CHAPTER-III

RESEARCH DESIGN

Research is an endless quest for knowledge and an unending search for truth. It brings to light new knowledge or correct previous errors and misconceptions and adds information in an orderly way to the existing body of knowledge. The knowledge obtained by research is scientific and objective and is a matter of rational understanding, common verification and experience. Research is considered to be the more formal, scientific and intensive process of carrying on the scientific method of analysis, it involves a more systematic structure of investigation usually resulting in some sort of formal record of procedure and a report of results or conclusions (J.W. Best).

The formidable problem that follows the task of defining the research problem is the preparation of the design of the research project, popularly known as “the research design.” A design is a plan or strategy of investigation conceived so as to solve the research problem. Design and procedure constitute an important part of research. Without a design, research study is just like the building construction without any plan or map. The design enables us to answer research questions as validly, objectively, precisely and economically as possible.

In this context, Kerlinger (1986) remarked that research designs are invented to enable investigators to answer research questions as validity, objectively, accurately and economically as possible. Van Dalen (1973) has rightly said that research is not to be divided into watertight compartments. He stated, “Research is often a confused, floundering process rather than a logical, orderly one. An investigator does not tackle one step at a time, complete that process, and then move on the next step. He may tackle the steps out of order, shuffle back and forth between steps, or work on two steps more or less simultaneously; when the investigator reports his findings to the scientific community, however, he structures his presentation in a precise and logically arranged form which closely parallels the steps of the scientific method”. Thoughtlessness in designing any research proposal leads to blind alleys and renders the research effort futile.
In the light of above description and keeping in view the various research designs discussed by Travers (1970), Best (1977) and Tuckman (1978) suitable different problems, the present investigator followed the design of the study employed, sample selected, tools used, procedure adopted for data collection and statistical treatment carried out in the present chapter.

The present study aimed at examining the occupational self efficacy, job satisfaction and attitude towards teaching profession among teachers working in teachers’ training institutions.

3.1 DESIGN OF THE STUDY

In the present study, normative survey method was used. This method is concerned with the phenomena that are typical of the normal conditions. It investigates into the conditions or relationships that exist in practices, prevailing beliefs, point of view or attitudes that are held, processes that are going on, influences that are felt and trends that are developing.

In this study, the main effects of gender, academic stream and teaching experience on Occupational Self Efficacy, Job Satisfaction and Attitude towards Teaching Profession among teachers were studied separately. An attempt was also made to find out the interaction effect of gender and academic stream; academic stream and teaching experience; gender and teaching experience on occupational self efficacy, job satisfaction and attitude towards teaching profession among teachers separately. An interaction effect of all the independent variables (gender, academic stream and teaching experience) on the dependent variables (Occupational self efficacy, job satisfaction and attitude towards teaching profession) in the present study was also explored separately. The subjects were given different designations and made groups to find out the interaction effect.

MSGMTE : Male + Science Group + More Teaching Experience
MSGLTE : Male + Science Group + Less Teaching Experience
MAGMTE : Male + Arts Group + More Teaching Experience
MAGLTE : Male + Arts Group + Less Teaching Experience
FSGMTE : Female + Science Group + More Teaching Experience
FSGLTE : Female + Science Group + Less Teaching Experience
3.2 POPULATION

A population is any groups of individuals that have one or more characteristics in common that are of the interest to the investigator. It may be all the individuals of a particular type or a restricted part of that group (Best, 1977). Thus a population refers to any collection of specified group of human beings or of non-human entities such as objects, educational institutions, time units, geographical areas or salaries etc. Teachers working in self-financing teacher training institutions affiliated to Maharshi Dayanand University, Rohtak in Haryana constituted the target population of the present study.

3.3 SAMPLE

Measuring the entire population is impracticable though not entirely impossible. Therefore, a sample from the population concerned may be drawn for the
purpose. In the present study, multi-stage random sampling technique was used to select the sample of 300 teachers working in teacher training institutions. In order to keep the study manageable and to select a sample that is true representative of the population, first it was planned that various self-financing teacher training institutions affiliated to M.D. University, Rohtak located in different areas will be categorized into nine districts and then out of these nine, five districts will be selected randomly. Thereafter out of these five districts, twelve teacher training institutions will be chosen randomly from each of the chosen districts. Therefore, sixty teacher training institutions will represent the whole population.

For the purpose, each district was written on a separate chit and each chit was folded and then was put in a box along with other chits. At first stage of the sampling, from the box five chits were randomly drawn and that were of the districts namely, Rohtak, Sonepat, Bhiwani, Gurgaon and Jhajjar. At the second stage, all the teacher training institutions of these districts were listed and written on separate chits and twelve chits were randomly picked from each district. Hence, 60 institutions were selected (Appendix-F). Since each institution was having 7 to 14 teachers (intake of one unit or two unit), at the third stage five teachers of each institution were selected randomly that constituted the sample of 300 teachers for the present investigation. These were further stratified on the basis of gender, academic stream and teaching experience. The teachers having above three years teaching experience were considered as more experienced teachers. The teachers having less than three years teaching experience were considered as less experienced one. The final sample of 240 teachers as per the requirement of the $2 \times 2 \times 2$ cells (30 in each cell) of the paradigm was chosen.

For this the teacher educators of male and female were divided in to four parallel groups — Science group having more teaching experience, Science group having less teaching experience, Arts group having more teaching experience and Arts group having less teaching experience. From each of these groups, 30 teacher educators were selected randomly, that is 30 from each combination group. In this way final sample comprised 240 teacher educators as given in the following table 3.1:
### Table 3.1
**Distribution of Sample (N=240)**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Teacher educators of Science Group (120)</th>
<th>Teacher educators of Arts Group (120)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male (120)</td>
<td>Having more teaching experience (30)</td>
<td>Having more teaching experience (30)</td>
</tr>
<tr>
<td></td>
<td>Having less teaching experience (30)</td>
<td>Having less teaching experience (30)</td>
</tr>
<tr>
<td>Female (120)</td>
<td>Having more teaching experience (30)</td>
<td>Having more teaching experience (30)</td>
</tr>
<tr>
<td></td>
<td>Having less teaching experience (30)</td>
<td>Having less teaching experience (30)</td>
</tr>
</tbody>
</table>

### 3.4 TOOLS USED
1. Personal Data Sheet prepared by the Investigator
2. Occupational Self Efficacy Scale (OSES) developed by Sanjyot Pethe, Sushma Chaudhari and Upender Dhar (1999) was used to assess the occupational self efficacy of teachers.
3. Teacher’s Job Satisfaction Scale (TJSS) developed by Yudhvirendra Mudgil, I.S. Muhar and Prabha Bhatia (1991) was used to assess the job satisfaction of teachers.
4. Teacher Attitude Scale (TAS) developed by J.C. Goyal (2004) was used to measure attitude of teachers towards teaching profession.

### 3.5 DESCRIPTION OF TOOLS USED.

#### 3.5.1 Personal Data Sheet
Personal Data Sheet developed by the investigator was used for getting personal information with respect to gender, qualification, teaching experience, academic streams etc. A copy of Personal Data Sheet is given at Appendix-A.

#### 3.5.2 Occupational Self Efficacy Scale (OSES)
The scale developed by Sanjyot Pethe, Sushma Chaudhari and Upender Dhar was used to assess the occupational self efficacy of teachers working in teacher training institutions (Appendix-B). This scale is self administering and does not require the services of highly trained tester. It is eminently suitable for group as well as individual testing and can be used for research and survey purposes. This scale contains 19 items corresponding to six factors. These are confidence, command,
adaptability, personal effectiveness, positive attitude and individuality. Confidence is dependence on one’s own abilities. Items 10, 11, 12 and 13 measure this factor. Command is sense of control over the situation. Items 4, 6 and 17 measure this factor. Adaptability is ability to adjust, measured by items 2, 5 and 9. Personal effectiveness is the inclination towards continuous development, measured by items 1, 14, 18 and 19. Positive attitude is the ability to evaluate optimistically. Items 3, 7 and 8 contribute to this factor. Individuality is independence in making decisions and setting standards for performance. This factor is measured by items 15 and 16.

**Reliability**

The odd-even reliability of the scale was determined by calculating reliability coefficient, corrected for full length for a sample of 220 subjects. The reliability coefficient of the scale is = 0.98.

**Validity**

Besides face validity, as all items in the scale are concerned with the variable under focus, the scale has high content validity. It is evident from the assessment of judges/experts that items of the scale are directly related to the concept of self efficacy. In order to find out the validity from the coefficient of reliability (Garrett, 1981), the reliability index was calculated. The later has indicated high validity on account of being 0.99.

**Administration**

The instructions printed on the response sheet are sufficient to take care of the questions that are asked. No time limit should be given for completing the scale. However, most respondents complete it in about 10 minutes. Before administering the scale, it is advisable to emphasize orally that responses should be checked as quickly as possible and sincere cooperation is sought for the same. The respondents should be told that results of the scale help in self knowledge and the responses will be kept confidential. It should also be emphasized that there is no right or wrong answer to the statements. The statements are designed to have differences in individual reactions to various situations. The scale is meant to know the difference between individuals and not meant to rank them as good or bad. It should be duly emphasized that all statements have to be responded and no statement should be left unanswered. It is not
desirable to tell the subjects the exact purpose for which the test is used. Though the scale is self-administering, it has been found useful to read out the instructions printed on the response sheet to the subjects.

**Scoring**

Manual scoring is done conveniently. Each item or statement should be scored 5 for strongly agree, 4 for agree, 3 for neutral, 2 for disagree and 1 for strongly disagree. Sum of the scores is the Occupational Self Efficacy Score. Individuals with very high scores are considered to have very high level of occupation self efficacy and are likely to be high performers.

3.5.3 Teacher’s Job Satisfaction Scale (TJSS)

The scale developed by Yudhvirendra Mudgil, I.S. Muhar and Prabha Bhatia was used to assess the job satisfaction of teachers (Appendix-C). This scale provides a handy instrument for the degree of job satisfaction enjoyed by the college and university teachers. The scale has 75 items based on likert scaling technique. They are presented on five point scale. The individuals scoring high will be having high job satisfaction while the individuals scoring low will be rated as having low job satisfaction. The middle range of scores indicates moderate degree of job satisfaction.

**Reliability**

The reliability was worked out by both the split half and test-retest methods. The reliability coefficients were 0.85 and 0.95 respectively.

**Validity**

The scale was validated against Brayfield and Rather’s (1951) Job Satisfaction index. The validity coefficient was worked out and it was found to be 0.87. Since both the reliability and validity coefficients were significant at 0.01 levels, the scale was finally prepared.

**Administration**

The following instructions are to be given to the subjects.

Please read the items one by one on the next pages. Each statement/item is followed by the five response categories, i.e. Strongly Agree, Agree, Indifferent or Uncertain, Disagree, Strongly Disagree. In case you strongly agree with a particular statement please tick mark (√) the cell (□) under strongly agree. Before recording the
response, be sure how strongly you agree or disagree and tick the cell in the appropriate response category.

It is necessary to answer each and every item. Only one response is to be ticked for each statement. There is no time limit and there are not right or wrong answers. In case you have any difficulty with regard to the instructions, please get it clarified before passing on to the next pages for answering the various items.

**Scoring**

The final version consists of items where a respondent has to make his/her agreement with each item on a five point scale. All these items are given a score from 5 to 1 i.e. strongly agree to strongly disagree. The sum of these values gives the job satisfaction scores for the subject.

**3.5.4 Teacher Attitude Scale (TAS)**

The scale developed by Dr. J.C. Goyal was used to measure attitude of teachers towards teaching profession (Appendix-D). The Teacher Attitude Scale (TAS) has high reliability and validity. It concentrates only on one aspect i.e. the attitude of teachers towards the profession of teaching taking into consideration various components of the profession. The scale has been standardized on an all India sample. It consists of 22 statements constructed by Thurstone technique. The scale is easy to administer and score. It can be used to: (i) measure attitude of secondary, elementary and preprimary level teachers; (ii) measure attitude of student teachers; (iii) measure change in attitude of student teachers during the training; (iv) compare attitude of different categories of teachers, types of teachers and teachers working in different types of schools and student teachers under training in different types of teacher training institutions.

The scale value of each statement was determined by the median value obtained from the rating of judges. Thus each statement got a value on the continuum of the scale. Similarly Q-value of each statement was obtained which was given by the difference of the $Q_1$ and $Q_2$ values of each statement. The Q-values indicated the ambiguity of the statement. The statements with higher Q-values were ambiguous and were rejected. Finally, 22 statements were retained with lower Q-values in such a way that two statements fell on each interval of the scale continuum. Thus, 10 items with
lowest scale values falling on the first five intervals from 0-5 indicated a favourable attitude and 10 items on the last five intervals from 6-11 with highest scale values indicated an unfavourable attitude towards teaching. Two statements falling on the interval 5-6 indicates a neutral attitude towards the profession of teaching. The scale-values and Q-values of statements are given in Table 3.2

### Table 3.2

**Scale and Q-values of Favourable and Unfavourable Statements**

<table>
<thead>
<tr>
<th>Sr. No. of Statement</th>
<th>F*/UF**/N***</th>
<th>Scale-value</th>
<th>Q-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>F</td>
<td>2.43</td>
<td>2.39</td>
</tr>
<tr>
<td>2.</td>
<td>UF</td>
<td>9.35</td>
<td>1.80</td>
</tr>
<tr>
<td>3.</td>
<td>F</td>
<td>0.78</td>
<td>1.21</td>
</tr>
<tr>
<td>4.</td>
<td>UF</td>
<td>6.95</td>
<td>2.55</td>
</tr>
<tr>
<td>5.</td>
<td>F</td>
<td>2.19</td>
<td>1.26</td>
</tr>
<tr>
<td>6.</td>
<td>UF</td>
<td>7.45</td>
<td>1.76</td>
</tr>
<tr>
<td>7.</td>
<td>F</td>
<td>4.79</td>
<td>2.84</td>
</tr>
<tr>
<td>8.</td>
<td>F</td>
<td>3.05</td>
<td>2.28</td>
</tr>
<tr>
<td>9.</td>
<td>UF</td>
<td>10.09</td>
<td>1.19</td>
</tr>
<tr>
<td>10.</td>
<td>UF</td>
<td>8.32</td>
<td>2.24</td>
</tr>
<tr>
<td>11.</td>
<td>F</td>
<td>3.55</td>
<td>2.04</td>
</tr>
<tr>
<td>12.</td>
<td>UF</td>
<td>9.42</td>
<td>1.28</td>
</tr>
<tr>
<td>13.</td>
<td>UF</td>
<td>7.81</td>
<td>1.74</td>
</tr>
<tr>
<td>14.</td>
<td>UF</td>
<td>8.65</td>
<td>1.81</td>
</tr>
<tr>
<td>15.</td>
<td>F</td>
<td>1.83</td>
<td>1.94</td>
</tr>
<tr>
<td>16.</td>
<td>UF</td>
<td>10.05</td>
<td>1.08</td>
</tr>
<tr>
<td>17.</td>
<td>UF</td>
<td>6.53</td>
<td>2.60</td>
</tr>
<tr>
<td>18.</td>
<td>F</td>
<td>4.36</td>
<td>1.64</td>
</tr>
<tr>
<td>19.</td>
<td>N</td>
<td>5.72</td>
<td>2.78</td>
</tr>
<tr>
<td>20.</td>
<td>F</td>
<td>1.40</td>
<td>1.87</td>
</tr>
<tr>
<td>21.</td>
<td>N</td>
<td>5.42</td>
<td>1.72</td>
</tr>
<tr>
<td>22.</td>
<td>F</td>
<td>0.80</td>
<td>1.27</td>
</tr>
</tbody>
</table>

F* = Favourable (Item Nos. – 1,3,5,7,8,11,15,18,20,22)
UF** = Unfavourable (Item Nos. – 2,4,6,9,10,12,13,14,16,17)
N*** = Neutral (Item Nos. – 19,21)

**Reliability**

Reliability of the scale was determined by the split-half method. It was found to be 0.90 by the Pearson Product – Moment Correlation method. When corrected by Spearman-Brown Formula, its co-efficient of correlation was 0.95.
Validity

Content validity of the scale was ensured by the judges who carefully rated each item. The validity of the scale was also determined by self-rating by subjects on a graphic continuum of the scale. It was found to be 0.78.

Administration of the Scale

Each subject was to respond by reacting to the statement and put a tick mark against those items only with which he/she agreed. The following instructions were given to the subjects.

Below is given a list of statement about the teaching profession. Please read each one of them carefully and tick mark (✓) those statements only with which you agree. Let your own experience determine your agreement with statements.

Scoring

Each statement has been assigned a scale value (Table 3.3). The attitude score of a subject is the sum total of the scale values of the statements ticked by the subject divided by the number of statements marked by him/her. It may be represented by the following formula:

\[ \text{Score} = \frac{\sum_{n=1}^{N} 1 + 2 + 3 \ldots \ldots n}{N} \]

Where 1, 2, 3,…… are the scale values of statements marked and N is number of statements ticked. Thus the mean attitude score of a subject is the average score value of the statements endorsed by him/her. It is to be noted that a lower mean score indicates a favourable attitude and the higher score indicates unfavourable attitude of a subject.

3.6 PROCEDURE FOR DATA COLLECTION

Data collection is essentially an important part of the research process so that the inferences, hypotheses or generalizations tentatively held may be identified as valid, verified as correct or rejected as untenable. Collection of factual information of data requires a systematic procedure, because as per Whitney (1964)'Data are the things we think with. They are the raw materials of reflection until by comparison, combination and evaluation they are stepped up to higher levels of generalization, where again they serve as basic material for further and higher thinking. It also
requires collection of relevant data adequate in quality and quantity and as reliable
and valid as possible.

In the beginning, all the three hundred teachers working in teacher training
institutions, selected for the present study were asked to fill the columns of personal
data sheet prepared by the investigator. After establishing rapport with the teachers,
they were administered ‘Occupational Self Efficacy Scale (OSES)’ as per
standardized instructions given in the manual. They were asked to express their views
by marking (√) on any one of the five cells of each sentence in the scale. There are 19
statements in the scale which were used to assess the six factors namely confidence,
command, adaptability, personal effectiveness, positive attitude and individuality.
There was no time limit for the completion of the OSES; however maximum time
limit of 10 minutes could be prescribed for all the items of scale.

As the second one, ‘Teacher’s Job Satisfaction Scale (TJSS) was given to the
same subjects. There are 75 items in it. Each item was followed by the five response
categories i.e. strongly agree, agree, indifferent or uncertain, disagree, strongly
disagree. The respondents were to make their agreement only with one response by
marking a tick (✓) for each statement. There was no time limit and there are no right
or wrong answers.

As the above two scales, the third one ‘Teacher Attitude Scale (TAS) was
administered on the same teachers. It was self-administering scale. There are 22
statements in this scale about the teaching profession. The respondents were asked to
read them carefully. They were told to put a tick mark (√) in the cell provided on the
right side of the statements with which they agree, otherwise to put a cross (∗) in it.
There was no time limit for answering the TAS.

While administering all the tests the respondents were assured that their
answers and scores would be treated with strict confidence. After getting the response
sheets, the next step was to score them. Scoring of the answers sheets was done
strictly according to the instructions given in the manual.

3.7 STATISTICAL TECHNIQUES

Statistical techniques are employed on the raw score to make it meaningful
and to test the significance of the scores. Without use of statistical techniques raw
scores do not have their own meaning and weight. In order to study the nature of data, descriptive statistics i.e. the measure of central tendency and dispersion – Mean, Standard Deviation were used. To study the main effects and interaction effects of independent variables i.e. gender, academic stream and teaching experience on the dependent variables i.e. Occupational Self Efficacy, Job Satisfaction and Attitude towards Teaching Profession, three way ANOVA (2×2×2 Factorial Design) was used separately. To test the assumption of homogeneity of variance for ANOVA, Hartley’s test was employed. For further investigation, ‘t’ test was employed, wherever F-value was found to be significant. These statistical techniques were computed using SPSS software.

The ANOVA used was, Balanced ANOVA. As Three-way ANOVA tests are the most useful when the replicate examples are equal or balanced i.e. an ANOVA analysis is typically applied to a set of data in which sample sizes are kept equal for each treatment combination.

On the basis of these tools, procedures, methods and statistical calculations, the analysis of the results has been given in the next chapter.