CHAPTER-III

METHODOLOGY

3.1 INTRODUCTION

This chapter deals with the methodology employed in order to achieve the set objectives of the study. Details regarding sample, description of the tools employed, techniques of collection of data and method of analysis of data with reference to various objectives of the study are presented. This chapter, therefore, presents a detailed description of the methodology followed at various phases of the investigation. It is presented under the following major sections.

3.2 Objectives of the Study

3.3 Hypotheses of the Study

3.4 Variables of the study

3.5 Design of the study

3.6 Sample and sampling procedure

3.7 Description of tools used for data collection

3.8 Statistical techniques employed and,

3.9 Summary of methodology

3.10 Collection of data

3.11 Statistical Techniques employed

A detailed description of each is followed.
3.2 OBJECTIVES OF THE STUDY

The following are the major objectives of the study:

1. To know the effectiveness of stress management intervention on teaching competence, academic achievement, teacher adjustment and home environment.

2. To compare the effectiveness of stress management intervention on teacher competence, academic achievement, teacher adjustment and home environment with reference to
   - Sex
   - Age
   - Locale
   - Qualification
   - Parents background (occupation, income and education)

3. To study the linear relationship between stress levels and academic achievement after the intervention.

4. To study the linear relationship between teaching competence and stress levels after the intervention.

5. To study the linear relationship between teacher adjustment and stress levels after the intervention.

6. To study the linear relationship between home environment and students stress levels after the intervention.

3.3 HYPOTHESES OF THE STUDY

The following major hypotheses are stated for testing their significance.

3.3.1 Stress Levels

1. There is no significant difference in the Stress levels of student teachers control and experimental groups after the intervention.
2. There is no significant difference in the Stress levels of male and female student teachers of experimental group after the intervention.

3. The Stress levels are significantly high among male student teachers before the intervention than that after the intervention.

4. There is no significant difference in the Stress levels female student teachers of experimental group of with reference to before and after the intervention.

3.3.2 Teaching Competence
5. The Teaching competence of experimental group is significantly higher than that of the control group after the intervention.

3.3.3 Academic Achievement
6. The Academic achievement of experimental group is significantly higher than that of the control group after the intervention.

7. There is no significant difference among the students belonging to various parental occupation groups in their Academic achievement after the intervention.

3.3.4 Adjustment
3.3.4.1 Home Adjustment
8. The experimental group student teachers is significantly well adjusted than the control group in terms of Home adjustment after the intervention.

9. There is no significant difference in the male student teachers of the experimental group with reference to Home adjustment before and after the intervention.

10. There is no significant difference in the female student teachers of the experimental group with reference to Home adjustment before and after the intervention.
3.3.4.2 Health Adjustment

11. There is no significant difference in the male student teachers of the experimental group with reference to Health adjustment before and after the intervention.
12. There is no significant difference in the female student teachers of experimental group with reference to Health adjustment before and after the intervention.
13. There is no significant difference among the students belonging to various parental occupational in Health adjustment after the intervention.

3.3.4.3 Submissiveness and Self-Assertion Adjustment

14. There is no significant difference in the student teachers of Submissiveness and self-assertion adjustment of experimental and control groups after the intervention.
15. There is no significant difference in the male student teachers of the experimental group with reference to Submissiveness and self-assertion adjustment before and after intervention.
16. There is no significant difference in the female student teachers of the experimental group with reference to Submissiveness and self-assertion adjustment before and after the intervention.

3.3.4.4 Emotional Adjustment

17. There is no significant difference between experimental and control groups with reference to Emotional adjustment after the intervention.
18. There is no significant difference in the male student teachers of the experimental group with reference to Emotional adjustment before and after the intervention.
19. There is no significant difference in the female student teachers of experimental group with reference to Emotional adjustment before and after the intervention.

3.3.4.5 Hostility and Friendliness Adjustment
20. There is no significant difference in the male student teachers of the experimental group with reference to Hostility and Friendliness adjustment before and after the intervention.
21. There is no significant difference in the female student teachers of experimental group with reference to Hostility and Friendliness adjustment before and after the intervention.

3.3.4.6 Masculinity and Femininity Adjustment
22. There is no significant difference between student teachers of the experimental and control groups with reference to Masculinity and Femininity adjustment after the intervention.

3.3.5 Home Environment
23. There is no significant difference in the student teachers of control and experimental groups with reference to their Home environment after the intervention.

3.3.6 Regression Analysis
24. The Academic achievement of student teachers is not a significant predictor for the stress levels of student teachers after the intervention.
25. The Home environment is not a significant predictor on stress levels of the student teachers after the intervention.
26. The Teaching competence is not a significant predictor on stress levels of the student teachers after the intervention.
27. The Home Adjustment is not a significant predictor on stress levels of the student teachers after the intervention.

28. The Health Adjustment is not a significant predictor on stress levels of the student teachers after the intervention.

29. The Submissiveness and self-assertion adjustment is not a significant predictor on stress levels of the student teachers after the intervention.

30. The Emotional Adjustment is not a significant predictor on stress levels of the student teachers after the intervention.

31. The Hostility and Friendliness Adjustment is not a significant predictor on stress levels of the student teachers after the intervention.

32. The Masculinity and Femininity Adjustment is not a significant predictor on stress levels of the student teachers after the intervention.

3.4 VARIABLES OF THE STUDY

The variables used in the study are classified as follows.

1. Independent variable
   - Stress Management Intervention

2. Dependent variables
   - Teacher competence
   - Academic achievement
   - Adjustment
   - Home environment

3. Moderate variables
   - Sex
   - Age
   - Locale
   - Qualification
   - Parents background (occupation, income and education)
3.5 DESIGN OF THE STUDY

In this study the researcher has undertaken an experimental type of research. An experimental method is used for the immediate purpose of predicting events in the experimental setting. They consist of two groups namely the experimental group and the control group.

The stress management program was conducted to reduce the stress levels among experimental group of D.I.E.T. students. The stress management intervention consists of yoga and meditation. It is a way that it could be implemented within a month duration. Yoga and meditation programme is conducted every day both in the morning and evening for a span of month. The control group is not exposed to the stress management programme.

A pre-test was given at the beginning of the treatment only to identify the stress levels and adjustment. Post-test was administered for both experimental and controlled groups to ascertain teacher competence on stress levels and their academic achievement adjustment, home environment after the completion of the stress management intervention. The diagrammatic representation of the design of the study is as follows.

### Diagrammatic representation of the design of the study

<table>
<thead>
<tr>
<th>Pre-tests</th>
<th>Experimental group</th>
<th>Control group</th>
<th>Post-tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress Levels Inventory</td>
<td>Treatment (one month duration)</td>
<td>No treatment</td>
<td>Stress level inventory</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Academic achievement test</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Teacher competence scale</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Home environment inventory</td>
</tr>
<tr>
<td>Adjustment inventory</td>
<td></td>
<td></td>
<td>Adjustment inventory</td>
</tr>
</tbody>
</table>
Design is the heart of research upon which the entire process of research is carried out. In this study, the investigator followed experimental type of research to study the influence of pre-service teachers stress management intervention on teacher competence and academic achievement. The study also made an attempt is made to find out whether stress management programme has any thing to do with teaching competence or not. Thus this study attempts to explore the relationship between teaching competence and academic achievement. The main and intervention effect between these variables also were studied. This relationship between stress management, academic achievement, teacher competence were studied. The significance of difference between pre-service teachers in different variables of the study related to their sex, age, qualification, low care, home environment, parents background (education, occupation, qualification and income) were studied.

**Design of the experiment**

![Diagram](image-url)
3.6 SAMPLE OF THE STUDY

Out of four D.I.E.Ts. in Rayalaseema region of Andhra Pradesh, one D.I.E.T was selected randomly. Experimental and control group is selected randomly from the D.I.E.T. The group consists of 52 student teachers.

As D.I.E.T. students of Andhra Pradesh will be selected through a state level common entrance test and both D.I.E.Ts selected for study are in same region, they may be treated as equivalent groups. Further, the groups will be equated based on mean scores of entrance examination.

3.7 VARIABLES OF THE STUDY

The investigator made a preliminary review of literature in the area of stress management, Teacher competence, academic achievement, adjustment and home environment of pre-service teachers research conducted on DIET students. The exhaustive review helped the investigator to identify the following variables for the study.

The present study involved three sets of variables, viz. independent and dependent and moderate variables, stress management intervention was the independent variable and teaching competence and academic achievement adjustment and home environment were the dependent variables. Sex, age, locale, qualification and parents background were moderate variables.

The variables used in the study are classified as follows.

1. Independent variable
   - Stress Management Intervention
2. Dependent variables
   • Teacher competence
   • Academic achievement
   • Adjustment
   • Home environment

3. Moderate variables
   • Sex
   • Age
   • Locale
   • Qualification
   • Parents background (occupation, income and education)

3.8 SAMPLE AND SAMPLING PROCEDURE

The sample selected for the investigation consisted 52 pre-service teachers (DIET students) of second year students at DIET, Bukkapatnam in Anantapur District of Andhra Pradesh during 2006-07. Simple random sampling technique was followed to draw the sample. The age of pre-service teachers range between 19 years to 25 years, both male and female pre-service teachers are found in the sample. DIET students with intermediate and with graduation (BA/BSc/B.Com) were found in the sample. DIET students from urban, semi-urban and rural area also found in the sample. DIET students parents background like occupation (farmer labour, employee and others), annual income (upto Rs. 20 thousands and above Rs. 20 thousands) and qualification (Inter/Degree & above) were also found in the sample. Sample distribution shown in the table 3.1.
<table>
<thead>
<tr>
<th>Group</th>
<th>Sex</th>
<th>Age</th>
<th>Qualification</th>
<th>Locale</th>
<th>Parents background</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Up to 19 years</td>
<td>20 years</td>
</tr>
<tr>
<td>Control group 26</td>
<td></td>
<td>13</td>
<td>13</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>Experimental group 26</td>
<td>13</td>
<td>13</td>
<td>14</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Sub total</td>
<td>26</td>
<td>26</td>
<td>28</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>Grand total</td>
<td>52</td>
<td>52</td>
<td>52</td>
<td>52</td>
<td>52</td>
</tr>
</tbody>
</table>
Sampling Distribution of Study

Based on 1. Age 2. Gender 3. Qualification of the students, 4. Locality and 5. Parents background (occupation, income per annum and education) the two groups namely, experimental and control groups were formed.

1. Sex: Both the groups consist of 13 male student teachers and 13 female student teachers.

2. Age: The experimental and control group consists of DIET student teachers upto 19 years age (14 students), 20 years age (8 students) and 4 students who are above 20 years age in each group.

3. Qualification: The student teachers qualification upto intermediate, 24 students and degree and above 2 students were distributed in both the groups.

4.Locale: Urban students 4, semi-urban students 5 and rural 17 students were distributed in both the groups.

5. Parents background

    (a) Parents occupation: Parents belong to farmers 10, labour 4, employee 5 and other occupationals 7 were distributed in both the groups.

    (b) Parents annual income: Upto Rs. 20,000 annual income group 6 and above Rs. 20,000 annual income group 20 members are distributed in both the groups.

    (c) Parents education: Upto intermediate education having parents 3 and degree and above education having parents 23 were distributed in the both groups for study.
Sample of the Study

The Rayalaseema area has 4 DIETs, they are DIET in Bukkapatnam (Anantapur Dist.), DIET in Thandrapadu (Kurnool Dist.), DIET in Rayachoti (Kadapa Dist.) and DIET in Karavetinagar (Chittoor Dist.). Of these 4 DIETs the investigator has a very good opportunity to observe the stress management intervention in Bukkapatnam. Therefore, DIET in Bukkapatnam is selected for the study.

For the yoga trainers two teachers, one male teacher and the other female teacher who were trained at Bangalore University on stress management were also brought to Bukkapatnam for a month to implement the intervention successfully wide Appendix IX to study the details of photos and video CD of the intervention.

3.9 DESCRIPTION OF TOOLS USED FOR DATA COLLECTION

Selection of valid and reliable tools for the collection of data is an important aspect for any investigation. For testing the formulated hypotheses, the data were collected using the following tools.

1. Stress levels identification inventory – for DIET students.
2. The adjustment inventory.
3. Teaching competence scale – for student teacher of Elementary Teacher Education.
4. Academic achievement test – for student teachers.
5. Home environment scale.

Among the five tools used, the adjustment inventory was developed and standardized by Huge M. Bell. Home environment inventory was developed by Ms. Sarla Java. Academic achievement test for DIET students was developed and
standardized by the investigator for the purpose of measuring second year DIET students based on D.Ed. second year syllabus (covering June to October months). Stress levels identification scale was developed and standardized by the Investigator based on Kyriacove and Sutcliffe’s Stress Scale. This tool is modified by the investigator for its suitability in this area. Teacher competence scale-for student teachers was developed and standardized by Dr. G. Viswanathappa and Dr. N. Venkataiah.

All these tools are described above are retested on a try-out sample of 92 pre-service teachers at Kurnool-DIET of Andhra Pradesh.

A brief description of each tool is attempted in the following subsections.

3.9.1 Stress Levels Identification Inventory for DIET Students

In order to measure the stress levels of pre-service teacher (DIET students) the stress levels inventory – for DIET students (a self reported scale) is developed and standardized “Kyriacove & Sutcliffe”, used. For re-tested of these climate by the investigator with the guide. This inventory consists of covering 42 items of three areas student stress. The three areas of stress are (1) Stress in the college (2) Stress in the teaching-practice and (3) Stress in the home. The investigator retested this inventory on a try-out sample of 92 student teachers of the DIET in Kurnool dist.

The distribution of 42 items in the stress levels identification is as follows. The items are given in the Appendix I.

The items pertaining to college are from 1 to 13 (13 items).

The items pertaining to teaching practice area are from 14 to 32 (19 items).

The items pertaining to home area are from 33 to 42 (10 items).
Table 3.2: The number of items and percentage of items in stress levels identification inventory

<table>
<thead>
<tr>
<th></th>
<th>In the college stress</th>
<th>Teaching practice stress</th>
<th>Home stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of items</td>
<td>13</td>
<td>19</td>
<td>10</td>
</tr>
<tr>
<td>Percentage</td>
<td>30.9%</td>
<td>45.2%</td>
<td>23.8%</td>
</tr>
</tbody>
</table>

**Preliminary Tryout**

DIET students stress scale is administered to a primary tryout sample 92 DIET students in Kurnool District of Andhra Pradesh. The instructions given are as follows.

“Here a self reported stress scale is given to you. Please answer all with suitable choice for your stress level indication, they are Not at all stressful, Mild stressful, Moderate stressful, Highly stressful or Extremely stressful”.

**Scoring**

The responses are scored according to the key. For all the items score 0, 1, 2, 3 and 4 for the ‘0’ possible responses such as No stress, Mild stress, Very stressful and Extremely stressful respectively. The maximum possible score indicates extremely student-teacher stress and low score indicates low student-teacher stress.

**Item analysis**

For the purpose of determining the degree to which each item is effective in discriminating between high and low attitude, an item analysis of the data obtained from the above sample is undertaken, using extreme groups (high and low). All the 92 responses of the subjects are scored and the scores are arranged in an order from highest score to the lowest score. Then the upper 27% of the total scores and lower 27% of the total score are taken into consideration for measuring significance of difference of means to know the item validity.
Arithmetic means and standard deviations for all the 92 items of the upper-
lower values were calculated. Critical ratio is, then, calculated for all the items
between upper and lower half. If the value of critical ratio of the items is greater than
1.96 (significant at 0.05 level of significance, inf.). Then the item is found to be valid
and accepted. If the value of critical ratio of the item is less than 1.96, then the item is
considered as invalid and rejected. Then items accepted are shown in Appendix VI.
The scale with all the accepted items is used for the final study.

The distribution of the 38 retained items is as follows.

**Table 3.3: The number of items and percentage of items in final DIET students stress levels scale**

<table>
<thead>
<tr>
<th>Sl. No. of items retained</th>
<th>Total no. of items</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. College stress</td>
<td>From 1 to 12</td>
<td>12</td>
</tr>
<tr>
<td>2. Teaching practice stress</td>
<td>15, From 17 to 26, From 28 to 32</td>
<td>16</td>
</tr>
<tr>
<td>3. Home stress</td>
<td>From 33 to 42</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>38</td>
</tr>
</tbody>
</table>

**Reliability**

The reliability index of the scale is calculated by using Spearman Brown Prophecy Formula (Garret, 1973). Split half method by using even/odd split is followed to calculate reliability coefficient of the scale. The reliability coefficient is found to be 0.928. This value is sufficiently high to assume that the present DIET
students stress scale, as highly reliable tool to measure student teacher stress levels of the DIETs.

**Validity of the tool**

The following types of validity were established for the DIET student teacher stress scale in this study.

a) This DIET student teacher stress scale has content validity.

b) This DIET student teacher stress scale has face validity.

Since the teacher stress scale has approved validity, reliability coefficient, this is an appropriate and adequate tool for measuring DIET students stress levels.

**3.9.2 The Adjustment Inventory**

In order to measure the DIET student teachers the adjustment inventory developed by Huge M. Bell is adopted in this study. There are 200 items in this scale related to Home adjustment, Health adjustment, Submissiveness, Self-assertion, Emotionality, Hostility, Friendliness and Masculinity, Femininity of DIET student teachers. The scale is of Likert type. The investigator retested this Adjustment Inventory on a tryout sample of 92 DIET student teachers.

The distribution of 200 items selected for the pilot study is as follows. The items are given in Appendix II.

a) Items under ‘Home adjustment’ area of Bell’s Adjustment Inventory are 8, 12, 22, 26, 31, 37, 46, 49, 52, 57, 63, 67, 72, 80, 87, 90, 93, 96, 103, 110, 111, 121, 127, 138, 139, 146, 150, 156, 163, 168, 173, 182, 184, 188 and 194.

b) Items under ‘Health adjustment’ area of Bell’s Adjustment Inventory are 2, 7, 14, 18, 30, 33, 38, 40, 45, 50, 58, 65, 70, 73, 79, 83, 97, 102, 105, 115, 122, 129, 132, 141, 148, 155, 161, 162, 166, 171, 181, 186, 191 and 199.
c) Items under ‘Submissiveness and self-assertion’ area of Bell’s Adjustment Inventory are 6, 11, 17, 21, 24, 27, 32, 39, 47, 54, 56, 59, 66, 75, 82, 88, 95, 101, 108, 119, 128, 133, 137, 142, 144, 149, 151, 158, 165, 170, 174, 177, 187, 198 and 200.

d) Items under ‘Emotionality’ area of Bell’s Adjustment Inventory are 1, 5, 13, 28, 41, 53, 60, 64, 71, 74, 78, 81, 86, 89, 94, 100, 104, 109, 114, 118, 120, 126, 131, 134, 143, 152, 157, 164, 169, 172, 176, 178, 180, 193 and 196.

e) Items under ‘Hostility friendliness’ area of Bell’s Adjustment Inventory are 4, 10, 15, 20, 25, 34, 36, 42, 51, 61, 68, 76, 84, 91, 98, 106, 112, 117, 124, 125, 135, 140, 147, 159, 167, 175, 189, 190, 192 and 197.


<table>
<thead>
<tr>
<th>Table 3.4: Number of items and Percentage of items in Bell’s Adjustment inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions of Adjustment</strong></td>
</tr>
<tr>
<td><strong>Home adjustment</strong></td>
</tr>
<tr>
<td><strong>Health adjustment</strong></td>
</tr>
<tr>
<td><strong>Submissiveness and self-assertion</strong></td>
</tr>
<tr>
<td><strong>Emotional adjustment</strong></td>
</tr>
<tr>
<td><strong>Hostility and Friendliness adjustment</strong></td>
</tr>
<tr>
<td><strong>Masculinity and Femininity adjustment</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
<tr>
<td><strong>No. of items</strong></td>
</tr>
<tr>
<td>35</td>
</tr>
<tr>
<td>35</td>
</tr>
<tr>
<td>35</td>
</tr>
<tr>
<td>35</td>
</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>200</td>
</tr>
<tr>
<td><strong>Percentage</strong></td>
</tr>
<tr>
<td>17.5</td>
</tr>
<tr>
<td>17.5</td>
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<tr>
<td>17.5</td>
</tr>
<tr>
<td>17.5</td>
</tr>
<tr>
<td>15</td>
</tr>
<tr>
<td>15</td>
</tr>
<tr>
<td>100</td>
</tr>
</tbody>
</table>

**Scoring**

The same procedure which is used to score the Bell’s Adjustment Inventory is adopted to this present study as it is. In this scale the total number of items are 200.
Item analysis, Reliability and Validity

Bell’s Adjustment Inventory is of high standardized reliability and validity. It is an already revised tool for college going students.

Though the tool is retested for its suitability the question of deleting any item in it did not arise.

Moreover, it has content validity and face validity. The investigator used for DIET student teachers for measuring adjustment.

3.9.3 Teaching Competence Scale for Student Teachers Elementary Teacher Education

To measure the teaching competence of DIET student teachers, teaching competence scale for student teachers of elementary teacher education developed by Dr. N. Venkataiah & Dr. G. Viswanathappa is adopted. The scale is of 7 point rating and has three dimensions of teaching competence namely Lesson Plan, Teaching–Learning situation and Recapitulation and Evaluation of DIET student teachers. The distribution of items in this tool is as follows. The items are given in Appendix III.

Items pertaining to ‘Lesson Plan’ area are Instructional Objectives, Content, Learning Activities (Method/approach, Media & Material) and Evaluation (Review/Tests/Assignment).

Items pertaining to ‘Recapitulation and Evaluation’ area are of Oral and Written tests, Assignments and Diagnosis and Remediation.
Table 3.5: The number of items and percentage of items in teaching competence scale

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Lesson plan</th>
<th>Teaching-learning situations</th>
<th>Recapitulation and evaluation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of items</td>
<td>4</td>
<td>11</td>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td>Percentage</td>
<td>22.2</td>
<td>61.1</td>
<td>16.1</td>
<td>100</td>
</tr>
</tbody>
</table>

Score
The same procedure used to score the Bell’s adjustment scale is followed in this teaching competence scale also. Total number of items are 18. The maximum possible score is 1656 and the minimum possible score is 92. The high score indicates high teaching competence, low score indicates low teaching competence.

Item Analysis
Each item has followed these 7 point rating scale, Excellent, Very Good, Good, Average, Poor, Very Poor, Extremely Poor and follows 7 to 1 point scoring.

All the items are retained is this study. To evaluate the pilot study and the final study. The high of the suggestions, the items which were marked ambiguous were recorded. These 18 items were included in the final form of the scale. The items in the scale were then randomized. The final form of the scale is given in Appendix V.

Reliability
The reliability index of the test was calculated by using Spearman-Brown Prophecy Formula (Garett, 1973), split-half method is used. Even-odd split is done. The reliability coefficient is found to be 0.916. The reliability coefficient of 0.916 is sufficiently large for us to assume that the present teaching-competency scale is highly reliable instrument for measuring the teaching competency of teachers.
Validity of the tool

The following types of validity were established for the teaching competency scale in this study.

a) This teaching competency scale has content validity.

b) This teaching competency scale has face validity.

Since the teaching competency scale has approved validity, reliability coefficient, this is an adequate tool for measuring teaching competence.

3.9.4 Academic Achievement Test for DIET Students

To measure the second year DIET student academic achievement test was developed by the investigator. There are 100 items in the scale related to five sections. They are Methodologies of Science, Social Studies, Mathematics and Languages of Telugu and English. The test consisted multiple choice objective type questions. The investigator retested this academic achievement test on a tryout sample of 92 second year DIET student teachers.

The investigator initially prepared 200 multiple choice questions. He went through the prescribed concerned text books and model papers of District Selection Committees. He prepared selected approximately 40 multiple choice questions in each subject area i.e., 1) Methodology of Science, 2) Methodology of Social Studies, 3) Methodology of Mathematics, 4) Methodology of Telugu language and 5) Methodology of English language.

The investigator also consulted a number of teachers who have been teaching these subjects for a long time for 1) Providing a few more questions, 2) Whether the content of each subject is covered or not, 3) Whether the questions are the suitable for
the D.Ed. second year students and 4) Whether there are deficiencies either in the questions or in the language.

At this initial stage the total no. of items in the achievement test were 200. The opinion, suggestions made by the expert teachers were considered and improvement was made in the test.

After consulting the experts and modifying certain items and deleting some ambiguous items only 100 items remained for the pilot study.

The pilot study was conducted on 92 students of second year DIET students in Thandrapadu, Kurnool District of Andhra Pradesh. For all practical purposes the standard of the students of Bukkapatnam, Anantapur District of Andhra Pradesh are equivalent to the standard of the neighboring districts DIET students.

The pilot study was conducted with a view to find out the difficulty level of the questions and whether the students can understand the language of the items easily or any further modification in the items of the achievement test was required.

The distribution of 100 items selected for the pilot study is as follows. The items are given in Appendix IV.

Items under ‘Methodology of Science’ area of Academic Achievement test are in serial numbers from 1 to 20.

Items under ‘Methodology of Social Studies’ area of Academic Achievement test are in serial numbers from 21 to 40.

Items under ‘Methodology of Mathematics’ area of Academic Achievement test are in serial numbers from 41 to 60.
Items under ‘Methodology of Telugu language’ area of Academic Achievement test are given the serial numbers from 61 to 80.

And items under ‘Methodology of English language’ area of Academic Achievement test have the serial numbers from 81 to 100.

**Table 3.6: Number of items and percentage of items in academic achievement test**

<table>
<thead>
<tr>
<th>Methodologies</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Science</td>
</tr>
<tr>
<td>Number of items</td>
<td>20</td>
</tr>
<tr>
<td>Percentage</td>
<td>20</td>
</tr>
</tbody>
</table>

**Item analysis**

For the purpose of determining the degree to which item is effective in discriminating between high and low achievement, an item analysis of the data obtained from the above sample is undertaken, using extreme groups (high and low). Then, the upper 27% of the total scores and lower 27% of the total scores are taken into consideration for measuring significance of difference of means to know the items validity.

Arithmetic means and standard deviations for all the 100 items of the upper-lower values were calculated. Critical ratio is, then, calculated for all the items between upper and lower half. If the value of critical ratio of the items is greater than 1.96 (Significant at 0.05 level of significance). Then, those items are found to be significant are accepted. If the value of critical ratio of the items is less than 1.96, then
the items were considered as invalid such items with less than 1.96 value are rejected.

The items accepted are shown in Appendix VII. The test with all the accepted items is used for the final study.

The items retained after item analysis for the final study in the Academic Achievement scale are 84.

**Table 3.7: The number of retained items of academic achievement test**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Sl. No. of items retained</th>
<th>Total No. items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science</td>
<td>1 to 13, 15, 16, 18, 19</td>
<td>17</td>
</tr>
<tr>
<td>Social Studies</td>
<td>22 to 28, 31 to 40</td>
<td>17</td>
</tr>
<tr>
<td>Mathematics</td>
<td>41 to 50, 52 to 55, 57, 58, 60</td>
<td>17</td>
</tr>
<tr>
<td>Telugu</td>
<td>61, 63 to 67, 69 to 75, 77, 79, 80</td>
<td>16</td>
</tr>
<tr>
<td>English</td>
<td>81 to 87, 89 to 96, 99, 100</td>
<td>17</td>
</tr>
<tr>
<td>Total number of items</td>
<td></td>
<td>84</td>
</tr>
</tbody>
</table>

Number of items and percentage of items of five dimensions of Academic Achievement test retained are shown in table 3.8.

**Table 3.8: The number of items and percentage of items retained under five dimensions of academic achievement test**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Science</th>
<th>Social Studies</th>
<th>Mathematics</th>
<th>Telugu</th>
<th>English</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of items</td>
<td>17</td>
<td>17</td>
<td>17</td>
<td>16</td>
<td>17</td>
<td>84</td>
</tr>
<tr>
<td>Percentage</td>
<td>20.2</td>
<td>20.2</td>
<td>20.2</td>
<td>19.2</td>
<td>20.2</td>
<td>100</td>
</tr>
</tbody>
</table>
Reliability

The reliability of the test is calculated by Split-half method. Even-odd split is used in dividing the test into two halves. The reliability coefficient is found to be 0.806. The reliability coefficient of 0.806 is sufficiently large for us to assume that the present Academic Achievement scale is highly reliable instrument for measuring the achievement of DIET students.

Validity of the tool

The following types of validity were established for the Academic Achievement test for DIET students.

a) This Academic Achievement test has content validity.

b) This Academic Achievement test has face validity.

Since the Academic Achievement test has approved validity, reliability coefficients. It is an adequate tool for measuring Academic Achievement of DIET students.

3.9.5 Home Environment Scale

To measure the home environment of DIET student teachers ‘Home Environment Scale’ developed by Dr. Sarla Jawa is adopted in this study. This scale is of Likert type and has 74 items related to personal freedom, critical, socio-isolation, acceptance, understanding, severity of discipline, emotional stability in disciplinary action, neglecting, rapport with parents, rapport with siblings, socio-economic image, interpersonal relations, inter parental relations and general satisfaction of students.
**Scoring**

The same procedure which is used to score the Academic Achievement test followed in the Home environment scale also. The number of items are 74. The maximum possible score is 74 and the minimum possible score is zero. The high score indicates high home environment and low score indicates low home environment of DIET students.

**Item analysis**

For the purpose of determining the degree to which each item in discriminating between high and low home environment, an item analysis of the data obtained from the above sample is undertaken using extreme groups (high and low). All the 74 responses of the subjects are scored and the scores are arranged in an order from highest score to the lowest score. Then, the upper 27% of the total scores and lower 27% of the total scores are taken into consideration for measuring significance of difference of means to know the validity of the items.

Arithmetic means and standard deviations for all the 74 items of upper lower halves were calculated. Critical ratio is, then, calculated for all the items between upper and lower half. If the value of critical ratio of the item is greater than 1.96 (Significant at 0.05 level of significance, inf.), then the items are found to be valid. Then the items with such values and above were accepted. If the value of critical ratio of the items was less than 1.96, then the item is considered as invalid such item was rejected. The scale with all the accepted items is used for final study, which was shown in Appendix VIII.
The items retained after item analysis for the final study in the Home environment scale are 64.

Thus, in the final scale there are 64 items. As already been mentioned earlier that this scale has all dimensions of home environment.

Reliability

The reliability index of the scale was calculated by using Spearman-Brows Prophecy Formula (Garett, 1973). Split-half method is used. Even-odd split is done. The reliability coefficient is found to be 0.916. The reliability coefficient of 0.916 is sufficiently large for us to assume that the present home environment scale is highly reliable instrument for measuring the Home environment of DIET student teachers.

Validity of the tool

The following types of validity was established for the Home environment scale in this study.

a) This home environment scale has content validity.

b) This home environment scale has face validity.

Since the Home environment scale has approved validity, reliability coefficients. It is an adequate tool for measuring home environment.

3.10 COLLECTION OF DATA

After retesting the adjustment, home-environment, teaching competence and scales and developing the stress levels and Academic Achievement scales of the study, fresh and final scales are prepared for the final study with a personal data page. These five standardized tools of the present study were administered to DIET student teachers of Bukkapatnam in Anantapur District of Andhra Pradesh. For collecting the
data the investigator visited the DIET. Administered the tools to the student teachers personally after getting permission from the head of the institution. They were advised to mention their Names, Sex, Qualifications, Parents background, their DIET-CET rank, etc., in the place provided in the personal data sheet of each test. For obtaining the real and correct information, some of the tools were administered without asking their identity.

Instructions are given in the first page of all the five tools. The investigator requested the DIET student teachers to follow these instructions while responding to the tools DIET student teachers were further advised not to leave any item of the tool. Ninety-five sets of tools were distributed to the DIET student teachers selected as mentioned earlier in the sample and sampling procedure. Out of them 52 were selected, 26 each for the two groups. One group is of experimental and other group is of control one. Experimental group was treated with intervention programme of stress management techniques like Yoga, Meditation and Aerobic exercise daily at morning 5.30 am to 7.30 am and evening 5.30 pm to 7.30 pm two + two = four hours a day till the entire course of one month package a video CD (Compact Disc) and photographs are enclosed in this part of study (Annexure IX). After the intervention programme both the groups were tested with all five tools and scored according to the scoring procedure explained in the development and standardization of tools and used for the final study.
3.11 STATISTICAL TECHNIQUES EMPLOYED

    The following statistical techniques were employed to analyze the data.

1) Mean, Median, Standard deviation, Skewness and Kurtosis for all distributions.

2) Pearson’s product moment correlation was calculated for even-odd items of stress
   levels scale, adjustment scale, teaching competence scale, home-environment
   scale and its reliability indices were computed by using Spearman Brown
   Prophecy formula.

3) Two-way analysis of Variance (One-way ANOVA) is used to know the
   interaction effects of independent variables on the dependent variable.

4) One-way analysis of Variance (One-way ANOVA) is used to test the hypothesis
   concerning to significant difference between age, qualifications, subject and
   parents background.

5) Critical ratios are calculated for the item analysis and to test the hypothesis
   concerning to significant difference.

6) Step-wise multiple regression analysis was done to predict the best predictor of
   teaching competence of DIET-student teachers.

3.12 FLOW CHART OF METHODOLOGY

    The methodology adopted in the present programme is summarized in the
    following flow chart for clarity and easy reference.
Variables

Independent variables

Stress levels

Adjustment

Home environment

Teaching competence

Academic achievement

Dependent variables

Tools

Stress Levels inventory

Adjustment inventory

Home environment scale

Teaching competence scale

Academic achievement

Sample (N : 26 + 26)

DIET student teachers

Pre – testing data collection

Administration tools

Experimentation package

Post – test scoring and consolidation

Data analysis

Percentage mean, SD

Person’s product moment correlation

T-test

One-way ANOVA

Two-way ANOVA

Multiple regression

Results and interpretations