3.1 **INTRODUCTION:**

In the previous chapter a brief review of related literature has been presented. The present chapter deals with the Methodology used by the researches.

The procedure or technique adopted in an investigation is known as Methodology.

The Methodology employed by the research investigator to conduct research includes the following aspects.

- Statement of the Problem
- Operational definitions of the study
- Variables of the study
- Tools used for the study
- Population of the study
- Sample of the study
- Methods of collecting the data
- Formulation of hypothesis
- Statistical analysis of the study.

3.2 **STATEMENT OF THE PROBLEM:**
The problem undertaken for the research study is “A STUDY OF ACADEMIC ACHIEVEMENT OF FEMALE STUDENT TEACHER’S OF KARNATAKA IN RELATION TO LEARNING STYLE, ADJUSTMENT, INTELLIGENCE AND SELF-CONCEPT”.

3.3 OPERATIONAL DEFINITIONS OF THE STUDY:

1) Academic Achievement:

- Academic Achievement can be defined as the attainment of an individual in terms of performance in various school subjects namely English, Kannada, Mathematics, General Science, Social Science and so on.
- Academic Achievement is the measure of pupils learning Academic Achievement as the base for testing the knowledge, understanding and also development various skills.
- Achievement is the accomplishment of acquired proficiently in the performance of an individual in a given skill of body knowledge.
- Academic Achievement is deified as “Success in completion with standard of excellence.”
• Academic Achievement is nothing but overall performance of individual during the year of studies and it is very essential for the successful development of the students.

• Academic Achievement defines a measures of knowledge gained in formal education usually indicated by test scores, grades points, average and degrees.

• Academic Achievement defines knowledge attained or skills developed in the school subjects usually designated by test scores or by marks assigned by teachers or by both.

2) Learning Style:

• Learning Style can be defined as a consistent perceiving thinking about and organizing information in particular way.

• The Learning Style theory implies that how much individuals learn has more to do with whether the educational experience is geared toward this particular style of learning than whether or not they are “Smart”.

• Learning Style are simply different approaches or ways of learning.
• Learning Style as the composite of characteristic cognitive, affective and physiological factors that serve as relatively stable indicators of how a learner perceives interacts with and responds to the learning environment.

• Learning Style defines Learning style as those “Educational conditions under which a student is most likely to learn.” Thus learning styles are not really concerned with what learners learn, but rather how they prefer to learn.

• Learning Style defines Learning Styles as the composite of characteristics cognitive, affective and physiological factors that serve as relatively stable indicators of how a learner perceives, interacts with and responds to the learning environment.

3) Adjustment:

Adjustment is the process by which living organisms a balance between its need and the circumstances that influence the stratification of these needs.
Adjustment is a continual process by which a person varies his behavior to produce a more harmonious relationship between himself and his environment.

We can think of adjustment as psychological survival in much the same way as biologist uses the term adaptation to describe physiological survival.

Adjustment is a condition or state in which one feels that one’s needs have been (or will be) fulfilled and one’s behavior conforms to the requirements of a given culture.

An individual’s adjustment is adequate wholesome or healthful to the extent that he has established harmonious relationship between himself and the conditions, situations and persons who comprise his physical and social environment.

Adjustment is the process of finding and adopting modes of behavior suitable to the environment or the changes in the environment.

4) Intelligence:
Intelligence is the general capacity of an individual to adjust his thinking to new replacements. It is general mental adaptability to new problems and conditions of life.

Intelligence means intellect put to use. It is the use of Intellectual abilities for handling a situation or accomplishing any task.

An Intelligence is intelligent in proportion as he is able to carry on abstract thinking.

Intelligence is the capacity to learn and adjust to relatively new and changing conditions.

Intelligence is the aggregate or global capacity of an individual to act purposefully, to think rationally and to deal effectively with his environment.

5) Self-Concept:

The individual perceptions or view of himself is known as his self-concept.

Self-Concept generally refers to the totality of a complex, organized and dynamic system of learned beliefs, attitudes and opinions that each person holds to be true about his or her personal existence.
Self-Concept is a cognitive appraisal of our physical, social and academic competence.

Self-Concept consists of all the perception feelings, attitudes, aspirations and values of concerning oneself.

3.4 DISCUSSION OF THE VARIABLES:

A variable is a symbol to which values are assigned. Many scientists loosely call variables as constructs on properties under their study. Some of the important variables that are chosen in the different fields of knowledge are; sex, income, education, social class, occupational mobility, achievement, adjustment, creativity, verbal aptitude, anxiety, intelligence, task orientation etc. Variables is said to be something that varies. These are three types of variables used in the present study viz., the Independent, Dependent and Moderator variables.

The Dependent variable of the present study is the Academic Achievement of female student teachers of Karnataka.

The Independent variables of the present study is

- Learning Style
- Adjustment
• Intelligence
• Self-Concept

The Moderator variables of the present study is

➢ Location (Urban and Rural)
➢ Type of Degree (Arts and Science)
➢ Type of Management (Aided and Unaided)
➢ Type of Caste (SC/ST and Others)

3.5 TOOLS USED FOR THE STUDY:

It is necessary to adopt or evolve a systematic procedure to collect essential data. Relevant data, adequate in quantity and quality should be collected in research. They should be sufficiently reliable and valid.

3.5.1 LEARNING STYLE QUESTIONNAIRE:

Various devises are used for collecting new and unknown data. The selection of suitable instruments or tools is of vital importance for successful research. In selecting the tools to be used it is essential to ensure its adequacy from the stand point of the purpose of the study.
A questionnaire was constructed by the investigator to collect data by using the Questionnaire Method.

The Questionnaire Method has been advocated as one of the best techniques for gathering data, especially under research study like present one. The questionnaire has been constructed by the researcher constructed the questionnaire by keeping in view guidelines for writing the questionnaire such as.

1. Avoiding factual statements.

2. Avoiding reference to the past.

3. Avoiding using specific determiners like all always none, never.

4. Avoiding using statements which tend themselves for multiple interpretations.

5. Avoiding using irrelevant statements.

6. Avoiding using non-distinguishing statements.

7. Avoiding using long statements.

8. Avoiding using double negatives.

9. Avoiding using contusive words.

10. Writing short, clear and direct statements.

11. Including only one thought in one statement.
The questionnaire was framed which ensured precise and correct responses from the student teachers to whom the questionnaire was addressed. In which 30 items are there which is Yes or No type to which students should respond.

3.5.2 ADJUSTMENT SCALE:

This scale used for measuring the Adjustment among student teachers. It is a standardized scale developed by Dr. S. K. Mangal, C.R. College of Education Rohtak (Haryana). The 70 items so selected were rearranged on the basis of randomization for avoiding any hollow or echo effect. The mode of response was to just ticking right (✓) mark for Yes or No. The marks will be allotted one marks each for right answer.

Table – 3.1

Reliability coefficients of the teacher Adjustment inventory (short form)

<table>
<thead>
<tr>
<th>Methods used</th>
<th>Test-Retest Method (N=100)</th>
<th>Split-Half</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability coefficient</td>
<td>969</td>
<td>983</td>
</tr>
</tbody>
</table>

Table – 3.2

Validity coefficients of the inventory (short form)
<table>
<thead>
<tr>
<th>Measures used</th>
<th>Bells Adjustment Inventory (Hindi version) (N=150)</th>
<th>Teacher Adjustment Inventory· MTAI (long form) (N=150)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Validity coefficients</td>
<td>-.848</td>
<td>.906</td>
</tr>
</tbody>
</table>

**Table – 3.3**

**Percentile norms for Male and Female teachers**

<table>
<thead>
<tr>
<th>Percentile</th>
<th>Raw score on total Male Teachers (N=400)</th>
<th>Adjustment Female teachers (N=328)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P_{99}</td>
<td>63</td>
<td>65</td>
</tr>
<tr>
<td>P_{95}</td>
<td>61</td>
<td>62</td>
</tr>
<tr>
<td>P_{90}</td>
<td>59</td>
<td>60</td>
</tr>
<tr>
<td>P_{85}</td>
<td>57</td>
<td>59</td>
</tr>
<tr>
<td>P_{80}</td>
<td>55</td>
<td>67</td>
</tr>
<tr>
<td>P_{75}</td>
<td>54</td>
<td>56</td>
</tr>
<tr>
<td>P_{70}</td>
<td>53</td>
<td>55</td>
</tr>
<tr>
<td>P_{65}</td>
<td>52</td>
<td>54</td>
</tr>
<tr>
<td>P_{60}</td>
<td>51</td>
<td>53</td>
</tr>
<tr>
<td>P_{55}</td>
<td>50</td>
<td>52</td>
</tr>
<tr>
<td>P_{50}</td>
<td>49</td>
<td>51</td>
</tr>
<tr>
<td>P_{45}</td>
<td>48</td>
<td>50</td>
</tr>
<tr>
<td>P_{40}</td>
<td>47</td>
<td>49</td>
</tr>
<tr>
<td>P_{35}</td>
<td>46</td>
<td>48</td>
</tr>
<tr>
<td>P_{30}</td>
<td>45</td>
<td>46</td>
</tr>
<tr>
<td>P_{25}</td>
<td>43</td>
<td>45</td>
</tr>
<tr>
<td>P_{20}</td>
<td>41</td>
<td>43</td>
</tr>
<tr>
<td>P_{15}</td>
<td>39</td>
<td>42</td>
</tr>
<tr>
<td>P_{10}</td>
<td>36</td>
<td>38</td>
</tr>
<tr>
<td>P_{5}</td>
<td>32</td>
<td>34</td>
</tr>
<tr>
<td>P_{1}</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>M=</td>
<td>48.07</td>
<td>50.06</td>
</tr>
<tr>
<td>T=</td>
<td>8.27</td>
<td>8.22</td>
</tr>
</tbody>
</table>

**Table - 3.4**
Classification of teacher’s total Adjustment in terms of categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Range of Raw scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>A</td>
<td>Very good</td>
<td>63 and above</td>
</tr>
<tr>
<td>B</td>
<td>Good</td>
<td>54-62</td>
</tr>
<tr>
<td>C</td>
<td>Average</td>
<td>43-53</td>
</tr>
<tr>
<td>D</td>
<td>Poor</td>
<td>33-42</td>
</tr>
<tr>
<td>E</td>
<td>Very poor</td>
<td>32 and below</td>
</tr>
</tbody>
</table>

Table – 3.5

Scoring scheme of Teacher’s Adjustment Inventory

<table>
<thead>
<tr>
<th>Mode of response</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Yes’</td>
<td>1</td>
</tr>
<tr>
<td>‘No’</td>
<td>0</td>
</tr>
</tbody>
</table>

a) Sr. No of the items where response ‘Yes’ show adjustment 7(a), 19, 21, 23, 38, 47, 57, 63 and 70 total 10 items. (For identification these 10 items have been marked by * symbol in the test booklet)

b) For all the remaining 60 items the response ‘No’ shows adjustment.
3.5.3 INTELLIGENCE:

This scale is used for measuring the intelligence among B. Ed student teachers. It is a standardized scale developed by J. C. Ravan’s.

It has got 60 problems divided into 5 sets of 12 problems each which is named as A set, B, C, D and E.

Table – 3.6

The self administered or Group test (Adults) working percentile points calculated from the natural scores of 3,665 militiamen and 2,192 civilians.

<table>
<thead>
<tr>
<th>Percentile points</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>35</th>
<th>40</th>
<th>45</th>
<th>50</th>
<th>55</th>
<th>60</th>
<th>65</th>
</tr>
</thead>
<tbody>
<tr>
<td>95</td>
<td>55</td>
<td>55</td>
<td>54</td>
<td>53</td>
<td>52</td>
<td>50</td>
<td>48</td>
<td>46</td>
<td>44</td>
<td>42</td>
</tr>
<tr>
<td>90</td>
<td>54</td>
<td>54</td>
<td>53</td>
<td>51</td>
<td>49</td>
<td>47</td>
<td>45</td>
<td>43</td>
<td>41</td>
<td>39</td>
</tr>
<tr>
<td>75</td>
<td>49</td>
<td>49</td>
<td>47</td>
<td>45</td>
<td>43</td>
<td>41</td>
<td>39</td>
<td>37</td>
<td>35</td>
<td>33</td>
</tr>
<tr>
<td>50</td>
<td>44</td>
<td>44</td>
<td>42</td>
<td>40</td>
<td>38</td>
<td>35</td>
<td>33</td>
<td>30</td>
<td>27</td>
<td>24</td>
</tr>
<tr>
<td>25</td>
<td>37</td>
<td>37</td>
<td>34</td>
<td>30</td>
<td>27</td>
<td>24</td>
<td>21</td>
<td>18</td>
<td>15</td>
<td>13</td>
</tr>
<tr>
<td>10</td>
<td>28</td>
<td>28</td>
<td>25</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>23</td>
<td>23</td>
<td>19</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Grade I or “Intellectually superior.” If his score lies at or above the 95\(^{th}\) percentile for people of his age.
Grade II “definitely above the average in intellectual capacity.” If his score lies at or above the 75th percentile.

II+, if his score lies at or above the 90th percentile.

Grade III “Intellectually average.” If his score lies between the 25th and 75th percentiles; III+, if his score is greater than the median or 50th percentile for his age; III-, If his score is less than the median.

Grade IV “Definitely below average in intellectual capacity.” If his score lies at or below the 25th percentile.

Grade V “Intellectual defective.” If his score lies at or below the 5th Percentile for his age-group.

3.5.4 SELF – CONCEPT:

This scale is used for measuring the intelligence among B. Ed students teachers. It is a standardized scale developed by Dr.(Mrs) Pratibha Deo, Ph. D Retd, Professor and Head, University Department of Education University of Bombay, Bombay.

It contains 90 words, 90 words in the check list also are divided in the positive and negative and neutral classes as well as in the dimensions of
Intellectual, Emotions, Character Social and Aesthetic characteristics base on the consensus of the 25 Judges, the mode of response was to just put (√) mark on any one of the five choices i.e.,

- Very much like this
- Much like this
- Uncertain
- Not like this
- Not at all like this

For the check list, a positive word marked carries a weight of +1, a negative word marked a weight of -1. Each aspect is scored separately. For one aspect, the total positive score will be the sum of all the positive weights given do the positive words.

Table : 3.7

Convergent and Discriminant Validities for perceive self on PWL (N=100)

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>E</th>
<th>S</th>
<th>C</th>
<th>A</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intelligence (I)</strong></td>
<td>.65**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Emotional (E)</strong></td>
<td>.57**</td>
<td>.69**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Social (S)</strong></td>
<td>.67**</td>
<td>.55**</td>
<td>.80**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Character (C)</strong></td>
<td>.45**</td>
<td>.41**</td>
<td>.46**</td>
<td>.89**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Aesthetic (A) | .43** | .31** | .37** | .18** | .73**
Neutral (N)   | .14*  | .12*  | .06** | .14*  | .12*  | .22*

** sig. at .01 level
* sig. at .05 level

### 3.6 POPULATION OF THE STUDY:

A population refers to any collection or of specified group of human beings or non human entities, such as objects, educational institutions, time units, geographical area, price of wheat or salaries drawn by individuals. The population is properly defined so that there is no ambiguity as to whether a given unit belongs to the problem. All the Female teacher trainee of B.Ed Colleges, studying in private aided, un-aided and government colleges comes under Karnataka formulated the population of the present study.

### 3.7 SAMPLE OF THE STUDY:

The primary purpose of research is to discover principles that have universal application. To arrive at generalizations by studying the whole population will be impracticable. If not impossible to test, to interview or
observe each unit of population under controlled conditions. Some populations are so large that their study would be expensive in terms of time, money effort and man power.

Fortunately, the process of sampling makes it possible to draw valid inferences of generalizations on the basis of careful observation of variables within a relatively small proportion of the population.

Lokesh Koul has defined sampling as “The process by which a relatively small number of individuals or measure of individuals, objects or events is selected and analyzed in order to find out something about the entire population from which it was selected.

In the present study, the researcher has employed the method of stratified Random sampling. In this kind of sampling, the researcher divides his population into different strata which is to be related to the phenomenon under investigation and from each of the smaller homogenous groups falling in each strata, he draws randomly a predetermined number of units.

The total number of secondary school students B.Ed trainers in the Karnataka state. Formed the population while the sample for this, the
study comprised of four divisions, Belgaum division, Gulbarga division, Mysore division and Bangalore division.

A total of 600 B.Ed teacher trainees were selected for the study from 8 colleges and each from each division which comprising 150 samples from divisions. Totally 600 female teachers trainees are taken for this study.

Table 3.8

The sample drawn in the present study is given in

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Name of the division</th>
<th>Name of the College</th>
<th>Type of the College</th>
<th>Number of Girls</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Belgaum Division</td>
<td>Siddarth College of Education, Jamkhandi</td>
<td>Private</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>School of Education (B.Ed) K.S.W.U. Bijapur.</td>
<td>Govt</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>Gulbarga Division</td>
<td>Godutai College of Education, Gulbarga.</td>
<td>Private</td>
<td>79</td>
<td>79</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nagambika College of Education, Gulbarga.</td>
<td>Private</td>
<td>71</td>
<td>71</td>
</tr>
<tr>
<td>3</td>
<td>Mysore Division</td>
<td>Mandavya College of Education Mandya.</td>
<td>Private</td>
<td>79</td>
<td>79</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sankraegauoda College of Education, Mandya.</td>
<td>Aided</td>
<td>71</td>
<td>71</td>
</tr>
<tr>
<td>4</td>
<td>Bangalore Division</td>
<td>Vijaya Teachers College of Education, Bangalore.</td>
<td>Aided</td>
<td>75</td>
<td>75</td>
</tr>
</tbody>
</table>
3.8 METHODS OF COLLECTING THE DATA:

Major objective of the present study was related to the study of social problem among Academic Achievement of Female student teachers of Karnataka in relation to Learning Style, Adjustment, Intelligence and Self-Concept. For this the investigator conducted a survey type of descriptive research. Investigator visited various B. Ed colleges of Karnataka state administered the Questionnaire to the Teacher Trainees of Karnataka and the Questionnaire includes

1) Learning Style which includes 30 items.
2) Adjustment which includes 70 items.
3) Intelligence which includes 60 items.
4) Self-Concept scale which includes 90 items.

The investigator visited four divisions of Karnataka i.e., Belgaum division, Gulbarga division, Mysore division and Bangalore division. In each division two colleges are selected. The investigator administered a questionnaire to all the student teachers of Karnataka. Instructions and explained each item gave which they felt difficult.
In this way the investigator collected the data from the four divisions of Karnataka.

3.9 FORMULATION OF HYPOTHESES:

Hypotheses are tentative guesses formulated to study the effect of independent variables on dependent variables. All hypotheses were stated in the null form to facilitate statistical testing of the hypothesis. The present study attempts to test the following hypotheses.

**Hypothesis:** There is a significant difference between student teachers of four divisions of Karnataka (Belgaum, Bangalore, Mysore and Gulbarga) with respect to their academic achievements.

**Hypothesis:** There is a significant difference between student teachers of four divisions of Karnataka (Belgaum, Bangalore, Mysore and Gulbarga) with respect to learning style scores.

**Hypothesis:** There is a significant difference between student teachers of four divisions of Karnataka (Belgaum, Bangalore, Mysore and Gulbarga) with respect to adjustment scores.
**Hypothesis**: There is a significant difference between student teachers of four divisions of Karnataka (Belgaum, Bangalore, Mysore and Gulbarga) with respect to intelligence scores.

**Hypothesis**: There is a significant difference between student teachers of four divisions of Karnataka (Belgaum, Bangalore, Mysore and Gulbarga) with respect to self-concept scores.

**Hypothesis**: There is a significant difference between urban and rural student teachers of Karnataka with respect to their academic achievements.

**Hypothesis**: There is a significant difference between urban and rural student teachers of Karnataka with respect to learning style scores.

**Hypothesis**: There is a significant difference between urban and rural student teachers of Karnataka with respect to adjustment scores.

**Hypothesis**: There is a significant difference between urban and rural student teachers of Karnataka with respect to intelligence scores.

**Hypothesis**: There is a significant difference between urban and rural student teachers of Karnataka with respect to self-concept scores.

**Hypothesis**: There is a significant difference between Arts and Science student teachers of Karnataka with respect to their academic achievements.
**Hypothesis:** There is a significant difference between Arts and Science student teachers of Karnataka with respect to learning style scores.

**Hypothesis:** There is a significant difference between Arts and Science student teachers of Karnataka with respect to adjustment scores.

**Hypothesis:** There is a significant difference between Arts and Science student teachers of Karnataka with respect to intelligence scores.

**Hypothesis:** There is a significant difference between Arts and Science student teachers of Karnataka with respect to self-concept scores.

**Hypothesis:** There is a significant difference between Aided and Unaided types of management student teachers of Karnataka with respect to their academic achievements.

**Hypothesis:** There is a significant difference between Aided and Unaided types of management student teachers of Karnataka with respect to learning style scores.

**Hypothesis:** There is a significant difference between Aided and Unaided types of management student teachers of Karnataka with respect to adjustment scores.
**Hypothesis:** There is a significant difference between Aided and Unaided types of management student teachers of Karnataka with respect to intelligence scores.

**Hypothesis:** There is a significant difference between Aided and Unaided types of management student teachers of Karnataka with respect to self-concept scores.

**Hypothesis:** There is a significant difference between SC/ST and other caste female student teachers of Karnataka with respect to their academic achievements.

**Hypothesis:** There is a significant difference between SC/ST and other caste female student teachers of Karnataka with respect to learning style scores.

**Hypothesis:** There is a significant difference between SC/ST and other caste female student teachers of Karnataka with respect to adjustment scores.

**Hypothesis:** There is a significant difference between SC/ST and other caste female student teachers of Karnataka with respect to intelligence scores.

**Hypothesis:** There is a significant difference between SC/ST and other caste female student teachers of Karnataka with respect to self-concept scores.
**Hypothesis:** There is a significant difference between low and high learning style female student teachers of Karnataka with respect to their academic achievements.

**Hypothesis:** There is a significant difference between low and high adjustment female student teachers of Karnataka with respect to their academic achievements.

**Hypothesis:** There is a significant difference between low and high intelligence female student teachers of Karnataka with respect to their academic achievements.

**Hypothesis:** There is a significant difference between low and high self-concept female student teachers of Karnataka with respect to their academic achievements.

**Hypothesis:** There is a significant relationship between academic achievement and learning style, adjustment, intelligence and self-concept scores of student teachers of Karnataka as a whole.

**Hypothesis:** There is a significant relationship between academic achievement and learning style, adjustment, intelligence and self-concept scores of student teachers of Belgaum division.
Hypothesis: There is a significant relationship between academic achievement and learning style, adjustment, intelligence and self-concept scores of student teachers of Bangalore division.

Hypothesis: There is a significant relationship between academic achievement and learning style, adjustment, intelligence and self-concept scores of student teachers of Mysore division.

Hypothesis: There is a significant relationship between academic achievement and learning style, adjustment, intelligence and self-concept scores of student teachers of Gulbarga division.

Hypothesis: There is a significant relationship between academic achievement and learning style, adjustment, intelligence and self-concept scores of urban student teachers of Karnataka.

Hypothesis: There is a significant relationship between academic achievement and learning style, adjustment, intelligence and self-concept scores of rural student teachers of Karnataka.

Hypothesis: There is a significant relationship between academic achievement and learning style, adjustment, intelligence and self-concept scores of arts student teachers of Karnataka.
**Hypothesis:** There is a significant relationship between academic achievement and learning style, adjustment, intelligence and self-concept scores of science student teachers of Karnataka.

**Hypothesis:** There is a significant relationship between academic achievement and learning style, adjustment, intelligence and self-concept scores of aided college student teachers of Karnataka.

**Hypothesis:** There is a significant relationship between academic achievement and learning style, adjustment, intelligence and self-concept scores of unaided college student teachers of Karnataka.

**Hypothesis:** There is a significant relationship between academic achievement and learning style, adjustment, intelligence and self-concept scores of SC/ST student teachers of Karnataka.

**Hypothesis:** There is a significant relationship between academic achievement and learning style, adjustment, intelligence and self-concept scores of other caste student teachers of Karnataka.

**Hypothesis:** Learning style, adjustment, intelligence and self-concept are would be significant predictors of academic achievement of student teachers of Karnataka as a whole.
**Hypothesis:** Learning style, adjustment, intelligence and self-concept are would be significant predictors of academic achievement of student teachers of Belgaum division.

**Hypothesis:** Learning style, adjustment, intelligence and self-concept are would be significant predictors of academic achievement of student teachers Bangalore division.

**Hypothesis:** Learning style, adjustment, intelligence and self-concept are would be significant predictors of academic achievement of student teachers Mysore division.

**Hypothesis:** Learning style, adjustment, intelligence and self-concept are would be significant predictors of academic achievement of student teachers Gulbarga division.

**Hypothesis:** Learning style, adjustment, intelligence and self-concept are would be significant predictors of academic achievement of urban student teachers of Karnataka.

**Hypothesis:** Learning style, adjustment, intelligence and self-concept are would be significant predictors of academic achievement of rural student teachers of Karnataka.
**Hypothesis:** Learning style, adjustment, intelligence and self-concept are would be significant predictors of academic achievement of arts student teachers of Karnataka.

**Hypothesis:** Learning style, adjustment, intelligence and self-concept are would be significant predictors of academic achievement of science student teachers of Karnataka.

**Hypothesis:** Learning style, adjustment, intelligence and self-concept are would be significant predictors of academic achievement of aided college student teachers of Karnataka.

**Hypothesis:** Learning style, adjustment, intelligence and self-concept are would be significant predictors of academic achievement of unaided college student teachers of Karnataka.

**Hypothesis:** Learning style, adjustment, intelligence and self-concept are would be significant predictors of academic achievement of SC/ST caste student teachers of Karnataka.

**Hypothesis:** Learning style, adjustment, intelligence and self-concept are would be significant predictors of academic achievement of other caste student teachers of Karnataka.
3.10 STATISTICAL ANALYSIS OF THE DATA:

Statistical technique plays an important role in any research because they are the means to analysis, interpret and then draw inferences.

The following statistical techniques were used for analyzing the data and were computed by using standard formulas.

1. Percentages.
3. Regression Analysis
5. ANOVA.

1. Percentages:

It is a statistical measure used to calculate rate per hundred.

\[ \frac{100 \times X}{N} \]  

Type equation here.

Where,

\[ X = \text{Number of students for which \% is calculated.} \]

\[ N = \text{Total number of students.} \]

2. Mean and Standard Deviation:
Mean : Mean is obtained adding all the scores together dividing it by the number of cases. It denotes the center of gravity of a distribution.

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

Where,

\[ N = \text{Sample. Size and} \]
\[ X = \text{Total Score.} \]

Mean is used when others competitions such as measures of variability are to be followed, when great sampling stability is wanted, when the distribution is symmetrical above the centre, at gives a stable measure. Because mean is the centre if gravity and each score contributes to its determinations in the present study, mean was used by researcher to measure the Dependent and Independent Variables.

**Standard Deviation :**

It is obtained as the square root of the arthematic mean of squares of the deviations about the mean. It written symbolically as :

\[ \text{SD} = \sqrt{\frac{\sum f d^2}{N}} \]

Where,

\[ f d^2 = \text{Sum of the squares of deviation from means.} \]
N = Number of items.

In the present study, standard deviation was used by the researcher to measure each item.

3. T-test:

‘t’ test is the ratio between the difference to two sample means, and the standard error of the mean difference. It is applied to small samples in order to determine the mean significance difference of one group over other this provided an idea as to determine the main effect of the variables on environmental awareness.

For determining the t-value of the following formula was used.

\[
t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{\sigma^2_1}{N_1} + \frac{\sigma^2_2}{N_2}}}
\]

Where:

\(X_1\) = Mean of the first group.

\(X_2\) = Mean of the second group.

\(\sigma_1\) = Standard deviation of the first group.

\(\sigma_2\) = Standard deviation of the second group.

\(N_1\) = Number of students in the first group.

\(N_2\) = Number of students in the second group.

4. Co-efficient Correlation:
The statistics that describes the degree of relation between two variables is called correlation. The co-efficient of co-relation was used in this study for testing the relationship between the variables.

For determining the correlation Pearson’s product moment correlation formula was used.

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

Where:

X = The sum of observations of variable X.

Y = The sum of observations of variable Y.

X = The sum of squares observations on variable X.

Y = The sum of squares observations on variable Y.

XY = The sum of the products of observations on variable X and Y variables.

N = The number of paired observations.

5. Multiple Regression Analysis:

This analysis is adopted when the researcher has one dependent variable which is presumed to be a function of two or more independent variables. The objective of this analysis is to make a prediction about the
dependent variables based on its covariance with all the concerned independent variables.

When there are two or more than two independent variables, the analysis concerning relationship as the multiple regression equation. We here explain multiple correlation and regression taking only two independent variables and one dependent variable. In this situation the results are interpreted as shown below.

Multiple regression equation assumes the form

\[ Y = a + b_1 x_1 + b_2 x_2 \]

Where:

- \( x_1 \) and \( x_2 \) are two independent variables.
- \( y \) being the dependent variable
- \( a \), \( b_1 \), and \( b_2 \) are constants.

In multiple regression analysis, the regression coefficients (viz., \( b_1 \), \( b_2 \)) become less reliable as the degree of correlation between the independent variables (viz., \( x_1 \), \( x_2 \)) increases.

6. ANOVA:
The ANOVA technique is important in the context of all those situations where we want to compare more than two populations. ANOVA is essentially a procedure for testing the difference among different groups of data for homogeneity. The essence of ANOVA is that the total amount of variation in a set of data is broken down into two types, that amount which can be attributed less chance and that amount which can be attributed to specified causes.

When two sets of scores are combined into a single distribution.

\[ \sum x^2_T = \sum x^2_A + \sum x^2_B + N_A d^2_A + N_B d^2_B \]

Where:

\[ \sum x^2_T = \text{SS of deviations in distribution T from } M_T. \]
\[ \sum x^2_A = \text{SS of deviations in distribution A from } M_A. \]
\[ \sum x^2_B = \text{SS of deviations in distribution B from } M_B. \]