CHAPTER – 3

Methodology

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3.2 Population of the Study
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CHAPTER - 3

METHODOLOGY

As mentioned in the previous chapters the present research was initiated to investigate the impact of emotional maturity, hardiness and job satisfaction on teaching effectiveness of school teachers. The study also intended to find out the effect of demographic variables (gender, marital status and teaching experience) on teaching effectiveness of school teachers. The main objectives of the present study were: (1) to investigate the impact of emotional maturity on teaching effectiveness of school teachers i.e. to what extent emotionally mature and immature teachers differ with respect to teaching effectiveness, (2) to investigate the impact of hardiness on teaching effectiveness of school teachers i.e. to what extent hardy and non hardy teachers with respect to their teaching effectiveness, (3) to explore the impact of job satisfaction on teaching effectiveness of school teachers i.e. to what extent job satisfied and dissatisfied teachers differ with respect to their teaching effectiveness, (4) to examine the various interactional effects of independent variables (emotional maturity, hardiness and job satisfaction) on the dependent variable i.e. teaching effectiveness, (5) to study the combined and individual effects of selected independent variables viz. emotional maturity, hardiness and job satisfaction on the teaching effectiveness of school teachers, (6) to study the effect of some demographic variables (gender, marital status and teaching experience) on teaching effectiveness of school teachers, (7) to study the combined effect of emotional maturity, hardiness and job satisfaction on teaching effectiveness of school teachers with respect to different demographic variables. To be more specific the present study was designed to answer the following questions:

1. Do emotional maturity and emotional immaturity have differential effect on teaching effectiveness of school teachers?

2. Do hardiness and non hardiness have differential effect on teaching effectiveness of school teachers?

3. Do job satisfaction and job dissatisfaction have differential effect on teaching effectiveness of school teachers?
4. Is there any interactional effect of emotional maturity and hardiness on teaching effectiveness of school teachers?

5. Is there any interactional effect of emotional maturity and job satisfaction on teaching effectiveness of school teachers?

6. Is there any interactional effect of hardiness and job satisfaction on teaching effectiveness of school teachers?

7. Is there any interactional effect of emotional maturity, hardiness and job satisfaction on teaching effectiveness of school teachers?

8. What is the extent of combined and individual effects of emotional maturity, hardiness and job satisfaction on teaching effectiveness of school teachers?

9. Do the demographic variables (gender, marital status and teaching experience) have significant effect on teaching effectiveness of school teachers?

10. What is the extent of combined effect of emotional maturity, hardiness and job satisfaction on teaching effectiveness of school teachers with respect to different demographic variables (gender, marital status and teaching experience)?

3.1) Design of the study

In order to answer the above questions a $2 \times 2 \times 2$ factorial design in which three personality variables (emotional maturity, hardiness and job satisfaction) each varying in two ways, was used in the present study. The two values of first personality variable i.e. emotional maturity were (a) emotionally mature and (b) emotionally immature; similarly the two values of second personality variable i.e. hardiness were (a) hardy and (b) non hardy. The third variable was also varied in two ways as (a) job satisfied and (b) job dissatisfied. Thus there were eight groups of school teachers as given below:

Group I: Emotionally mature, Hardy and Job satisfied teachers.

Group II: Emotionally mature, Hardy and Job dissatisfied teachers.

Group III: Emotionally mature, Non hardy and Job satisfied teachers.

Group IV: Emotionally mature, Non hardy and Job dissatisfied teachers.
Group V: Emotionally immature, Hardy and Job satisfied teachers.

Group VI: Emotionally immature, Hardy and Job dissatisfied teachers.

Group VII: Emotionally immature, Non hardy and Job satisfied teachers.

Group VIII: Emotionally immature, Non hardy and Job dissatisfied teachers.

The design of the present study is diagrammatically shown in Figure 3.1.

![Diagram showing the design of the study](image)

Table 3.1: Schematic layout for design of the study.

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>(N=75)</td>
<td>(N=75)</td>
<td>(N=75)</td>
<td>(N=75)</td>
<td>(N=75)</td>
<td>(N=75)</td>
<td>(N=75)</td>
<td>(N=75)</td>
</tr>
</tbody>
</table>

3.2) Population of the study

The population of the present study comprised of the teachers teaching in schools affiliated to Central Board of Secondary Education (CBSE) from Aligarh district and New Delhi.

3.3) Sample and Data Collection

In order to make the above mentioned eight groups of teachers, the researcher initially administer tests on a large sample of teachers (2000) teaching in CBSE schools of Aligarh and New Delhi. They were motivated and persuaded to give honest and frank responses and were ensured that the data will be used only for the research purposes. Initially three tests namely, Emotional Maturity Scale (EMS), Singh Psychological...
Hardiness Scale (SPHS) and Job Satisfaction Scale (JSS) were administered by the investigator herself adhering strictly to the instructions (given in the manual of the authors) of the tests. Each data sheet was scrutinised instantly for correction, if any. On the basis of scores obtained on all the tests, the researcher was able to accomplish the herculean task of making eight groups of school teachers comprising of 75 teachers each to make a total working sample of 600 teachers. The final sample was achieved purposive convenient sampling technique. Finally Teacher Effectiveness Scale (TES) was administered on these 600 teachers for collecting teacher effectiveness raw scores. This process of group formation and data collection was time consuming and took about 15 months. Distribution of these 600 teachers with respect to demographic variables is shown in Figure 3.2.

![Figure 3.2: Distribution of sampled teachers with respect to demographic variables.](image)

### 3.4) Tools
As far as the tools of the study are concerned, only the standardized tests were employed for obtaining reliable and valid data for dependable results. The selection of tools was governed by the consideration of their availability, suitability to the sample, validity and reliability. The tools used for data collection in the present investigation are listed below:

1. Teacher Effectiveness Scale (TES) developed by Dr. Pramod Kumar and Dr. D. N. Mutha (1999 Revised).
2. Emotional Maturity Scale (EMS) developed by Dr. Yashvir Singh and Dr. Mahesh Bhargava (2010 Revised).

3. Singh Psychological Hardiness Scale (SPHS) developed by Dr. Arun Kumar Singh (2008).

4. Job Satisfaction Scale (JSS) developed by Dr. Amar Singh and Dr. T., R., Sharma (2009 Revised).

3.4.1) Teacher Effectiveness Scale (TES)

It is generally agreed that the goodness of an educational programme to a large extent is dependent on the quality of its teachers available to implement it. The problem of identification of effective teachers is therefore, of prime importance for realising desirable educational goals. An effective teacher may be understood as one who helps development of basic skills, understanding, proper work habits, desirable attitudes, value judgement and adequate personal adjustment of the students (Ryan, 1969). A standardised Likert type Teacher Effectiveness Scale (1999 Revision) has been used for the present investigation for measuring the teacher effectiveness of school teachers developed by Dr. Pramod Kumar and Dr. D. N. Mutha. The important factor for choosing this scale is the concept of teacher effectiveness adopted by this scale covering broad areas of teacher effectiveness. TES consist of 69 highly discriminating positively worded items.

Reliability of TES

The split half reliability (correlating the odd/even items) of the scale, applying the Spearman-Brown formula is found to be 0.67 (N = 100) with an index of reliability of 0.82. The test-retest reliability of the scale is 0.75 (N = 60), with an index of 0.85, with two months’ interval time (Kumar & Mutha, 1974). The two r-values have been found to be significant at 0.01 level, showing the scale is highly reliable both in terms of its internal consistency and stability of scores.

<table>
<thead>
<tr>
<th>Reliability</th>
<th>N</th>
<th>r-value</th>
<th>Index of reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Split–half</td>
<td>100</td>
<td>0.67</td>
<td>0.82</td>
</tr>
<tr>
<td>Test–retest</td>
<td>60</td>
<td>0.75</td>
<td>0.85</td>
</tr>
</tbody>
</table>
Validity of TES

The face validity of the measures is fairly high. The content validity is ensured as the items for which there has been hundred percent agreements amongst judges regarding their relevance to teacher effectiveness are included in the scale. Further scale has been validated against principals’ ratings. The correlation between principals’ rating and self rating is found to be 0.77 (N = 50), with an index of reliability of 0.87.

Scoring of TES

All the 69 items of the scale are positively worded. Items are given a score of ‘5’, ‘4’, ‘3’, ‘2’, ‘1’ for ‘strongly agree’, ‘agree’, ‘undecided’, ‘disagree’, ‘strongly disagree’. The sum of these values gives the total teacher effectiveness score for the subject.

3.4.2) Emotional Maturity Scale

For having an idea about the levels of emotional maturity of school teachers, Emotional Maturity Scale (2010, Revised version) by Yashvir Singh and Mahesh Bhargava was used that seeks information about the following five factors of emotional maturity:

a) Emotional Stability: Emotional stability refers to the characteristics of a person that does not allow him to react excessively or given to swings in mood or marked changes in any emotive situation. The emotionally stable person is able to do what is required of him in any given situation. Contrary to it emotional unstaability is a tendency to quick changing and unreliable responses and is a factor representing syndrome of irritability, stubbornness, and temper tantrums, lack of capacity to dispose off problems and seek help for one’s day to day problems. This group factor has a high correlation (0.75) with the total score obtained on the scale.

b) Emotional Progression: Emotional progression is the characteristic of a person that refers to a feeling of adequate advancement and growing vitality of emotions in relation to the environment to ensure a positive thinking imbued with righteousness and contentment. Whereas emotional regression is also a broad group of factors representing such syndromes as feeling of inferiority, restlessness, hostility, aggressiveness and self centeredness. This factor has a high correlation (0.63) with the total score on all the five factors of the scale.
c) **Social Adjustment:** Social adjustment refers to a process of interaction between the needs of a person and demands of the social environment in any given situation so that they can maintain and adapt a desired relationship with environment. Therefore, it may be described as a person’s harmonious relationship with his social world. Whereas socially maladjusted person shows lack of social adaptability, showed hatred, seclusive but boasting, liar and shirker.

d) **Personality Integration:** Personality integration is the process of firmly unifying the diverse elements of an individual’s motives and dynamic tendencies, resulting in harmonious coactions and de-escalation of the inner conflict in the undaunted expression of behaviour, whereas disintegrated personality includes all those symptoms like reaction, phobias formation, rationalization, pessimism, immorality etc. such a person suffers from inferiorities and hence reacts to environment through aggressiveness, destruction and has distorted sense of reality. In brief such a person shows varied degrees of neuroticism.

e) **Independence:** Independence is the capacity of a person’s attitudinal tendency to be self reliant or of resistance to control by others, where he can take his decisions by his own judgement based on facts by utilizing his intellectual and creative potentialities. He would never like to show any habitual reliance upon another person in making his decisions or carrying out difficult actions, whereas a depended person shows parasitic dependence on other, is egotistic and lacks objective interest.

**Reliability of EMS**
The reliability of the test was determined by (1) test-retest method, and (2) internal consistency.

**Test-retest Reliability:** The test-retest reliability was calculated on a sample of 150 subjects. The time interval between the two testing was that of six months. The product moment $r$ between the two testing was 0.75.

**Internal consistency:** The internal consistency of the scale was checked by calculating the coefficients of correlation between total scores and scores on each of the five areas. Table given below show the value of internal consistency.
Table 3.2: Internal Consistency of EMS.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Areas</th>
<th>r- value</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>Emotional stability</td>
<td>0.75</td>
</tr>
<tr>
<td>b.</td>
<td>Emotional progression</td>
<td>0.63</td>
</tr>
<tr>
<td>c.</td>
<td>Social adjustment</td>
<td>0.58</td>
</tr>
<tr>
<td>d.</td>
<td>Personality integration</td>
<td>0.86</td>
</tr>
<tr>
<td>e.</td>
<td>Independence</td>
<td>0.42</td>
</tr>
</tbody>
</table>

Validity of EMS

The scale was validated against external criteria, i.e. the (d) area of the adjustment inventory by Sinha and Singh. The inventory has (d) area measuring emotional adjustment. The number of items of this area is 21. Product moment correlation obtained between total scores on all 21 (d) items and total scores on EMS was 0.64 (N = 46).

Scoring of EMS

Emotional maturity scale has a total of 48 items under the five categories. EMS is a self–reporting five point scale. Items of the scale are in question form demanding information for each in either of the five options viz. ‘very much’, ‘much’, ‘undecided’, ‘probably’, ‘never’. The items are so stated that if the answer is very much a score of ‘5’ is given; for much ‘4’; for undecided ‘3’; for probably ‘2’; and for negative answer never, a score of ‘1’ is to be awarded. All the statements are negatively worded, therefore the higher the score on the scale, greater the degree of emotional immaturity and vice–versa.

3.4.3) Singh Psychological Hardiness Scale (SPHS)

There are some persons who actually seem to thrive on stress instead of letting the stress wear them down. Such persons are called hardy personality, a term first coined by Suzanne Kobasa (1979). For measuring the hardiness level of the subjects the researcher used Singh Psychological Hardiness Scale (SPHS). The SPHS has been prepared and standardized by Dr. Arun Kumar Singh (2008) in Indian Situations.
Reliability of SPHS

SPHS has both sufficient degree of test retest reliability and internal consistency reliability. For calculating the test retest reliability, the scale was administered twice, with a gap of 14 days on a sample of 200 subjects. The test retest reliability was found to be 0.862 which was significant at 0.01 level, likewise, the internal consistency reliability as indicated by the coefficient of alpha was found to be 0.792 which was significant (Cronbach, 1951; Kaiser & Michael, 1975; Novich & Lewis, 1967). Thus SPHS possessed a sufficient degree of reliability.

Validity of SPHS

SPHS has also a sufficient degree of content validity. A group of experts (N = 12) provides a high level of consensus regarding suitability of items in terms of being important indices of three components of psychological hardiness, i.e. commitment, control and challenge. The overall coefficient of concordance of the rankings of 12 experts was 0.74, which was significant and it provided evidence for the content validity of the whole scale. The index of reliability based upon test retest reliability coefficient was 0.92 and based upon coefficient of alpha was 0.89 which meant that the test measured true ability to the extent expressed by r of 0.92 and 0.89 (Singh, 2008).

Scoring of SPHS

Every item of SPHS has been provided five response categories namely ‘strongly agree’, ‘agree’, ‘neutral’, ‘disagree’, and ‘strongly disagree’. All items except item no 17, 21, 25, 28 would be given a score of 5, 4, 3, 2, 1 for the above five categories of responses respectively. Since these items (17, 21, 25, and 28) are negative, they would be given a score of 1, 2, 3, 4 and 5 for the above five categories of responses respectively. Subsequently the scores earned by the testee on each item are added to yield a total score. Higher the score higher is the magnitude of psychological hardiness.

3.4.4) Job Satisfaction Scale (JSS)

For measuring the level of job satisfaction, Job Satisfaction Scale (2009 Revised version) developed by Dr. Amar Singh and Dr. T., R., Sharma was employed. It consists of 30 statements which are categorised as:

1. Job – Intrinsic statements (factors inherent in the job)
a) Job concrete statements such as excursions, place of posting, working conditions:
   6, 11, 13, 19, 23, and 25
b) Job abstract statements such as cooperation, democratic functioning etc.
   8, 15, 16, 17, 20, 21, and 27

2. Job – Extrinsic statements (factors residing outside the job)
   a) Psycho – social such as intelligence, social circle:
      1, 3, 4, 7, 10, 12, 26, and 30
   b) Economic such as salary, allowance:
      2, 5, 9, 18
   c) Community/ National growth such as quality of life, national economy:
      14, 22, 24, 28, and 29

Reliability and Validity of JSS
The test- retest reliability works out to be 0.978 with N = 52 with a gap of 25 days.
The scale compares favourably with Muthayya’s job satisfaction questionnaire giving
a validity coefficient of 0.743.

Scoring of JSS
The scale has both negative and positive statements, each having five alternatives
from which a respondent has to choose any one which candidly expresses his response. Items at Sr. No. 4, 13, 20, 21, 27, and 28 are negative, others are all positive. The positive statements carry a weightage of 4, 3, 2, 1 and 0 and the negative ones a weightage of 0, 1, 2, 3, and 4. The total score gives a quick measure of satisfaction/dissatisfaction of a worker towards his job.

3.5) Statistical Treatment of the Data
In the present study, several statistical techniques were employed by the researcher for analysing the quantitative data in accordance with the nature of variables involved and objectives of the study. Factorial analysis of variance was employed to evaluate the differential effects and interactive effects of emotional maturity, hardiness and job satisfaction on teaching effectiveness of school teachers and to determine the proportion of variance accounted by these independent variables, multiple regression analysis was used. In addition, t-test was employed to evaluate the significance of difference in the degree of teaching effectiveness with respect to gender and marital
status; however, F test was applied to find out the significance of difference on the measure of teaching effectiveness with respect to different years of teaching experience and to ascertain the real position of significance difference between the groups, post hoc comparisons were done by t-test. The results of data have been reported separately in chapter 4.

**Factorial ANOVA**

As the present study includes $2 \times 2 \times 2$ design, a $2 \times 2 \times 2$ factorial ANOVA is used for analysing the data. Factorial Designs are used for the implementation of multiple factors in which all possible combinations of all the selected values of independent variables are used in a single study. Factorial ANOVA is the statistical method that analyses the independent and interactive effects of two and more than two independent variables on a dependent variable. In the present investigation fixed effect model factorial ANOVA is employed in which within groups mean square is always used as the correct error term. This technique involves ANOVA and the various components of variances are estimated. Here the between group sum of squares are further broken down separately for each independent variable to produce F ratios for main effects and interaction effects of the independent variables.

**Multiple Regression Analysis**

Multiple Regression Analysis was performed to determine the proportion of variance in the dependent variable as explained by the independent variables. It also intended to find out the combined effect of independent variables on the dependent variable. It helps in determining the potential relationship or shared common variance between the predictor and the criterion variable where dependent variable being the criterion variable and independent variable the predictor. The formula for multiple regression is just an extension of linear regression.

\[
Y = a + b1X1 + b2X2 + \ldots
\]

Where,

- $Y =$ variable to be predicted
- $a =$ constant or intercept
- $b =$ slope of prediction
- $X =$ score of predictor.
t-test

The t-test is the most commonly used method to test the significance of difference between means of two groups. The formula for t-test is:

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

\[
\sigma_D = \sqrt{\frac{N_1 \sigma_1^2 + N_2 \sigma_2^2 [N_1 + N_2]}{N_1 - N_2 - 2 [N_1 N_2]}}
\]

Where,
- \( t \) = t-ratio.
- \( M_1 - M_2 \) = difference between two means.
- \( \sigma_D \) = standard Error of difference between means.
- \( N_1, N_2 \) = number of scores.
- \( \sigma_1, \sigma_2 \) = S.D of scores.

F test

F test or the Analysis of Variance technique is used for testing simultaneously the difference between several sample means. Method of ANOVA uses variances entirely in which the between group variance and within group variances are pitted against each other to provide the F ratio.

\[
F = \frac{\sigma_b^2}{\sigma_w^2}
\]

Where,
- \( F \) = F ratio
- \( \sigma_b^2 \) = between group variance
- \( \sigma_w^2 \) = within group variance

All statistical analyses were conducted using SPSS for windows v. 16.0 (SPSS Inc. Chicago).

{The next chapter deals with presentation, analysis and interpretation of results}