CHAPTER-III

METHODOLOGY
AND
PROCEDURE
CHAPTER-III
METHODOLOGY AND PROCEDURE

INTRODUCTION

The present study was designed to investigate the thinking and teaching styles of teacher educators in relation to their Self-esteem, Job-satisfaction, Gender, Age, Stream, Teaching experience, Academic qualifications and Nature of appointment. Present chapter embodies the descriptions of methodology and procedure adopted in conducting the present study. More specifically, it presents the description of research method, population, sample and sampling, variables, structure, research design, tools used, data collection and scoring, classification of subjects, data organization, tabulation and statistical techniques used.

3.1 RESEARCH METHOD

For conducting any research it becomes inevitable to select the appropriate research method. Depending upon the objectives of the study the descriptive research method deemed appropriate and suitable and was used in the study.

A descriptive study describes 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 influence as they relate to current conditions.

Descriptive research studies are designed to obtain pertinent and precise information concerning the current status of phenomena and, whenever possible to draw valid general conclusions from the facts discovered. Descriptive studies are more than just a collection of data; they involve measurement, classification analysis, comparison and interpretation. They differ from other types of researches in purpose and scope. Descriptive studies involve events that have already taken place and are related to present conditions.
According to Ary et al. (1972) "Descriptive research studies are designed to obtain information concerning the current status of phenomena. They are directed towards determining the nature of a situation as it exists at the time of study. There is no administration or control of a treatment as it is found in experimental research. Their aim is to describe "what exists" with respect to variables or conditions in a situation".

John, W. Best, (1980) holds that “The descriptive research method involves events that have already taken place. The only elements that researcher manipulates his method of observation and description in which he analyses relationships”.

Descriptive studies may be classified in the following categories—1) Survey Studies, ii) Interrelationship studies, iii) Developmental Studies.

Further, this research method is most commonly used in educational research endeavour to study present phenomena in terms of conditions, relationships, practices, beliefs, attitudes, processes and effects of trends and are analysed with the help of observations questionnaire, interview and tests.

3.2 VARIABLES STRUCTURE

In general, variables are those which vary or change from person to person or situation to situation or variables are the conditions or characteristics that the experimenter manipulates, controls or observes. According to Kerlinger (1978), a variable is a symbol to which numerals or values are assigned. A variable refers to any dimension that has two or more changing values. A variable can be defined as an attribute in which individuals differ among themselves.

Variables can be classified in two main categories according to the way they are used in the research. These categories are: 1) Independent Variables, 2) Dependent Variables.
An Independent variable is the presumed cause of the dependent variable, the presumed effect. The independent variable is the antecedent; the dependent is the consequent.

The Independent variables are the conditions or characteristics that the experimenter manipulates or controls in his or her attempts to ascertain their relationship to observed phenomena.

The dependent variables are the conditions or characteristics that appear, disappear or change as the experimenter introduces removes or changes independent variables.

In the present study, five thinking and five teaching styles were considered dependent variables and Self-esteem, Job-satisfaction, Gender, Age, Stream, Teaching experience, Academic qualifications and Nature of appointment as independent variables. The influence of these independent variables was analyzed on dependent variables.

3.3 POPULATION

A population is any group of individuals that have one or more characteristics in common that are of interest to the researcher. The population may be all the individuals of a particular type, or a more restricted part of that group (Best and Kahn, 1993).

A population may refer to any collection of specified group of human beings or of non-human entities such as objects, educational institutions, time units, geographical areas, price of wheat or salaries drawn by individuals. A population can be finite or infinite.

Kempthorne (1961) has distinguish between "experimentally accessible population" and "target population". The former is the population of the subject i.e. available to the researcher for his study. The target population is the total group of subjects about whom the researchers is empirically attempting to learn something.

Population of the present study comprised all teacher educators serving in B. Ed. Colleges of Education of Himachal Pradesh.
3.4 SAMPLE

After defining a population and listing all the units, a researcher selects a sample of units from the list. A good sample must be as nearly representative of the entire population as possible.

A sample is a portion of a population which is selected for the purpose of study or investigation. The essential requirement of any sample is that it is a representative as possible of the population from which it has been drawn. The scope of generalization of the findings depends on the representation of sample. A good sample is marked by three characteristics freedom from bias, representativeness and adequacy in terms of its size.

A sample is small proportion of a population selected for observation and analysis. By observing the characteristics of the sample, one can make certain inferences about the characteristics of population from which it is drawn (John W. Best and James V. Kahn).

Cocharan (1972) has pointed out the following advantages that accrue from using sample rather than the entire population. (a) reduced cost (b) greater speed (c) greater scope (d) greater accuracy.

Mouly (1964) sampling is both necessary and advantageous. Taking a complete census is generally both costly and difficult, in many cases it is completely impossible. What is not so clearly recognized by a lay man, who feels that one takes a sample when he can not get a complete census, is that sampling frequently results in more adequate data than complete census. In an interview study, for example, sampling not only saves money but also permits greater care and controlled to be asserted, it allows for better training and coordination among the interviewers; it permits greater depth in interviewing; it allows the interviews to be conducted in a relatively short time so that the distorting effects of the passage of time are minimized; it also permits greater depth in analysis and greater accuracy in processing.

There are basic two requirements of good sample—it representativeness and its adequacy. If information from sample data is to be generalized to
population, it is essential that sample should be represented of that population. In the strict sense of the term a representative the sample would be a miniature or replica ideally in all respects of the population from which it has been drawn. A good sample not only needs to be representative, it needs also to be adequate or of sufficient size to allow confidence in the stability of its characteristics.

Sampling procedure can be broadly classified in to two categories: (a) probability sampling (b) non-probability sampling.

The probability sampling procedure are based on random selection as the fundamental elements of control permit the specification of the precession that can be obtained and size of the sample required for that purpose. On the other hand, non-probability sample procedures are based on the judgement of the investigator as the most important element of control.

The guiding principles of non-probability sampling procedures are the availability of the subject, the personal judgement of the investigator and convenience carrying out survey.

Young (1968) has suggested three criteria for selecting sampling procedure or constructing a sampling design.

(a) A measurable or known probability sampling technique should be used so that the risk of errors in the sample estimate can be controlled, the degree of confidence that can be placed in the published figures can be pointed out and whether sufficient resources are available to get results from the sample with the reliability required, can be determined in advance.

(b) Simple, straight-forward and workable method adapted to available facilities and personnel should be used.

(c) An attempt should be made to achieve maximum reliability of results for each dollar spent. Striking at an optimum balance between expenditure and a maximum of reliable information should be the guiding principle.

In the present study, the initial sample consisted of 186 teacher educators. Drawn from than existing 31 B.Ed. colleges in Himachal Pradesh. From each B.Ed. college six teacher educators were randomly selected i.e by lottery
method. However, the data of 185 teacher educators was used for analysis as data given by one teacher educator was incomplete.

* List of Colleges is given in appendix

Details of the structure of the sample are given in table 3.1, 3.2, 3.3, 3.4, 3.5 and 3.6 that follows:

Table 3.1
Structure of the Sample Interms of Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>No. of Teacher Educators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>89</td>
</tr>
<tr>
<td>Female</td>
<td>96</td>
</tr>
<tr>
<td>Total</td>
<td>185</td>
</tr>
</tbody>
</table>

Table 3.2
Structure of the Sample Interms of Age

<table>
<thead>
<tr>
<th>Age</th>
<th>No. of Teacher Educators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Age (23 to 32Yrs.)</td>
<td>139</td>
</tr>
<tr>
<td>Average Age (33 to 42 Yrs.)</td>
<td>35</td>
</tr>
<tr>
<td>High Age (43 Yrs. and above)</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>185</td>
</tr>
</tbody>
</table>

Table 3.3
Structure of the Sample Interms of Stream

<table>
<thead>
<tr>
<th>Stream</th>
<th>No. of Teacher Educators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science</td>
<td>100</td>
</tr>
<tr>
<td>Arts</td>
<td>85</td>
</tr>
<tr>
<td>Total</td>
<td>185</td>
</tr>
</tbody>
</table>
Table 3.4
Structure of the Sample Interms of Teaching Experience

<table>
<thead>
<tr>
<th>Teaching Experience</th>
<th>No. of Teacher Educators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low TE (upto 3 Yrs.)</td>
<td>116</td>
</tr>
<tr>
<td>Average TE (4 to 6 Yrs.)</td>
<td>48</td>
</tr>
<tr>
<td>High TE (7Yrs. and above)</td>
<td>11</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>185</strong></td>
</tr>
</tbody>
</table>

Table 3.5
Structure of the Sample Interms of Academic Qualifications

<table>
<thead>
<tr>
<th>Academic Qualifications</th>
<th>No. of Teacher Educators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescribed</td>
<td>110</td>
</tr>
<tr>
<td>Less than Prescribed</td>
<td>75</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>185</strong></td>
</tr>
</tbody>
</table>

Table 3.6
Structure of the Sample Interms of Nature of Appointment

<table>
<thead>
<tr>
<th>Nature of appointment</th>
<th>No. of Teacher Educators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular</td>
<td>65</td>
</tr>
<tr>
<td>Adhoc</td>
<td>120</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>185</strong></td>
</tr>
</tbody>
</table>

From table 3.1, 3.2, 3.3, 3.4, 3.5, and 3.6 it is clear that samples was fairly large and representative of the population.

3.5 TOOLS USED

The research study requires relevant data from many sources direct or indirect. The data should be adequate in quantity and quality and reliable and valid.

Tools are the means of data collection, suitability appropriateness, relevance, reliability, validity and language are the main criteria which serve the basis for selection of research tools.
Bennett (1973) suggests that at least five factors should be taken into account when selecting the tools for data collection. They are mentioned as follows:

1) Reliability: A test is reliable to the extent that it measures whatever it is measuring consistently. How reliable is the measuring instrument and how does its reliability compare with other possible instruments for measuring the same attribute?

2) Validity: In general, a test is valid if it measures what it claims to measure. What evidence is there that the measuring instrument does provide a good assessment of a attribute, as defined by the investigator?

3) Time to Administer: How long does the measuring instrument take to administration and is there sufficient time to use it within the confines of the study?

4) Expertise Required: Does the investigator require special expertise in order to use the instrument or can it be used with standard instructions by anybody?

5) Administration Procedures: What biases are likely to be introduced into the subjects responses depending on the administration procedures employed and situation in which the instrument is used?

Keeping in view the above-mentioned criteria, the following tools were selected for data collection in the present study.

1) Inquiry Mode Questionnaire (In Q) by Harrison and Bramson
3) Self-esteem Inventory (SEI) by Rosenberg.
4) Job-satisfaction Scale by Bradfield and Rothe.

Brief Description of each tool is given below:-

3.5.1 The Inquiry Mode Questionnaire

Thinking styles of teacher educators were measured through Hindi adaptation of Inquiry Mode Questionnaire (by Prof. B.P. Verma). This
questionnaire measure five thinking styles viz. Realist, analyst, pragmatist, idealist and synthesist.

In this questionnaire 18 statements provide different situations. Each item has a statement followed by five choices, each of which represents one of the five thinking styles. A person is supposed to rank the choices based on habitual preferences. The choice most like the person should be ranked 5 and that which least resembles the person should be ranked 1. The total possible score is 270 (Harrison and Bramson, 1977).

Reported test-retest reliabilities range between .61 and .75 for the sub-scales realist, analyst, pragmatist, idealist and synthesist thinking styles. (Bruvold, Parlette, Bramson and Bramson, 1963).

Item analysis showed that the items comprising each sub-test correlated highly with total sub-test scores and differentiated high and low scores in each sub-test.

Factor analysis of the item data provided some support for the five theoretical factors noted as did analysis of average profiles for several occupational and professional groups.

Thus, inquiry mode questionnaire promising new instrument worthy of use coupled with research to assess further its reliability and validity.

Kienholtz and Hritzuk (1986) compared thinking styles of students in architecture and medicine using Harrison and Bramson Inquiry Mode Questionnaire. The findings revealed that mean scores for students in architecture to be higher for the idealist style, while the mean scores for realist style appear higher for the medicine students.

Bruvold, Parlette, Harrison and Bramson (1983) found differences in thinking styles of occupational groups. Personal workers were higher on the pragmatist scale and lowest on the analyst scale, administrators were highest on the synthesist scale but relatively flat on other scales. Insurance staff was quite higher on pragmatist scale and lowest in analyst. Scientists scored served highest on synthesist and idealist and lowest on retest.
Social workers were highest on idealist and lowest on analyst. Finally engineers were highest on analyst.

Verma (2004) reported test retest reliability for five sub-scales of inquiry mode questionnaire on a sample of 20 prospective secondary teachers with a interval of two weeks ranging between .59 and .78 which is parallel to the reliability indices of the author of the test.

<table>
<thead>
<tr>
<th>TS</th>
<th>'r'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synthesist</td>
<td>.75</td>
</tr>
<tr>
<td>Idealist</td>
<td>.62</td>
</tr>
<tr>
<td>Pragmatist</td>
<td>.65</td>
</tr>
<tr>
<td>Analyst</td>
<td>.70</td>
</tr>
<tr>
<td>Realist</td>
<td>.61</td>
</tr>
</tbody>
</table>

InQ sub-test reliability was investigated by test-retest method, which is essentially a measure of temporal stability. The data were obtained from 63 respondents from three university classes during 1981 and 1983. The interval between the first and second test administration was approximately six weeks.

A copy of this tool Hindi adaptation is given in Appendix 'A':-

3.5.2 Teaching Style Inventory

This inventory was constructed and developed by A. F. Grasha (1996). There are 40 items in it; eight items have been assigned to each scale namely, Expert, Formal Authority, Personal Model, Facilitator and Delegator. The respondents are asked to record their responses for each item on 7-point rating scale—strongly disagree 1) Somewhat Disagree (2,3) Neither Disagree nor agree (4) Somewhat agree (5, 6) and strongly agree (7) The minimum score for each scale is 8 and maximum 56.

This tool has been standardised on 351 faculty member of four ranks (Instructor, Assistants, Associates and Professors) drawn from academic discipline areas.
The reliability estimated by Cronbach Alpha ranged for all scales from .68 to .74. Construct validity was established by the author of the tool by relating TSI scores with LSI (Learning Style Inventory) scores and demographic characteristics of teachers and courses.

Grasha (2000) states that the instrument appears to be good at discerning group trends and that is its primary purpose.

In the present study Hindi version of it adopted by Singh (2000) was used. Its brief description is given below:

**Adaptation of Teaching Style Inventory**

As one of the objectives was to adapt “Teaching Style Inventory” in Indian conditions, Hindi version was got examined by two experienced teachers of education who were experts of measurements. On the basis their suggestions, a slight change was made into format to make it usable with Indian subjects for assessment of teaching styles in general. Rating scale was also changed from seven point to five point. A score of 1 was given to strongly disagree and 5 strongly agree. Thus, score for each scale of the inventory ranged from 8 to 40. The minimum obtainable score was 8 and maximum score was 40. Higher level of each scale (or style) was represented by higher score of the subject.

Then “Teaching Style Inventory” was got typed on computer and got photostat to find out it reliability.

A sample of 80 subjects was selected randomly from the population, which included both males and females from undergraduate levels. Adapted version of TSI was administered on the subjects twice with an interval of one month. However, they were told about the purpose and were requested to extend their full co-operation to give the data.

On completion of TSI it was scored with the help scoring key. Thereafter, the correlation between the scores obtained by the teachers on the first and second administration was computed by Pearson’s Product Moment method. The test-retest co-efficient of correlation for each of the 5 scales of TSI is given in Table 3.8.
Test-Retest Reliability Coefficients for 5 Scales of TSI (N=80) (Interval = 1 month)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Teaching Style Inventory</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Expert</td>
<td>0.794</td>
</tr>
<tr>
<td>2.</td>
<td>Formal Authority</td>
<td>0.646</td>
</tr>
<tr>
<td>3.</td>
<td>Personal Model</td>
<td>0.773</td>
</tr>
<tr>
<td>4.</td>
<td>Facilitator</td>
<td>0.774</td>
</tr>
<tr>
<td>5.</td>
<td>Delegator</td>
<td>0.794</td>
</tr>
</tbody>
</table>

It is apparent from the table 3.8 that all the five values were found to be quite satisfactory. An attempt was also made ascertain Cronbach Alpha reliability for each scale. The obtained values have been reported in Table 3.9.

Cronbach Alpha Reliability for the Scales of TSI

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Teaching Style Inventory</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Expert</td>
<td>0.883</td>
</tr>
<tr>
<td>2.</td>
<td>Formal Authority</td>
<td>0.783</td>
</tr>
<tr>
<td>3.</td>
<td>Personal Model</td>
<td>0.872</td>
</tr>
<tr>
<td>4.</td>
<td>Facilitator</td>
<td>0.872</td>
</tr>
<tr>
<td>5.</td>
<td>Delegator</td>
<td>0.879</td>
</tr>
</tbody>
</table>

The above mentioned indices were considered to be quite satisfactory after comparing them with Cronbach Alpha Coefficient Indices estimated by Anthony F. Grasha which raged from 0.68 to 0.74 for all the five scales.

A copy of the adopted version of TSI is given in Appendix ‘B’:

3.5.3 Self-Esteem Scale

Self-esteem of teacher educators was assessed self-esteem scale of Resenberg. This scale was specifically designed by the author for the study reported in his book ‘Society and the Adolescent Self-Image’ (1965).

This scale consists of 10 statements, 5 of which are phrased in a positive direction, with the other 5 in a negative direction, to control for acquiescence. These are related on a four-point scale ranging from strongly agree, to strongly disagree. In general terms item score if positive ones are disagreed with and negative ones agreed with so that high scores reflect low self-esteem. It does
have the merits of ease and economy of time, which derive from administering a short scale.

This scale is an attempt to achieve a unidimensional index of global self-esteem based on the Gattman model and has a reproducibility index of 0.93 and an item scalability of 0.73. Siber and Tippett (1965) obtained a two-week test retest reliability of .85.

The scoring is somewhat confusing and calls for exercise for sufficient care. However, the scale is worthy of high recommendation in view of its wide acceptability, reliability coefficients attained on only 10 terms and considerable evidence for its construct derived from the many theoretical relationship studied and shown to be significant in Rosenberg's (1965) study.

A copy of self-esteem scale is given in appendix 'C':-

3.5.4 Job Satisfaction Index

A Hindi adaptation of Brayfield and Rothe's job satisfaction index by H.C Rathore (1983) was used to measure the job satisfaction of teacher educators included in the sample. After reviewing several tools of job satisfaction, the investigator noticed that Brayfield and Rothe's instrument of job satisfaction adopted by H.C. Rathore was found to be more suitable for the present study. This tool is short and has easy scoring. Moreover, job satisfaction can be inferred from individual's attitudes towards his work. Further, it does not have any item in it which has a bearing on any aspect of the job and it has no cultural bias. Infact, this tool measures only overall feelings of an individual towards his job whatever be the nature of his or her job. It consists of 18 statements using five-category response for each item. There are 9 positive and 9 negative items. Positive items ranges strongly agree to strongly disagree and marks are given as 5, 4, 3, 2 and 1. In case of negative items, scoring is reversed. Viz 1, 2, 3, 4 and 5. Thus maximum possible score for an individual is 90 and minimum is 18. It is a very carefully constructed scale. The author subjected each item of the scale to a process of item analysis and only those items were selected for the final form the scale which discriminated between high and low job satisfied groups. This index
is unidimensional, unifactor and objectively score-able to measure job satisfaction of an individual in any profession he may be.

It is a self-administering tool without any time limit. The subjects are asked to read each item carefully and think as to how far they agree with the statement. This may be administered individually as well as in a group setting.

Bradfield and Rothe reported that correlation between odd and even item scores was obtained as .77 from female office workers. Rathore (1983) computed split half reliability as .80. It is quite satisfactory index of reliability. Bradfield and Rothe reported following types of validity of this tool:

- content validity
- concurrent validity and
- criterion related validity.

A copy of Hindi adapted job satisfaction index is given in appendix ‘D’ :-

3.6 DATA COLLECTION AND SCORING

The data were collected by administering the four tools on the teacher educators on prefixed schedules, on individual basis. Before Administration, however, teachers were told the purpose of the study and were requested to extend their full cooperation in data collection. Necessary instructions were given to the subjects regarding the procedure of recording the responses. No time restriction was imposed in completing the tools.

On completion, tools were collected and their scoring was done with the help of standard scoring keys given by their authors in the respective manual.

3.7 TABULATION AND ORGANIZATION OF DATA

The data were tabulated and organized according to the purpose of the study. The classificatory variable were self-esteem, job-satisfaction, gender, age, stream, teaching experience, academic qualifications and nature of appointment. Therefore, the scores of each thinking and teaching styles were tabulated and organized accordingly. Mean and ± 1 S.D. formula was applied to classify the subjects on self-esteem and Job-satisfaction. Mean + 1 S.D. indicated high level
and Mean - 1 S. D. indicated low level and remaining scores pointed out average level.

3.8 STATISTICAL TECHNIQUES USED

In the present study one-way ANOVA and 't' test were employed to analyse the effects of independent variables on a dependent variables. The obtained ‘F’ and ‘t’ values were evaluated at .05 and .01 level of significance.

3.8.1 One-Way Analysis of Variance (ANOVA)

The analysis of variance technique developed by R. A. Fisher in 1920's. Basically it consists of classifying and cross-classifying statistical results and testing whether means of specified classification differ significantly. In this way it is determined whether the means of a specified classification differ significantly or ANOVA is essentially a procedure for testing the difference among different groups of data for homogeneity.

\[
F = \frac{\text{Variance based on between samples variance}}{\text{Variance based on within samples variance}}
\]

One-way ANOVA – In one-way classification, we consider only one factor and then observe that the reason for said factor to be important is that several possible types of samples can occur within that factor we then determine if there are differences with that factor.

\[
F = \frac{\text{MS between}}{\text{MS within}}
\]

In spite of versatility of “F” test it may be said that a significant “F” ratio is ambiguous since it does not indicate where the difference resides. Hence, in order to locate the exact source of difference in mean, statistical comparison among them are required. The appropriate procedure for making comparison among means depends on whether the comparison are planned or unplanned. In
general a planned comparison are accomplished by "t"- test. Minimum and Clarke (1982) has categorically stated that if the data analysis does not support the presence of differential treatment effects, there would be no justification for further statistical work. Therefore, the present study post-hoc analysis was done by "t" test. In case the obtained "F" ratio was found significant at .05 or .01 level of significance.

The significance of difference between the two means was tested by the "t" - test.

It is pertinent to mention here that two basic assumptions of ANOVA related to normality and homogeneity of data were not tested in the present study prior to the use of ANOVA for the simple reason that F-test is very robust test which is insensitive to such violations if the is large enough.

Graphs were also used to depict the differences in mean scores of thinking styles and teaching styles of comparison groups.

3.8.2 The "t" Test

The index used to find out the significance of difference between the means of the two samples is called "t" test. The following formula was used for "t" test.

\[
t = \frac{M_1 - M_2}{\sqrt{\frac{(SD_1)^2}{N_1} + \frac{(SD_2)^2}{N_2}}}
\]

- \(M_1\) = Mean of group 1
- \(M_2\) = Mean of group 2
- \(SD_1\) = Standard deviation of Group 1
- \(SD_2\) = Standard deviation of Group 2
- \(N_1\) = Number of teachers in Group 1
- \(N_2\) = Number of teacher in Group 2

3.8.3 Pearson's Correlation ('r')

3.8.3.(i) Coefficient of Correlation
For expressing the degree of relationship quantitatively between two sets of measures or variables, we usually take the help of an index i.e. known as coefficient of correlation. It is a kind of ratio which expresses the extent to which changes in one variable are accompanied by changes in the other variable. It involves no units and varies from -1 (indicating perfect negative correlation) to +1 (indicating perfect positive correlation). In case the coefficient of correlation is zero, it indicates zero correlation between sets of measure.

There are two different methods of computing coefficient of correlation:

1) Rank difference method (Spearman Method)
2) Product Moment Method (Pearson's Method)

**Pearson's ('r')**

It is a measure of correlation which is applied when the data represents either interval or ratio scale. It takes into account each and every score and produces a coefficient between .00 and ±1.00. It is computed by the following formula:

\[
 r = \frac{N \sum XY - \sum X \sum Y}{\sqrt{[N \sum X^2 - (\sum X)^2][N \sum Y^2 - (\sum Y)^2]}}
\]

**X** and **Y** = Raw scores in the test.

**XY** = Sum of the products of each X scores multiplied with its corresponding Y scores.

**N** = Total number of cases or scores.