CHAPTER – 3
PLANNING AND PROCEDURE OF THE STUDY

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CHAPTER – 3
PLANNING AND PROCEDURE OF THE STUDY

3.1 Introduction:

Planning occupies an important part in research. The investigator moves in the right direction only if the work is planned in advance, planning is like the engineer’s blue-print of a project.

Borg says, “The factor that most often differentiates between good and poor research is not the funds available, the size of the sample or the sophistication of the statistics, it is the care and thought that goes into the research plan.”

Planning carefully not only saves time, labour and money but also creates a perfect picture before the researcher, so that all the attempts lead to successful achievement of objectives. It facilitates the selection of tools, sample and administration of the tools.

The present study is related to the teaching aptitude of B.Ed. students in context of some variables. This requires a carefully planned research design and tools for data collection.

The study involves the construction of teaching aptitude test: the investigator knew it very well that a reliable test can’t just happen. It is neither a result of a flash or an imagination, nor is the result of a few moments of profound thinking. It encompasses a number of operations to be carried out with patience, hard work, zeal, accuracy and diligence of months. Such a long process would demand utmost care and insight. It also expects a good amount of responsibilities from the tool constructor.
It is undoubted fact that many works without pre-planning and thinking have not only failed to bring out satisfactory results, but also have invited doubtful results and frustration.

Planning involves previewing: thinking about any sort of activity, arranging all details, thinking about the various devices that emerge after the successful execution of the same such a complicated process is called planning. Actually this chapter is a guideline of the research. Therefore, to plan accurately, is necessary for the investigator.

3.2 Rational of the Study:

Quest for quality or effectiveness has been the characteristic of the entire history of human civilization. It is the driving force behind all human endeavours. Teacher quality, which is very much associated with teaching aptitude, is considered as the main spring for all educational innovations.

Although an educational system has excellent resources, or if the teachers are lacking teaching aptitude and are incompetent or indifferent to their responsibilities, the whole programme is likely to be ineffective and largely wasteful.

Since the future of our nation is moulded in our classrooms, teachers are the real makers. Teachers with rich teaching aptitude can create wonders in the minds of their children and can lead them to a world of reality, practicability and accountability.

In the field of education, a term is always discussed, in relation with 'quality'. This is, no matter, highly related to teaching professionals and aspirants of teacher education. This quality is mainly depending on teacher's aptitude in teaching and several associated factors.
Several studies had provided substantial evidence favouring teaching aptitude, for quality education. Complexity and multidimensional nature of teaching aptitude warrants a comprehensive study of the factors related with it.

How student teachers with teaching aptitude can be identified? How Teaching aptitude can be reliably measured? In the case of teachers, teacher educators and teacher trainees, how can we infer their level of teaching aptitude from related factors? What are such factors? Can we predict Teaching aptitude from achievement in Teacher education? These are some of the questions which are to be answered.

Reviewed studies in this area revealed that attitude towards teaching (Vashishta, 1973)\textsuperscript{2}, teacher effectiveness (Mutha, 1980\textsuperscript{3}; Sharma, 1971\textsuperscript{4}; Singh, 1987\textsuperscript{5}; Beena, 1995\textsuperscript{6}), teaching success (Vyas, 1982)\textsuperscript{7}, general intelligence (Banerjy, 1956\textsuperscript{8}; Thakkur, 1977\textsuperscript{9}), etc. are significantly related to Teaching aptitude. This made investigator to study the extent of relationship of certain psychological variables and studying the predictability of teaching aptitude from these variables.

Considering the pivotal role of teaching aptitude in quality teaching, a significant weightage was given to teaching aptitude in entrance examinations related to teaching profession. GTAT, HTAT has been organized by Gujarat Government and CTAT is being organized by Central Government for the selection of Teachers at primary, secondary and higher secondary level of education, in which 50% of marks is the weightage for aptitude in teaching. In B.Ed. entrance examination of Kerala 13.3% of mark is the weightage for aptitude in teaching (Prospectus, for B.Ed, Kerala, 2006).\textsuperscript{10} This signifies the importance of
teaching aptitude given by Kerala Government for the selection of candidates for getting admitted to the B.Ed. course.

Out of the personal experiences of the investigator while training his own teacher trainees, he had noticed that certain trainees who are competent in their subject matters are often failure in classroom teaching and class management. Hence a need was felt for knowing the relationship of Academic Achievement in Teacher Education with teaching aptitude.

Reviewing the previous studies conducted both inside and outside India: it was found that the studies related to teaching aptitude are very few in numbers. The investigator believes that the present study will fill the gap and may become a motivation for the future researchers. The investigator being a teacher educator felt that the study will help the concerned personnel to chalk out a selection procedure by considering either Teaching aptitude or the allied or related psychological variables as the major criteria of either admission to teacher education or selection of teachers at various levels of education.

3.3 Population and Sample:

3.3.1 Population:

The population is the group of interest to the investigator, the group to which he or she would like the results of the study to be generalizable. The defined population has at least one characteristic that differentiate it from other groups. There are two important aspects regarding population of any research. First, populations may be virtually any size and may cover almost any geographical area. Second, the group, the researcher would really like to generalize to be rarely available. The population that the researcher
would ideally like to generalize is referred to as the target population: the population that the researcher can realistically select from is referred to as accessible or available population. Thus, the definition of the population is generally a realistic choice not an idealistic one.

Before selecting the technique of sampling the distribution of the population was found out. The present Teaching aptitude test was prepared for the students of B.Ed. So the students of the year 2010-11 of B.Ed. colleges of Gujarat state were the population for the study.

The common characteristics of these students are:

1. The students studying in B.Ed. in the B.Ed. colleges of Gujarat State.
2. The students studying in B.Ed. in the Gujarati medium Colleges of Gujarat State.

3.3.2 Sample:

Selection of a sample is a very important step in conducting a research study. “Goodness” of the sample determines the generalizability of the result. Since conducting a study generally requires a great deal of time and energy, non generalizable results are extremely wasteful: if all the results were true for the group on which they were based, educators could never benefit from anyone else’s work and each and every study would have to be replicated an almost infinite number of times.

According to Freeman\textsuperscript{11}, “the author of the test must decide at the outset with which group or segment of the
population his instrument is to be used. Then he must (Select) sample that is stratified according to relevant factors and within each stratum, the selection of cases should be adequate in number.”

There are four basic sampling techniques or procedures:

(1) Random Sampling     (2) Stratified Sampling
(3) Cluster Sampling     (4) Systematic Sampling

The investigator used first three techniques in a particular series as mentioned hereafter. These sampling techniques have the following specialties.

(1) **Random Sampling:**

Random sampling is the process of selecting a sample in such a way that all individual in the defined population have an equal and independent change of being selected for the sample. It is the best single way to obtain a representative sample. It involves defining the population, identifying each member of the population, and selecting individuals for the sample on a completely change basis.

(2) **Stratified Sampling:**

Stratified sampling is the process of selecting a sample in such a way that identified sub groups in the population are represented in the sample in the same proportion that they exist in the population. It can also be used to select equal sized samples from each of a number of sub groups, if sub group comparisons are desired. The steps in stratified sampling are very similar to those in
random sampling except that selection is from subgroup in the populations rather than the population as a whole.

(3) **Cluster Sampling**:

Cluster sampling is sampling in which groups, not individuals, are randomly selected. Any intact group of similar characteristics is a cluster. The steps in cluster sampling are similar to those in random sampling except that the random selection of groups (clusters) is involved, not individuals.

(4) **Systematic Sampling**:

The technique of systematic sampling is used to obtain a sample from the defined population. This technique can be used if all members in the defined population are placed on a list in random order. To use systematic sampling, the researcher first divides the population by the number needed for the sample. Then, in view of the number arrived at, he selects the cases from the list of population at regular intervals.

Systematic sampling is a slightly easier procedure to use instead of simple random sampling. It differs from random sampling in that each member of the population is not chosen independently. Systematic sampling can be used instead of simple random sampling if one is certain that the population list is in random order. Systematic sampling is used very widely.

### 3.3.3 Sample for the Present Study:

For the present investigation the procedure adopted for the selection of sample was Random sampling. Mainly three steps were adopted by the investigator for the selection of sample. There
was random selection of Universities of Gujarat. Then the B.Ed. Colleges of different Universities have been selected again using Random sampling. The B.Ed. students of were also selected by Random Sampling as per the need of the sample. Thus, the sample was selected according to the following strata:

- University wise distribution of the students
- College wise distribution of the students, and
- Sex wise distribution of the students

The following points were taken into consideration at the time of selecting the sample.

- There is diversity in ratio of male and female students in almost colleges of the state.
- Generally students are regular in the classes.

As stated by Scott, “it is not convenient to study randomly scattered sample in a large population, so naturally occurring groups or clusters are better.”

The students were selected.

After considering all these, the sample selected for the final administration, was as presented as follows:

- **University wise distribution of the students**:

  The university wise distribution of the sample is presented in the Table 3.1 as follows:
## Table 3.1
**University and Sex wise Distribution of Sample**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of University with colleges</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VNSGU, SURAT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Shri Rang Shikshan Mahavidyala, Bilimora</td>
<td>31</td>
<td>69</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>R. K. Desai College of Education, Vapi</td>
<td>24</td>
<td>76</td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>V. T. Choksi College of Education, Surat</td>
<td>6</td>
<td>44</td>
<td>50</td>
</tr>
<tr>
<td>4</td>
<td>Naranlala Institute of Teacher Education, Navsari</td>
<td>19</td>
<td>81</td>
<td>100</td>
</tr>
<tr>
<td>5</td>
<td>V. R. Bhakt Mahavidyalaya, Kamrej</td>
<td>15</td>
<td>35</td>
<td>50</td>
</tr>
<tr>
<td>6</td>
<td>C. N. Parmar B. Ed. College, Udwada</td>
<td>12</td>
<td>38</td>
<td>50</td>
</tr>
<tr>
<td>7</td>
<td>M. K. Mehta College of Education, Umergam</td>
<td>19</td>
<td>31</td>
<td>50</td>
</tr>
<tr>
<td><strong>S.P.UNI. VVNAGAR</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Shri P. M. Patel College of Education, Anand</td>
<td>31</td>
<td>19</td>
<td>50</td>
</tr>
<tr>
<td>9</td>
<td>N. H. Patel College of Education, Anand</td>
<td>14</td>
<td>36</td>
<td>50</td>
</tr>
<tr>
<td>10</td>
<td>Anand Education College(Mahila), Anand</td>
<td>-</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>11</td>
<td>Anand College of Education, Anand</td>
<td>21</td>
<td>29</td>
<td>50</td>
</tr>
<tr>
<td><strong>GUJARAT UNI., A'BAD</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Shri Ram Cheritable Trust B. Ed. College, Koidam, (PMS)</td>
<td>22</td>
<td>28</td>
<td>50</td>
</tr>
<tr>
<td>13</td>
<td>Smt. K. C. M. Shah B. Ed. College, Kakanpur(PMS)</td>
<td>20</td>
<td>30</td>
<td>50</td>
</tr>
<tr>
<td><strong>H. NORTH GUJARAT UNI., PATAN</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>S. V. V. L. M. K. College of Education, Patan</td>
<td>22</td>
<td>28</td>
<td>50</td>
</tr>
<tr>
<td>15</td>
<td>L N K College of Education, Patan</td>
<td>29</td>
<td>21</td>
<td>50</td>
</tr>
<tr>
<td><strong>SAURASHTRA UNI., RAJKOT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Shri B. V. Shah B. Ed. College, Wadhwancity, Surendranagar</td>
<td>18</td>
<td>32</td>
<td>50</td>
</tr>
<tr>
<td>17</td>
<td>Dr. V. R. Godhaniya B.Ed. College, Porbandar.</td>
<td>22</td>
<td>28</td>
<td>50</td>
</tr>
<tr>
<td><strong>Total :</strong></td>
<td></td>
<td>325</td>
<td>675</td>
<td>1000</td>
</tr>
</tbody>
</table>

- **College wise distribution of the students**:

The college wise distribution of the sample is presented in the Table 3.2 as follows:
### Table 3.2

**College and Sex wise Distribution of Sample**

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Name of College</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>81</td>
<td>100</td>
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<td>50</td>
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<td>28</td>
<td>50</td>
</tr>
<tr>
<td>7</td>
<td>N. H. Patel College of Education, Anand</td>
<td>14</td>
<td>36</td>
<td>50</td>
</tr>
<tr>
<td>8</td>
<td>Anand Education College, Anand</td>
<td>-</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>9</td>
<td>Anand College of Education, Anand</td>
<td>21</td>
<td>29</td>
<td>50</td>
</tr>
<tr>
<td>10</td>
<td>Shri Ram Cheritable Trust B. Ed. College, Koidam, (PMS)</td>
<td>22</td>
<td>28</td>
<td>50</td>
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<td>11</td>
<td>C. N. Parmar B. Ed. College, Udwada</td>
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<td>50</td>
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<tr>
<td>12</td>
<td>S. V. V. L. M. K. College of Education, Patan</td>
<td>22</td>
<td>28</td>
<td>50</td>
</tr>
<tr>
<td>13</td>
<td>Shri P. M. Patel College of Education, Anand</td>
<td>31</td>
<td>19</td>
<td>50</td>
</tr>
<tr>
<td>14</td>
<td>Shri B. V. Shah B. Ed. College, Wadhwan City, Surendranagar</td>
<td>18</td>
<td>32</td>
<td>50</td>
</tr>
<tr>
<td>15</td>
<td>Smt. K. C. M. Shah B. Ed. College, Kakanpur(PMS)</td>
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<td>30</td>
<td>50</td>
</tr>
<tr>
<td>16</td>
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<td>21</td>
<td>50</td>
</tr>
<tr>
<td>17</td>
<td>M. K. Mehta College of Education, Umergam</td>
<td>19</td>
<td>31</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td><strong>Total:</strong></td>
<td><strong>325</strong></td>
<td><strong>675</strong></td>
<td><strong>1000</strong></td>
</tr>
</tbody>
</table>

From the above table no. 3.2, it is clear that sample contains as good as the total 1000 B.Ed. students of above mentioned 17 B.Ed. Colleges throughout Gujarat state.
3.4 Area of the Research:

There are several types of educational research. There are several typologies for classifying educational research. The typologies are useful for analyzing research and for thinking about the future researches.

Educational researches can be classified by the phenomena investigated. Many educational journals specialized in practice and research relating to one of these phenomena.

According to the Fifth Survey of Educational Research, 37 major research areas have been classified according to the topic selected. There may be some other areas. So the researcher has divided the research areas into 38 sections, which are listed below:

- **Areas of Research**:

  1. Philosophy of Education
  2. Sociology of Education
  3. History of Education
  4. Economics of Education
  5. Psychology of Education
  6. Mental Health
  7. Curriculum Development
  8. Social Processes
  9. Creativity and innovations
  10. Cognitive Processes
  11. Guidance and Counseling
  12. Motivation
  13. Pre-Primary Education
  14. Primary Education
  15. Secondary Education
  16. Higher Education
  17. Social Science Education
  18. Science Education
  19. Mathematics Education
  20. Physical and Health Edu.
  22. Educational Technology
  23. Teaching Strategies
  24. Teacher Education
  26. Special Education
  27. Open and Distance Education
28. Adult, Continuing and Non-Formal Education
29. Education of the S.C., S.T. and Minorities
30. Education of Girls and Women
31. Demographic Studies in Education and Population Education
32. Ecological and Environmental Studies in Education
33. Comparative Education
34. Educational Assessment and Evaluation
35. Educational Planning and Policy Research
36. Organization, Administration and Management of Education
37. Correlates of Achievement
38. Other Areas (Miscellaneous)

The present research is related to 24th and 34th area i.e. area regarding Teacher Education and Educational Assessment and Evaluation respectively.

3.5 **Type of Research :**

Research is classified under three broad categories :

- Basic or fundamental research
- Applied research
- Action research

Although the line of demarcation between these categories is not very sharp, yet they have their distinctions.

The present research is concerned with the construction and standardization of Teaching Aptitude Test (TAT) and study of teaching aptitudes of the B.Ed. students and therefore, it attempts to put into practice, the theoretical knowledge regarding aptitudes. It is an applied type of research. The result of this study would be helpful for future
researchers, educationists and policy makers. This indicates the application aspect of the research.

3.6 Research Method:

While research studies have a number of similar components, such a defined problem and a set of conclusions, specific procedures in a study are to a great extent determined by the particular method of research involved. Experts have classified the methods of educational researches into three main titles. They are entitled as follows.

- The historical method
- The descriptive method
- The experimental method

As each of three methods of research has a unique purpose, application of each method entails a unique set of procedures and concerns. The knowledge of all kinds of research helps the researcher in planning the procedure for his study. Therefore, it is necessary to have brief outlines of all these methods:

- **Historical Research**:

  This type of research describes what was the process involves investigating, recording, analysis and interpreting the events of the past for the purpose of discovering generalizations that are helpful in understanding the past, the present, and to a limited extent, in anticipating the future.

- **Descriptive Research**:

  This type of research describes what is, describing, recording, analyzing and interpreting conditions that exist. It involves some type of
comparison or contrast and attempts to discover relationships between existing non-manipulated variables.

- **Experimental research**:

  This type of research describes what will be when certain variables are carefully controlled or manipulated. The focus is on variable relationships. A deliberate manipulation is always a part of the experimental method.

3.6.1 **Type of Present Research**:

  The present study falls in the category of ‘Descriptive Research’ method as it involves collecting data in order to test hypotheses or to answer questions concerning the current status of the subject of the study. It is mainly used for two major reasons. First, a high percentage of reported research studies are descriptive in nature. Second the descriptive survey is an attempt to collect data from members of a population with respect to one or more variables.

  This method is useful for investigating a variety of educational problems. Typical descriptive studies are concerned with the measurement of aptitudes, attitudes, values, opinions, demographic information, conditions and procedures. Descriptive data are usually collected through a questionnaire, different tests and scales, survey, interviews or observation.

  In the present study, investigator has also followed the co-relational method of research. Co-relational research is sometimes treated as a type of descriptive research, primarily because it does describe an existing condition. However, the condition it describes is distinctly different from the conditions typically described in
self-report or observational studies: a co-relational study describes in quantitative terms the degree to which variables are related.

Co-relational studies involve collecting data in order to determine whether, and to what degree, a relationship exists between two or more quantifiable variables. Degree of relationship is expressed as a correlation coefficient. Relationship studies typically investigate a number of variables believed to be related to a major, complex variable such as achievement. Co-relational studies provide an estimate of just how related two variables are.

In the present study, the investigator has studied teaching aptitude and its co-relationships with some psychological variables. Hence, the investigator followed these two methods for the study.

### 3.7 Tools of the Study:

A research tool plays a major role in any worthwhile research, as it is the sole factor in determining the sound data and in arriving at perfect conclusions about the study in hand. This ultimately, helps in providing suitable remedial measures to the problem concerned.

In the present study, to collect the required data the following tools were required.

- Tool to measure I.Q.
- Tool to measure E.Q.
- Tool to measure Teaching Aptitude.

#### 3.7.1 Tool to measure I.Q.:

Gardner’s adopted Guajarati version of Multiple Intelligence (MI) was administered as I.Q. test to measure the I.Q. of the students. The main purpose of this test was to find out the level of I.Q. of the students. The test includes five point scales with 70
statements on which the respondents have to tick-mark on any one of five choices. The scale is attached in Appendix I.

3.7.2 Tool to measure E.Q.:

Emotional Quotient (EQ) Scale standardized by Dr. Pallavi P. Patel & Hitesh Patel was used to obtain E.Q. scores. It contains 77 statements with five point scales, to be tick-marked on any of the five choices. It is a reliable tool to measure emotional status of the students. The scale is attached in Appendix - II.

3.7.3 Tool to Measure Teaching Aptitude:

For this research, a Teaching Aptitude Test has been constructed and standardized to measure the teaching aptitude of the students.

3.8 Construction of Teaching Aptitude Test:

As discussed in Chapter 14 – ‘Individual Differences and Aptitude’ by H. E. Garret in his book ‘General Psychology’¹³,

“An aptitude is not a set of questions, miniature performances, puzzles, and other gadgets assembled in the pious hope that somehow it will measure proficiency for a job or vocation. On the contrary, the construction of an aptitude test follows certain definite procedures and demands considerable psychological and statistical skill.”

Keeping this thing in mind, the researcher had followed the following general steps as suggested by Garret in devising an aptitude test for B. Ed. Students:

- JOB ANALYSIS
- TENTATIVE SELECTION OR CONSTRUCTION OF TESTS
- EXPERIMENTAL TRYOUT OF THE TEST
SETTING-UP DIRECTIONS FOR ADMINISTRATION AND SCORING: THE ESTABLISHMENT OF NORMS

FOLLOW-UP STUDIES TO DETERMINE THE PREDICTIVE VALUE OF THE TEST BATTERY IN SELECTION AND IN VOCATIONAL GUIDANCE

After studying the researches, tests and reference books of the concerned research problem, as mentioned in the Chapter-2, the researcher had also discussed the problem with some experts in the field of education and psychology as well as with his research guide in order to plan the test. Finally, he followed the steps as prescribed by Garret and as suggested by many experts i.e. Job Analysis and Tentative Selection or Construction of Test, in this chapter and rests of other three steps have been discussed in the following Chapter-4th of this report.

JOB ANALYSIS

3.8.1 Job Analysis :

The psychologist first makes an analysis of the job, vocation, or other activity in order to determine the probable abilities, fundamental skills, and personality traits required. The researcher had carefully observed the actual operations, often learning them himself as performed by a teacher on the job. From this analysis the researcher had drew up a list of specifications covering the activities and operations which the tests are to gauge.

The first step under Job Analysis that researcher had followed was: he had given an open ended question to the teachers and trainees of education. The question was: what are the essential qualities required to be a successful teacher? One more supporting question was asked to clarify the previous question: what are the general and specific activities performed by a teacher on the job?
In response to this, the researcher had collected a long list of various activities and qualities of a teacher on the job. Some of them were like planning and preparing daily exercises, correcting papers, keeping records, administering achievement tests, maintaining discipline, counseling with students on all sorts of educational and personal matters, participating in activities of school/college and community, keeping abreast of progress in his subject and fitting him for professional advancement.

This data was then compared and contrasted by the researcher in order to make a final list of activities. Finally, he prepared a list of 30 activities which are supposed to be required of a teacher. The list of 30 activities which was considered as traits were mentioned below:

(1) Teacher's Research Activity
(2) Teacher's Reading Interest
(3) Expertise in Teaching
(4) Verbal Expression
(5) Skilful Use of Teaching Aids
(6) Awareness for Education
(7) Follow of the Code of Conducts
(8) Use of Spare/Free Time
(9) Appreciation of Others
(10) Feeling for Cooperation
(11) Knowledge of Teaching Methods
(12) Concept Clarity of Curriculum
(13) Knowledge of Measurement and Evaluation
(14) Ability of Planning Activities
(15) Readiness for Taking Responsibility
(16) Readiness for Obedience
(17) Teacher's Innovative Efforts
(18) Acceptance of Social Responsibility
(19) Feeling for Surrender
(20) A special Contribution of Teacher in Education
(21) Knowledge of Child Psychology
(22) Logical Expression
(23) Knowledge of the subject-matter
(24) In depth Knowledge of Educational Philosophy
(25) Teacher’s Affective Response
(26) Teacher's Teaching Aptitude
(27) Teacher’s Self-concept
(28) Reactions Towards Different Situations
(29) Teacher’s Practical Nature
(30) Professional Creativity

3.8.2 Analysis of the Traits :

The researcher got a list of these 30 traits printed on a paper with a forwarding letter and handed over to 20 selected teachers in order to rate them as per their knowledge and experience of these traits. (A copy of the Rating Scale with the forwarding letter is presented in the Appendix III). The selection of 20 teachers were made dividing them into two groups – most reputed teachers and most common teachers of south Gujarat region.

This bifurcation was made keeping in mind their individual contribution to education and their dedication to education and society. They were requested to rate these traits on a five point scale as per their knowledge and experience. The researcher received a good response from both of these groups. Analysis of
the data was presented in the form of Frequency Distribution Table 3.3 as follows:

Table 3.3

Frequency Distribution Table (Rating Scale)

<table>
<thead>
<tr>
<th>Factor/Trait No.</th>
<th>Fully Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Fully Disagree</th>
<th>Total Freq. (100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>16*5=80</td>
<td>4*4=16</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>96</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>8</td>
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<td>-</td>
<td>-</td>
<td>92</td>
</tr>
<tr>
<td>3</td>
<td>14</td>
<td>4</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>92</td>
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<td>3</td>
<td>13</td>
<td>4</td>
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<td>-</td>
<td>79</td>
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<td>14</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>86</td>
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<td>-</td>
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<td>7</td>
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<td>8</td>
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<td>-</td>
<td>16</td>
<td>4</td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
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<td>9</td>
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<td>-</td>
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</tr>
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<td>4</td>
<td>15</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>83</td>
</tr>
<tr>
<td>27</td>
<td>4</td>
<td>14</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>82</td>
</tr>
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<td>28</td>
<td>1</td>
<td>4</td>
<td>13</td>
<td>2</td>
<td>-</td>
<td>64</td>
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<td>13</td>
<td>5</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>91</td>
</tr>
<tr>
<td>30</td>
<td>16</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>96</td>
</tr>
</tbody>
</table>
Table No. 3.3 shows the traits contributing to successful teaching as rated by two groups of teachers. Analysis as shown in the table indicated that trait no. 1, 2, 3, 6, 7, 11, 14, 15, 17, 20, 21, 23, 29, and 30 were found to be most acceptable by both of the groups as their frequency rated above 90.

Among them trait no. 1 – Teacher’s Research Activity, trait no. 6 - Awareness for Education, trait no. 7 - Follow of the Code of Conducts, trait no. 11 - Knowledge of Teaching Methods, trait no. 23 - Knowledge of the subject-matter, and trait no.30 - Professional Creativity were rated above 95 on the Frequency. On the contrary, trait no.28 - Reactions towards Different Situations – scored the lowest i.e. 64 by teachers of both groups. As a result factor no. 28 was omitted from the list and remaining 29 factors were considered as final traits for the pre try-out test.

3.8.3 Grouping the Traits

It can be seen from the explanation of factors that though each trait has its own identity and importance, many of them are inter-related. In the light of this fact – similarity in nature – it is possible that a test – item intended to extract one trait may seem to be testing some other traits too. It was, therefore, thought necessary to group the traits which may be called unidirectional. This could help in making the test precise and practicable.

The total 29 selected traits for this research have been grouped from this point of view as presented in Table 3.4. Grouping of traits was done under the guidance of experts and the guide.
<table>
<thead>
<tr>
<th>GROUP</th>
<th>TRAIT NO.</th>
<th>GROUPED TRAITS</th>
<th>MERGED TRAITS INCLUDED IN THE GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. INNOVATION-RESEARCH IN EDUCATION AND INTEREST &amp; ATTITUDE TOWARDS TEACHING</td>
<td>1</td>
<td>Teacher's Aptitude for Research and Innovation</td>
<td>Teacher's Research Activity</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Teacher's Interest and Attitude towards Teaching</td>
<td>Teacher's Innovative Efforts</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A special Contribution of Teacher in Education</td>
</tr>
<tr>
<td>2. TEACHER’S MASTERY IN SUBJECT-CONTENT, TEACHING METHODS AND EVALUATION IN EDUCATION</td>
<td>3</td>
<td>Knowledge of the Subject-Content</td>
<td>Concept Clarity of Curriculum</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Professional Excellency in Teaching</td>
<td>Knowledge of the subject-matter</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Teacher's Effective Expression</td>
<td>Expertise in Teaching</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Practical Knowledge of Educational Theory and Evaluation</td>
<td>Skilful Use of Teaching Aids</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Professional Creativity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Knowledge of Teaching Methods</td>
</tr>
<tr>
<td>3. TEACHER’S COMMITMENT</td>
<td>5</td>
<td>Teacher's Awareness towards Education &amp; Self</td>
<td>Awareness for Education</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Teacher's Awareness of his Responsibilities</td>
<td>Readiness for Obedience</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Teacher's Ability of Educational Planning</td>
<td>Follow of the Code of Conducts</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Readiness for Taking</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ability of Planning Activities</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Use of Spare/Free Time</td>
</tr>
<tr>
<td>4. TEACHER’S HUMAN RELATIONSHIPS AND SOCIAL ACCOUNTABILITY</td>
<td>9</td>
<td>Teacher's Knowledge of Human Relationships</td>
<td>Appreciation of Others</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Teacher’s Social Dedication</td>
<td>Feeling for Cooperation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Teacher’s Affective Response</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Teacher’s Practical Nature</td>
</tr>
<tr>
<td>5. MENTAL ABILITIES</td>
<td></td>
<td></td>
<td>Acceptance of Social Responsibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Feeling for Surrender</td>
</tr>
</tbody>
</table>
From the Table 3.4 it can be seen that these 5 groups form 5 sub-tests in all the three forms of the test – Pre Try-out, Pilot and Final Form. The researcher had developed a number of different test items keeping in mind the traits. These test items were thoroughly discussed with the guide and with some experts in the concerned field in order to assess the traits on their best level and some of them were either improved or removed as per the guidance. Correctness of answers of all these items was also assured by similar discussion.

The final list of total 206 test items i.e. 37, 45, 31, 28 and 65, respectively for Sub-Test – 1, Sub-Test – 2, Sub-Test – 3, Sub-Test – 4 and Sub-Test – 5 were sent to the 32 test experts throughout Gujarat. A list of test experts with forwarding letter is presented in Appendix –IV.

3.8.4 Expert Suggestions for the Test

The researcher has sent a copy of the test to each of the test experts and experts in psychological assessments. Total 32 copies were sent to different experts in the concerned field and have got back 15 copies of the same. The valuable suggestions given by different test experts were thus summarized as follows:

- Some of the statements measure only interest rather than measuring aptitude.

- Many of the statements measure the aptitude of in-service teachers rather than of B.Ed. Students. So they should be improved.

- Aptitude is not just a thought or emotional state but it indicates the preparation for performance in the field. So there should some statements measuring the said idea.
In multiple choice type items, the correct answer should be one and only. Many of the answers might not be measuring aptitude for teaching. The choices should be developed with the thorough knowledge of the statement.

Some common and easy to answer statements should be improved or discarded.

There should be no ideal statements in the test especially in rating scale.

Some of the experts have suggested their concern for removing the Mental Ability test for the test as there is fixed minimum M.A. For the teacher.

Some of the experts have suggested language of the statements especially spelling and grammar, along with the format of the test.

Some of the experts have suggested short-out the number of test items in each sub-test to measure aptitude in given period of time.

The statements presented in each sub-test should measure the desired trait, so assemble the group of such statements in one sub-test only.

Some of the experts have suggested developing free-response type of test to avail maximum possible measurement of teaching aptitude.

Some of the experts have suggested taking care of content validity and constructing validity as they are the characteristic features of a good test.

**TENTATIVE SELECTION OR CONSTRUCTION OF TESTS**

**3.8.5 Formation of Pre Try-out Form of the Test**

The Pre Try-out Form of the Test was developed keeping in mind the expert suggestions. The test consisted of 5 sub-tests. The
sub-test – I was entitled as ‘Innovation-Research in Education and Interest and Attitude towards Teaching’: measuring the traits like Teacher's Research Activity, Teacher's Innovative Efforts, and A special Contribution of Teacher in Education, Teacher's Reading Interest, and Teacher’s Teaching Aptitude.

The sub-test – II was entitled as ‘Teacher’s Mastery in Subject-matter, Method and Evaluation’: measuring the traits like Concept Clarity of Curriculum, Knowledge of the subject-matter, Expertise in Teaching, Skilful Use of Teaching Aids, Professional Creativity, Knowledge of Teaching Methods, Verbal Expression, Logical Expression, Knowledge of Child Psychology, In depth Knowledge of Educational Philosophy, Knowledge of Measurement and Evaluation.

The sub-test – III was entitled as ‘Teacher’s Commitment’: measuring the traits like Awareness for Education, Teacher’s Self-concept, Readiness for Obedience, Follow of the Code of Conducts, Readiness for Taking Responsibility, Ability of Planning Activities, Use of Spare/Free Time.

The sub-test – IV was entitled as ‘Teacher’s Human Relationships and Social Dedication’: measuring the traits like Appreciation of Others, Feeling for Cooperation, Teacher’s Affective Response, Teacher’s Practical Nature, Acceptance of Social Responsibility, Feeling for Surrender, and the sub-test – V was entitled as ‘Mental Abilities’: measuring mental abilities in all its three sections. The test consisted of total 183 test items. Table 3.5 gives a detailed picture of the traits to be assessed using various test items.
<table>
<thead>
<tr>
<th>TRAIT NO.</th>
<th>TRAIT AND SUB-Trait</th>
<th>SUB TEST – I ITEM NO.</th>
<th>SUB TEST – II ITEM NO.</th>
<th>SUB TEST – III ITEM NO.</th>
<th>SUB TEST – IV ITEM NO.</th>
<th>SUB TEST – V ITEM NO.</th>
<th>TOTAL NO. OF ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Teacher’s Research Activity</td>
<td>23, 24, 25, 26</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Teacher’s Reading Interest</td>
<td>13, 14, 15, 16, 17, 18</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>Expertise in Teaching</td>
<td>-</td>
<td>32, 38</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Verbal Expression</td>
<td>-</td>
<td>15, 16, 17</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Skilful Use of Teaching Aids</td>
<td>-</td>
<td>23, 24</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Awareness for Education</td>
<td>-</td>
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<td>6, 7, 8, 9, 10, 11</td>
<td>-</td>
<td>-</td>
<td>6</td>
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<td>7</td>
<td>Follow of the Code of Conducts</td>
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<td>8</td>
<td>Use of Spare/Free Time</td>
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<td>6</td>
</tr>
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<td>Knowledge of Child Psychology</td>
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<td>Logical Expression</td>
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<td>Knowledge of the subject-matter</td>
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<td>In depth Knowledge of Educational Philosophy</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
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<td>Teacher’s Practical Nature</td>
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<td></td>
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<td>Professional Creativity</td>
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<tr>
<td>30</td>
<td>Mental Abilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(A) Number Series</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(B) Word Analogy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>21</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(C) Word Relation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Items in each Sub-test:</td>
<td></td>
<td>26</td>
<td>39</td>
<td>27</td>
<td>26</td>
<td>65</td>
</tr>
</tbody>
</table>
It can be seen from the Table 3.5 that utmost care had been taken to justify all the traits in all 5 sub-tests. The preview of number of traits covered along with number of items under different sub-tests was given in Table 3.6.

**TABLE 3.6**

**SUB-TEST WISE TRAITS COVERED ALONG WITH NO. OF ITEMS**

<table>
<thead>
<tr>
<th>SUB-TEST</th>
<th>TRAITS COVERED</th>
<th>TOTAL NO. OF TEST ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>1, 2, 17, 20, 26</td>
<td>26</td>
</tr>
<tr>
<td>II</td>
<td>3, 4, 5, 8, 11, 12, 13, 14, 21, 22, 23, 24, 29</td>
<td>39</td>
</tr>
<tr>
<td>III</td>
<td>6, 7, 15, 16, 27</td>
<td>27</td>
</tr>
<tr>
<td>IV</td>
<td>9, 10, 18, 19, 25, 28</td>
<td>26</td>
</tr>
<tr>
<td>V</td>
<td>-</td>
<td>65</td>
</tr>
<tr>
<td>TOTAL</td>
<td>30</td>
<td>183</td>
</tr>
</tbody>
</table>

**3.8.6 Description of Sub-tests**

There were 5 sub-tests. Types of items selected to assess each sub-test were as follows:

**Sub-test-I : INNOVATION-RESEARCH IN EDUCATION AND INTEREST AND ATTITUDE TOWARDS TEACHING**

In this sub-test there were 26 statements. This sub-test consist of ‘YES’ – ‘NO’ type of statement. The respondents had to circle one of the three choices viz. ‘Y’ for ‘YES’, ‘U’ for Uncertain/neutral, and ‘N’ for ‘NO’ in the answer sheet. To avoid mechanical selection of answers some of the statements were presented in Negative Form.
Sub-test–II: TEACHER’S MASTERY IN SUBJECT-CONTENT, TEACHING METHODS AND EVALUATION IN EDUCATION

In this sub-test there were 39 statements. This sub-test consists of Multiple-choice type of statement. The respondents were suggested to circle one of the four choices ‘A’ ‘B’ ‘C’ ‘D’ in the answer sheet, keeping in mind the statements.

Sub-test – III: TEACHER’S COMMITMENT

In this sub-test there were 27 statements. This sub-test consists of Five Point Scale type of opinion test items. The respondents were suggested to circle on any five choices viz. ‘SA’ if they are completely agree with the statement, ‘A’ if they are agree with the statement, ‘U’ if they are uncertain about their opinion, ‘D’ if they are disagree with the statement and ‘SD’ if they are completely disagree with the statement. To avoid mechanical selection of answers some of the statements were presented in Negative Form.

Sub-test – IV: TEACHER’S HUMAN RELATIONSHIPS AND SOCIAL ACCOUNTABILITY

In this sub-test there were 26 statements. This sub-test consist of ‘YES’ – ‘NO’ type of statement. The respondents had to circle one of the three choices viz. ‘Y’ for ‘Yes’, ‘U’ for uncertain/neutral, and ‘N’ for No. To avoid mechanical selection of answers some of the statements were presented in Negative Form.

Sub-test – V: MENTAL ABILITIES

This sub-test is divided into three parts viz. Number Series, Word Comparison, and Word Relations. This sub-test includes 65 test items. This sub-test consists of Multiple Choice type of test items. The respondents were suggested to circle one of the four
choices ‘A’ ‘B’ ‘C’ ‘D’ in the answer sheet, keeping in mind the statements.

3.9 Collection of Data:

Data for the present study was collected by administering of above mentioned Teaching aptitude test during the academic year 2010-11. The procedure of data collection for the present study was carried out in two phases, the details of which are described below.

- **Phase : I**

  During this phase, the data pertaining to variables teaching aptitude score, I.Q., E.Q. and gender of student were collected from all the students who were studying in the selected B.Ed. colleges which comprise the sample. For this, initially the principal of all the selected B.Ed. colleges were consulted to seek their permission to collect the data and were informed that the investigator would visit their B.Ed. College on working day in the month of December-January 2011. Accordingly, the investigator went to each of the selected B.Ed. colleges personally and met the principal during December-January-2011. Then, the investigator had administered the tool to all the students who were present on that day in the respective B.Ed. colleges to obtain the data.

  Prior to administration of the tools viz. Teaching Aptitude Test, I.Q. Test and E.Q. scale, the student were made aware about the purpose of administration of the tools and were given the following instructions regarding the tools and the expectations form them when they provide responses.
Instructions for Teaching Aptitude Test:

- Along with this test there are two more scales and the answers of the same is too recorded on the same scale itself.
- The Teaching aptitude test contains 5 sub-tests, answer each question serially.
- Each sub-test contains instruction with illustration. They are informed to read them carefully and then read the statements, think over it and circle (O) against answer of the statement in the answer sheet.
- The students were guaranteed about the confidentiality of the information collected and its use only for research purpose.
- They were requested to return their responses to all the statements along with the test booklet.

Then, they were asked to read the printed instructions on the first page of teaching aptitude test. They were informed to ask the investigator whenever they find any word or statement difficult to comprehend. They were also informed that this is not a time bound test and hence read each statement carefully and respond according to their own belief.

The students were asked to write their complete name, specify the gender, occupation of their parents, their recreational activities, and name of their college against the space provided for it. After completing such introductory formalities, the students were allowed to provide their responses to statements in teaching aptitude test.

Majority of the student were able to complete their responses to Teaching aptitude test within 50 minutes. They took 30 minutes to fill up their responses on the scales attached. The students were once again reminded to ensure that they have responded to all the
statements of the Teaching aptitude test. The investigator also ensured
the complete response to all the statements of the Teaching aptitude
test by randomly checking a few of them while collecting the duly
filled in as from the student.

○ Phase - II :

During this phase, the data pertaining to variable academic
achievement score i.e. result sheets of the final university
examination of all the students in sample were collected from the
respective B.Ed. colleges during the period of May to July, 2011.
The principal of the selected B.Ed. colleges were consulted for the
same by the investigator.

The results of some students were collected with the help of
internet service by directly downloading the result sheets using
their examination numbers. The marks obtained by student indicate
their academic achievement.

3.10 Analysis of Data :

The data was compiled in tabular form for each variable and the
mean scores and standard deviations were computed. To study the
distribution of teaching aptitude of student mean, S.D., percentiles,
percentile ranks, Skewness, and Kurtosis were computed for the entire
sample and the sub samples of male and female students. For
standardization of the test the process given by research experts was
followed and employing the formulas of converting raw score into T
Score and Percentile Rank were computed.\textsuperscript{13} Data were further analyzed
and interpreted on the basis of F-values and t – values to study the
significance of interactions as explained by Edwards A.L.\textsuperscript{14}
Thus, collected data were analyzed through appropriate statistical techniques. Statistical Techniques used in the analysis of data are the following:

1. Pearson’s Product Moment Coefficient of Correlation ‘r’ followed by
   a) Test of significance of ‘r’s.
   b) 0.95 Confidence Interval of ‘r’s.
   c) Coefficient of determination, r² x 100
2. Step wise Multiple Regression Analysis (ANOVA approach)
3. Test of significance of the Difference between two Correlation Coefficient for Independent samples.
4. Two tailed Test of Significance of Mean Difference for large independent samples.
5. One-way Analysis of Variance

3.11 Conclusion:

In this chapter the researcher had discussed in detail the planning and the procedure of the study which comprises of rational of the study, population and sample, area of research, method of research, the procedure to construct the tool (Teaching Aptitude Test) for the study, collection of data and techniques used in analyzing the data. As a whole, this chapter was proved to be the index of the study.
REFERENCES


