally mature, stable, realistic about life, unruffled, possessing ego strength, better able to maintain solid group moral.

**FACTOR E**

| SUBMISSIVENESS | VS. | DOMINANCE |

*HUMBLE. MILD. ACCOMMODATING. CONFORMING:* The person who scores low on factor E tends to give way to others, to be docile and to conform. He is often dependent, confessing, anxious for obsessional correctness.
The person who scores high on factor E is assertive, self-assured and independent-minded.

**FACTOR - F**

**DESURGENCY VS. SURGENCY**

The person who scores low on factor F tends to be restrained, reticent, and introspective. He tends to be a sober, dependable person.

_HAPPY-GO-LUCKY, IMPULSIVELY, LIVELY, ENTHUSIASTIC_:- The person who scores high on this trait tends to be cheerful, active, talkative, frank, expressive, effervescent, and carefree. He is frequently chosen as an elected leader.

**FACTOR - G**

**WEAKER SUPER EGO VS. STRONGER SUPER EGO**

_EXPEDIENT, EVADES RULES, FEELS FEW OBLIGATIONS_: The person who scores low on factor G tends to be unsteady in purpose. He is often casual and lacking in effort for group undertakings and cultural demands.

_CONSCIENTIOUS, PERSERVING, STAID, RULE BOUND_: The person who scores high on factor G tends to be exacting in character, dominated by sense of duty, preserving, responsible, plan full. “Fills the unforgiving minutes”.

**FACTOR - H**

**THRECTIA VS. PARMIA**

_SHY, RESTRAINED, DIFFIDENT, TIMID_: The person who scores low on this trait tends to be shy, withdrawing, cautious requiring, a “Wall flower”. He usually has inferiority feelings.
VENTURESOME, SOCIALLY-BOLD, UNINHIBITED, SPONTANEOUS:
- The person who scores high on factor H is sociable, bold, ready to try new things, spontaneous and abundant in emotional response.

FACTOR – I
HARRIA VS. PREMSIA

TOUGH-MINDED, SELF RELIANT, REALISTIC, NO-NONSENSE:- The person who scores low on factor I tend to be practical, realistic, masculine, independent, responsible, but skeptical of subjective, cultural elaborations.
TENDER-MINDED, DEPENDENT, OVER-PROTECTED, SENSITIVE:- The person who scores high on factor I tend to be tender-minded, daydreaming, artistic, fastidious, feminine. He dislikes crude people and rough occupations.

FACTOR – L
ALAXIA VS. PROTENSION

TRUSTING, ADAPTABLE, FREE OF JEALOUSY, EASY TO GET ON WITH:- The person who scores low on factor L tends to be free of jealous tendencies, adaptable, cheerful, un-competitive, concerned about other people, a good team worker.
SUSPICIOUS, SELF OPINIONATED, HARD TO FOOL:- The person who scores high on factor L tends to be mistrusting and doubtful. He is often involved in his own ego, is self-opinionate, and interested in internal, mental life.

FACTOR – M
PRAXERNIA VS. AUTIA

PRACTICAL, CAREFUL, CONVENTIONAL, REGULATED BY EXTERNAL REALITIES, PROPER:- The person who scores low on Factor M tends to be anxious to do the right things, attentive to practical matters and subject to the dictation of what is obviously possible.
The person who scores high on factor M is unconventional, unconcerned over every day matters, self-motivated, imaginatively creative, concerned with "essentials" and oblivious of particular people and physical realities.

**FACTOR – N**

**ARTLESSNESS** VS. **SHREWDNESS**

FORTHRIGHT. NATURAL. ARTLESS. SENTIMENTAL.: The person who scores low on factor N tends to be unsophisticated, sentimental, and simple. He is sometimes crude and awkward, but easily pleased and content with what comes, and is natural and spontaneous.

SHREWED. CALCULATING. WORLDLY. PENETRATING.: The person who scores high on factor N tends to be polished, experienced, worldly, shrewd. He is often hardhearted and analytical. He has an intellectual unsentimental approach to situations.

**FACTOR – O**

**UNTROUBLED ADEQUACY** VS. **GUILT PRONENESS**

PLACID. SELF-ASSURED. CONFIDENT. SERENE.: The person who scores low on factor O tends to be placid, with unshakable nerve. He has a mature, unanimous confidence in himself and his capacity to deal with things.

APPREHENSIVE. WORRYING. DEPRESSIVE. TROUBLED.: The person who scores high on factor O tends to be depressed, moody, a worrier, full of foreboding and brooding. He has a childlike tendency to anxiety in difficulties.

**FACTOR Q1**

**CONSERVATISM** VS. **RADICALISM**

CONSERVATIVE. RESPECTING ESTABLISHED IDEAS. TOLERANT OF TRADITIONAL DIFFICULTIES.: The person who scores low on factor
Q1 is confident in what he has been taught to believe, and accept the “tried and true” despite inconsistencies, when something else might be better. He is cautious and compromising in regard to new ideas.

EXPERIMENTING. CRITICAL, LIBERAL, ANALYTICAL, FREE-THINKING:- The person who scores high on factor Q1 tends to be interested in intellectual matters and has doubts on fundamental issues. He is skeptical and inquiring regarding ideas, either old or new.

FACTOR Q2

GROUP ADHERENCE VS. SELF-SUFFICIENCY

GROUP-DEPENDENT. A 'JOINER' AND SOUND FOLLOWER:- The person who scores low on factor Q2 prefers to work and make decisions with other people, likes and depends on social approval and admiration. He tends to go along with the group and may be lacking in individual resolution.

SELF-SUFFICIENT. PREFERENCES OWN DECISIONS, RESOURCEFUL:- The person who scores high on factor Q2 is temperamentally independent, accustomed to going his own way, making decisions and taking action on his own. He does not dislike people but simply does not need their agreement or support.

FACTOR Q3

LOW INTEGRATION VS. HIGH SELF-CONCEPT CONTROL

UNDISCIPLINED. SELF-CONFLICT. CARELESS OF PROTOCOL FOLLOWS OWN URGES:- The person who scores low on factor Q3 will not be bothered with will control and regard for social demands. He is not overly considerate careful, or painstaking.

CONTROLLED. SOCIALLY PRECISE. FOLLOWING SELF-IMAGE:- The person who scores high on factor Q3 tends to have strong control of his emotions and general behaviour is inclined to the socially aware and careful, and evidences what is commonly termed “self-respect” and regard for social reputation.
FACTOR Q4
LOW ERGIC TENSION VS. HIGH ERGIC TENSION

RELAXED, TRANQUIL, TORPID, UNFRUSTRATED:- The person who scores low on factor Q4 tends to be sedate, relax, composed and satisfied.
TENSE, FRUSTRATED, DRIVEN, OVERWROUGHT:- The person who scores high on factor Q4 tends to be tense, excitable, restless, fretful, and impatient. He is often fatigued, but unable to remain inactive.

Reliability and Validity of 16 P.F :- For knowing the personality traits of Govt. and Private secondary school teachers of Rural and Urban area of four Districts from Haryana State the investigator used the Cattell’s personality Questionnaire (16 P.F.)

It is most competent and valid test of personality. The Cattell’s personality test is an objectively score able test. It measures 16 dimensions or traits of personality, which have been found by psychologists. It is planned for the adult age range and most appropriate for the fully literate person.

<table>
<thead>
<tr>
<th>FACTORS</th>
<th>RELIABILITY</th>
<th>VALIDITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.83</td>
<td>0.92</td>
</tr>
<tr>
<td>B</td>
<td>0.69</td>
<td>0.82</td>
</tr>
<tr>
<td>C</td>
<td>0.73</td>
<td>0.85</td>
</tr>
<tr>
<td>E</td>
<td>0.81</td>
<td>0.89</td>
</tr>
<tr>
<td>F</td>
<td>0.86</td>
<td>0.93</td>
</tr>
<tr>
<td>G</td>
<td>0.66</td>
<td>0.77</td>
</tr>
<tr>
<td>H</td>
<td>0.79</td>
<td>0.89</td>
</tr>
<tr>
<td>I</td>
<td>0.58</td>
<td>0.71</td>
</tr>
<tr>
<td>L</td>
<td>0.62</td>
<td>0.74</td>
</tr>
<tr>
<td>M</td>
<td>0.76</td>
<td>0.84</td>
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<tr>
<td>N</td>
<td>0.62</td>
<td>0.74</td>
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<tr>
<td>O</td>
<td>0.84</td>
<td>0.92</td>
</tr>
<tr>
<td>Q1</td>
<td>0.58</td>
<td>0.70</td>
</tr>
<tr>
<td>Q2</td>
<td>0.69</td>
<td>0.83</td>
</tr>
<tr>
<td>Q3</td>
<td>0.59</td>
<td>0.72</td>
</tr>
<tr>
<td>Q4</td>
<td>0.77</td>
<td>0.88</td>
</tr>
</tbody>
</table>
Description of Teaching Aptitude Test:

A teaching aptitude test can be defined as a test, which measures a person’s potential ability in an act of teaching.

For the present study, the investigator has used the Teaching Aptitude Test, constructed and standardized by Dr. Jai Prakash and Dr. R.P. Srivastava for measuring the teaching aptitude of govt. and private secondary school teachers as it was considered most appropriate on the basis of its responded characteristics.

This test has 10 sub-tests of 15 items each, thus having a total of 150 items, which measure the teaching aptitude.

There is no time limit for the test but generally the examinees should complete it within 30 minutes. The test has the following areas belonging to each of the 10 sub-tests.

1. Cooperative Attitude:

   This trait has been used for measuring the co-operative attitude of the teachers towards their taught, society and the nation. This trait is an essential link for the relationship between the teacher and the taught, the school and the community and the society and the nation.

2. Kindliness:

   The items under this area have been used with regard to the general and particular attention of the teacher, which is to be devoted for full growth and development of the personality of the pupil and to remove the hurdles and handicaps in the way of growth and development of pupil.

3. Patience:

   The patience is an important attribute of teacher’s personality, as he very often meets such a critical situation, which needs patience and tolerance on his part.

4. Wide Interest:

   The teacher is not supposed to stick to his work of teaching the subjects only but he is also an active participant in co-curricular activities outside the institution. He wants to see his taught growing physically, mentally, culturally, socially and in other aspects alike.
5. **Fairness:**
   This element has been taken in the test to measure the fairness and impartiality of the teacher, which are the most essential traits of the teacher’s personality.

6. **Moral Character:**
   Moral status in the opinions of adults, especially concerning their adherence to the adult’s standard, have been tried to see through the items constituting this area.

7. **Discipline:**
   Discipline and problems of conduct in the classroom and elsewhere, and the methods employed in dealing with the problems are contained in this area.

8. **Optimism:**
   This trait is more essential in the teacher’s personality as he is supposed to be always optimistic.

9. **Scholarly Taste:**
   A teacher is always a student in the acquisition of knowledge. He is always thirsty for knowledge, and as such items in this sub-test measure scholarly taste.

10. **Enthusiasm:**
    Enthusiasm is an important element for the personality of a good teacher. The importance of this trait has increased too much in the present age.

* **Weightage to Items:**
   For every item in the test, the weights were determined by a variance and its covariance with other items. In this test, the weights of +3, +2 and +1 were assigned to the right responses of Highly Agreed (HA), Agreed (A) and Indifferent (I) or Highly Disagree (HD), Disagree (D) and Indifferent (I), respectively. In the same way, -3, -2 and -1 were given to the wrong responses of ‘HA’, ‘A’ and ‘I’ or ‘HD’, ‘D’ and ‘I’ respectively. After this, a scoring formula (Lindguist, 1961) rights minus wrongs ($S = R - W$) was adopted to obtain the correct scores. The coefficient of correlation between the raw scores of the test and the rated-scores has been found to be + .579 by Product-Moment Method and this justified the given weightages to a greater extent.
* Validity:

The validity of the test was secured by computing a coefficient of correlation between scores on the test and the assessment marks obtained in the final examinations. The coefficient of correlation between the total marks of theory, practice teaching and craft, and the test score of 200 pupil teachers, was +.5. The obtained validity coefficient is quite satisfactory.

* Cross Validation:

The general psychological readers want to know how well the results hold well in other situations. For this, a fresh group of 50 pupil teachers of Government R.T. College, Rewa, with the same socio-economic and cultural impact and the same educational qualifications were taken for cross-validation as a sample for determining the validity. The test was administered to this group and the results were compared with the ratings of Principal and four Lecturers of the same Institution. The coefficient of correlation came to be +.672 which is higher than +.579 of the earlier experimental group and revealed that the final test is more developed and predictive than the earlier experimental draft.

* Reliability:

The reliability of the test was calculated by Split-Half method using Guttman and Spearman-Brown Prohecy formulas which yielded the coefficient of correlations as +.891 and +.91, respectively, on a sample of 100 cases. The Test-Retest Method on a group of 50 teachers yielded a correlation of +.94. All these coefficients are high and therefore the test has a good reliability. The test has also a higher degree of internal consistency and all the ten traits measure independently their respective qualities irrespective of a moderate over-lapping among four traits. The inter-element correlations between the 10 components mostly center around +.5. Hardly any one of them is less than +.5 and none more than +.547.

3.1.8.2 Administration of the Tests:

These tests were administered on 500 govt. and private sec. school teachers. First of all, the investigator went round the different schools, which were selected for the present study. Prior to administration the cooperation of
the head masters of schools and the members of staff was sought for smooth administration of the test.

1. **Personality Questionnaire (16 F):**

   Firstly for measuring the personality a Reusable Test-Booklet of 9 pages containing sixteen personality factors and an one page answer-sheet for recording the answers (16PF) questionnaire was distributed. The test booklets and answer sheets were distributed to the teachers. All necessary instructions about the particular test were given and the teachers were told to answer the questions frankly as it was not concerned with their academic test; it was simply their personality test. When the instructions were explained the researcher asked the teachers to give the answer of each question as soon as possible.

   It was announced that there is no time limit, yet it should normally be finished within forty to forty five minutes. During the test the meaning of different words were explained time to time by the investigator. When teachers had finished, the answer sheets were collected.

2. **Teaching Aptitude Test: (T.A.T)**

   Secondly for measuring the teaching aptitude TAT was distributed to the same teachers. The test has a Reusable Test-Booklet of 8 pages containing ten parts (or Sub-tests) and two pages Answer-Sheet for recording the answers. The answers to first 75 items are to be recorded on page 1 of the Answer-Sheet, i.e. Parts 1 to 5, and on the back page 2 are parts 6 to 10 running from item number 76 to 150. This means that examinees must be told in the very beginning that they have not to mark any thing on the Test-Booklets so that it can be re-used. The test is un-timed but almost all examinees can easily finish within the normal class period. The following guidelines will be followed for the group test situation.

   The investigator passed out the test-booklets and the separate answer-sheets to the examinees. Teachers were cautioned to make no marks on the test-booklets. They were asked to write at the top of the answer sheet their name, qualification (or grade, class), age, designation, experience (in years), salary (income per month) and other desired information. As soon as all the
examinees were ready to listen, the directions given at the top of the cover page of the test-booklet were read loudly while the examinees read silently.

Then procedure for recording the answers on the answer-sheet explained.

The examinees were made to understand clearly how responses were to be made. As soon as they understood what to do they were instructed to turn over the cover page of the test booklet and start the test proper. Just after the testing was started, the examiner moved rapidly around the group to make sure that everyone was following the instructions. Similarly, before the test-booklets and answer-sheets were taken back from the examinees, the teachers were asked to ensure that they had answered each and every statement.

3.1.8.3 Scoring of the Tests:

1. **Personality Questionnaire (16 P.F.):**

Five hundred teachers were selected for the present study. These were divided into two main groups govt. and private school teachers as well as rural and urban, male and female on the basis of their teaching experience and qualifications. After that scoring of answer sheets will be done with the help of two scoring keys. One scoring key covered factors A, C, F, H, I., N, Q1, Q3 and the other covered the factors B, E, G, I, M, O, Q2 and Q4. First scoring key was placed over the answer sheet. The scores were counted which were visible through the holes for factor A, allowing either 2 or 1, as indicated by the number printed adjacent to the hole. Sum these scores and enter the total in the space indicated for Factor A, but in Factor B each correct mark visible in a hole gives a score of 1 only. Similarly, each factor was scored and raw scores of each factor were obtained.

2. **Teaching Aptitude Test (T.A.T.):**

The T.A.T. is set up to permit the hand scoring of separate answer-sheet. Separate transparent Keys are available for scoring each page of the answer-sheet and for right as well as wrong answers. In all, there are four keys: (i) Right Answers on page 1, (ii) Right Answers on page 2, (iii) Wrong Answers on page 1, (iv) Wrong Answers on page 2, of the answer sheet. Each of the 150 statements of the test has five alternative responses – HA, A, I, D and HD. For scoring these statements, the following general guidelines
apply: (a) examine the answer-sheet to see that only one response has been marked for each item and that it is clearly marked; (b) reject any answer-sheets that show obvious response patterns such as all of the answers in one column, etc; and (c) check to see that all of the items have been answered.

As may be noted, the test has two sets of scoring keys: One, for the Right (R) and the other, for Wrong (W) Score. Accordingly, the weights of +3, +2 and +1 are given to the right responses of HA, A and I or HD, D and I respectively, whichever is correct as is visible through the blank circles of the Right Keys. Similarly, the weights of −3, −2 and −1 are assigned to the wrong answers of HA, A and I or HD, D and I, whichever is visible through the blank circles of Wrong Keys. Thus, the scoring keys give two sets of scores separately, i.e. Right and Wrong Scores. The correct score is obtained by subtracting the Wrong Scores from the Right Scores (R − W) and the remainder is an individual’s raw score.

3.2 Procedure of Data Collection:

The present study was based upon primary data and was conducted through normative survey method of research. The data were collected from the sample by using the above-mentioned tools. For the collection of data the investigator visited himself to the govt. and private secondary schools. Before collecting the data rapport was established with the respondents. The respondents were very much cooperative. Generally they asked two questions when they were requested to fill up tests and scales. Firstly they asked about the utility of filling it out and secondly they were keen to know their results. In reply to the first question they were told that the purpose of this study is to study the personality and teaching aptitude of govt. and private secondary school teachers and find out the differences between govt. and private schools teacher’s personality and teaching aptitude with reference to their sex, teaching experience, qualification and rural-urban background. In reply to the second question the respondents were told that their responses would be used for research purpose only and these would keep completely confidential. After that the tests were distributed individually to the sample. The important instructions related to different tests were clearly told to the respondents. When the respondents filled the given tests, the same were collected. After collecting
the filled tests, the scoring of these were done as per instructions given in the test manuals.

3.3 Testing the Null Hypotheses:

Statistical treatment was method for the data collected to test the null hypotheses formulated for the study, particularly through determining the status of each hypothesis on the basis of ‘t’ value of significance of means of various variables involved in the study. The problem under investigation in the study involved the interpretation of human behaviour, in which case, the level of significance used for the rejection or retention (acceptance) of a null hypothesis is normally seen at .05 ‘t’ value which as per ‘t’ table is 1.96 (Garret, 1979, p. 216). If the ‘t’ value equals or exceeds 1.96.

3.4 Statistical Techniques Used:

There are two main types of statistical techniques to analyze the data namely:-

i) Descriptive Statistics; and ii) Inferential Statistics.

Both the descriptive as well as the inferential statistical techniques were used to analyze the data.

Descriptive Statistics:

Descriptive statistics is used to describe the data that have been collected from a sample. The advantage of descriptive statistics is that they enable the researcher to use one or two statistics such as the mean and standards deviation to represent all the individual scores of subjects in the sample. Descriptive statistics involves measures of central tendency, measures of variability, skewness, kurtosis, estimation of population parameters and graphs.

In the present study, the following descriptive statistical techniques have been used.

Mean: It is used to describe the average of an entire sample scores.

Mean was calculated by using the following formula:-

\[
\text{Mean} = \frac{\sum x}{N}
\]

S.D: The standard deviation, a measure of variability, it is a measure of the extent to which scores in distribution, on an average, deviate from their mean.

Standard deviation was calculated by the following formula:-

\[
\text{S.D.} = \sqrt{\frac{\sum x^2}{N}}
\]

Graphical Techniques: Bar and line diagrams haves been used wherever required.
Inferential Statistics:

Inferential statistics is used to make inferences from sample statistics to the population parameters.

In the present study, the following inferential statistical technique has been used.

**t-test:**

The test of significance between two means is known as 't' test. It involves computation of ratio between observed differences between two sample means and the error variance (the sampling error factor). To test the different variables in terms of personality and teaching aptitude of govt. and private secondary school teachers, the 't' test has been used in this study. "t" value was calculated by the following formula:

\[
 t = \frac{M_1 - M_2}{SEM}
\]

Formula for (SEM):

\[
 SEM = \sqrt{\frac{\sigma^2_1}{N_1} + \frac{\sigma^2_2}{N_2}}
\]

*Testing the level of Significance was done at .05 and at 0.01 level.*