CHAPTER III
DESIGN OF THE STUDY

Research design is an outline of the plan of action that researcher prepares carefully to test the hypothesis s/he laid down while searching for the solution of the research problem. It is a blueprint of the procedure involved in the testing of the hypotheses. For the design of the study, previous chapter namely Review of Related Literature provided necessary framework. On the basis of studies done earlier comprehensive view was made related to Moral Judgment and its impact on psychosocial variables of the individual. The present chapter embodies the design of the study which includes a brief description of the method, population, sample, tools, data collection, procedure and the statistical techniques employed for conducting present study.

3.1 METHODOLOGY

The present study was related to the area of social psychology and therefore addressed more appropriately with quantitative research method wherein the data concerned could analyzed in the numbers.

The present study was an attempt to describe the current state of affairs. The present investigation aimed at examining the Moral Judgment among children and relationship with Emotional Intelligence, Social Adjustment and Academic Achievement. Survey method was adopted for the study because this method was concerned with the present and attempts to determine the present status of phenomena under investigation.
3.2 SAMPLE

In present study, students of C.B.S.E. affiliated schools of Mahendergarh District constituted the population. The names of the schools from which data collected, were selected on random basis and they were following

The names of the schools

1. M.L.S.D.A.V. Public School, Mahendergarh
2. Yaduvanshi Shiksha Niketan, Mahendergarh
3. C.L. Public School, Narnaul, Dist. Mahendergarh
4. Kendriya Vidalaya, Narnaul
5. Saraswati Senior Secondary School, Narnaul, Dist. Mahendergarh
6. Haryana Public School, Mahendergarh

A sample of 259 students comprised of 131 girls and 128 boys, out of which 135 were from rural area and 124 from urban area were selected for the study. Boys and girls had been taken from class 9th their mean age was 14 years.

3.3 DESCRIPTION OF THE TOOLS

For the data collection researcher used two standardized tools and two self constructed tools. Self constructed tools were developed in consultation and guidance from the supervisor, a number of educationists and researchers in the field of education.

The two standardized tools were
1. Adjustment Inventory for School Students

2. Emotional Intelligence Test

The two self constructed tools were

1. Moral Judgment Test

2. Academic Achievement Test

3.3.1 Adjustment Inventory for School Students

Adjustment Inventory is the scale constructed and standardised by Dr. A.K.P. Sinha, Ex-Professor of Psychology, Ravi Shankar University, Raipur and Dr. R.P. Singh, Professor and Head, Department of Education, Patna University, Patna. It was employed for the present investigation as it was considered most appropriate on the basis of its reported characteristics. It consisted of three parts. Part one aimed at measuring emotional adjustment through the responses of pupils to various situations related to emotions. This part consisted 20 items. Part two attempted to measure social adjustment of the pupils. This part also consisted of 20 items. Third part included items related to educational adjustment and included 20 items. Responses in all the sixty items were invited in yes-no form. In order to arrange items on random basis the items were distributed evenly. The following table give the description of distribution of various items in three dimensions-
### TABLE 3.1: INDICATIVE OF LACK OF ADJUSTMENT AREA WISE

<table>
<thead>
<tr>
<th>Emotional Item</th>
<th>Response indicative of lack at adjustment</th>
<th>Social Item</th>
<th>Response indicative of lack at adjustment</th>
<th>Educational Item</th>
<th>Response indicative of lack at adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yes</td>
<td>2</td>
<td>Yes</td>
<td>3</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>Yes</td>
<td>5</td>
<td>Yes</td>
<td>6</td>
<td>Yes</td>
</tr>
<tr>
<td>7</td>
<td>Yes</td>
<td>8</td>
<td>Yes</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>10</td>
<td>Yes</td>
<td>11</td>
<td>No</td>
<td>12</td>
<td>No</td>
</tr>
<tr>
<td>13</td>
<td>Yes</td>
<td>14</td>
<td>Yes</td>
<td>15</td>
<td>Yes</td>
</tr>
<tr>
<td>16</td>
<td>Yes</td>
<td>17</td>
<td>No</td>
<td>18</td>
<td>No</td>
</tr>
<tr>
<td>19</td>
<td>Yes</td>
<td>20</td>
<td>No</td>
<td>21</td>
<td>Yes</td>
</tr>
<tr>
<td>22</td>
<td>Yes</td>
<td>23</td>
<td>No</td>
<td>24</td>
<td>No</td>
</tr>
<tr>
<td>25</td>
<td>Yes</td>
<td>26</td>
<td>No</td>
<td>27</td>
<td>Yes</td>
</tr>
<tr>
<td>28</td>
<td>Yes</td>
<td>29</td>
<td>Yes</td>
<td>30</td>
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<td>31</td>
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<td>32</td>
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<td>Yes</td>
<td>36</td>
<td>Yes</td>
</tr>
<tr>
<td>37</td>
<td>Yes</td>
<td>38</td>
<td>No</td>
<td>39</td>
<td>Yes</td>
</tr>
<tr>
<td>40</td>
<td>Yes</td>
<td>41</td>
<td>No</td>
<td>42</td>
<td>Yes</td>
</tr>
<tr>
<td>43</td>
<td>Yes</td>
<td>44</td>
<td>No</td>
<td>45</td>
<td>Yes</td>
</tr>
<tr>
<td>46</td>
<td>Yes</td>
<td>47</td>
<td>Yes</td>
<td>48</td>
<td>No</td>
</tr>
<tr>
<td>49</td>
<td>Yes</td>
<td>50</td>
<td>No</td>
<td>51</td>
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<tr>
<td>52</td>
<td>Yes</td>
<td>53</td>
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<td>54</td>
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<tr>
<td>55</td>
<td>Yes</td>
<td>56</td>
<td>No</td>
<td>57</td>
<td>No</td>
</tr>
<tr>
<td>58</td>
<td>Yes</td>
<td>59</td>
<td>No</td>
<td>60</td>
<td>No</td>
</tr>
</tbody>
</table>
Thus the final form of the test included 20 items in each of the three parts of the test.

**Reliability**

Coefficient of reliability was determined by Split- Half method, Test-Retest method and K-R formula. Table 3.2 gives the reliability coefficient of the total test and of sub-tests by different methods.

**TABLE 3.2 : RELIABILITY COEFFICIENTS OF THE INVENTORY**

<table>
<thead>
<tr>
<th>Method used</th>
<th>Emotional</th>
<th>Social</th>
<th>Educational</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Split half</td>
<td>0.94</td>
<td>0.93</td>
<td>0.96</td>
<td>0.95</td>
</tr>
<tr>
<td>Test- Retest</td>
<td>0.96</td>
<td>0.90</td>
<td>0.93</td>
<td>0.93</td>
</tr>
<tr>
<td>K-RFor.20</td>
<td>0.92</td>
<td>0.92</td>
<td>0.96</td>
<td>0.94</td>
</tr>
</tbody>
</table>

**Validity**

The inventory was stated to be validated by biserial correlation method and only such items are retained which yielded biserial correlation with both the criteria (i) total score and (ii) area score. Level of significance was 0.001.

**Administration**

The Adjustment Inventory could be administrated individually as well as in group. Simple and clear instructions had been given for test users. The responses had to be marked on separate answer
sheets. For test items the respondent had to select his answer out of two responses (yes or no). The pupils were asked not to leave any question unanswered. It was clarified that there was no right or wrong responses to questions.

**Scoring**

Scoring of inventory can be done manually. For any answer indicative of adjustment zero was given, otherwise a score of one was awarded. The score on each aspect of adjustment was added up. *Higher the adjustment score in each area lesser adjusted the pupil was and vice versa.*

A copy of the inventory has been provided in appendix no. xxxii

**3.3.2 Scale for Emotional Intelligence**

Emotional Intelligence Scale is developed by Purnima Dixit, Lecturer, Raghunath Girls College, Meerut. There were forty five items in the scale. It was a five point scale. The scale consisted of four aspects related to different areas of Emotional Intelligence. First aspect namely emotional expression had ten items. Second aspect Self-control also consisted of ten items. Third aspect Adaptability had thirteen items. Fourth aspect Emotional awareness consisted of twelve items.
TABLE 3.3: DISTRIBUTION OF ITEMS IN FOUR DIMENSIONS OF EMOTIONAL INTELLIGENCE

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Dimension</th>
<th>Item Numbers</th>
<th>Min. Raw Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Emotional Expression</td>
<td>9,21,23,24,25,27, 28,30,33,45</td>
<td>10</td>
</tr>
<tr>
<td>2.</td>
<td>Self-Control</td>
<td>2,6,10,13,14,15,16, 26,31,38</td>
<td>10</td>
</tr>
<tr>
<td>3.</td>
<td>Adaptability</td>
<td>3,4,8,11,12,18,19, 22,37,40,41,42,43</td>
<td>13</td>
</tr>
<tr>
<td>4.</td>
<td>Emotional Awareness</td>
<td>1,5,7,17,20,29,32, 34,35,36,39,44</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>45</td>
</tr>
</tbody>
</table>

Reliability

Reliability of the test was computed by Test-Retest method and it was found to be 0.88.

Validity

The scores on the scale were validated against the scores obtained by the students on Emotional Intelligence scale prepared by Anukool Hyde. Product moment coefficient was calculated and it was found to be 0.621.
Administration

Scale of Emotional Intelligence can be administrated to group as well as individual student in the class. Administrator could read out the instruction before taking the test. There was no time limit for test. There was no right or wrong response.

Scoring

The scoring pattern similar to Likert type scale had been used for the scoring of responses on the scale. A weightage of 5,4,3,2,1 had been assigned for positive items and of 1,2,3,4,5 had been assigned for negative items.

A copy of the scale is attached in Appendix xxxiii

3.3.3 Moral Judgment Test

“Moral do not exist as object in space and time but are established by judgment, by judging things, qualities, events or actions from a personal point of view” (Taneja, 1984). The judgment aspect of morality is the capacity to make judgment of right and wrong and to justify maintaining standards to one self and to others. Moral judgments are the assertions; which an individual makes on the basis of his/her values. The values are grounds not the conclusions. According to Haidt’s “social intuitionist” model, emotional capacities involving affect and intuition do almost all of the work in generating moral judgments (Haidt, 2001). Reason, on the other hand, is relegated to the role of a lawyer or public relations agent,
whose job it is to offer public, post-hoc justifications for judgments after they have been made.

Moral Judgment Test was developed by investigator in order to test the moral judgment of the children. For the construction of test investigator had consulted various web-sites and books. After consulting the various web-sites and available test on moral judgment like Durganand Sinha and Meera Verma, Ranjana Gupta and Defining Issue Test, investigator decided to create stories like Piaget and Rest method. For construction of stories following procedure had been followed-

3.3.3.1 Collection of stories

For collection of stories researcher decided those areas of Moral Judgment on which test was based. These areas were selected on the basis of Piaget theory of Moral Judgment. Study of moral judgment was confined to following five areas only

(a) Moral Realism—Objective Responsibility

(b) Expiratory Punishment—Reciprocity in Punishment

(c) Collective and Communicable Responsibility

(d) Immanent Justice

(e) Equality—Authority

A number of stories were composed, collected and adopted from sources like Piaget, John, Ranjana Gupta, Durganand Sinha and Meera Verma etc. Different situations concerning the five areas
were depicted in these stories. In constructing and adopting the stories care was taken to see that the themes were in conformity with Indian conditions. (Especially in the conditions of Haryana)

3.5.3.2 Scrutiny of stories

On the basis of students responses and experts advice stories were selected. The stories had grammatical difficulties were eliminated. After that it had been shown to experts and supervisor.

Each scrutinizer considered the following questions

(a) Suitability in Indian conditions

(b) Agreement with sub areas

In the light of suggestions given by experts four stories in each section which were more appropriate retained for try out.

3.5.3.2 Pre try out for selection of stories

Pre try out is a necessary aspect in tool construction. Pre testing helps one to discover weakness in the instructions and the format and to establish a reasonable time limit and a desirable length of the test. So the researcher decided to take pre try out for the Moral Judgment Test.

In the present study three students had average, above average and below average intelligence were selected for pre try out. Initially no time limit was set for first administration of the test. Pre try out filter out language, grammatical error in the context according to the level of children. In first draft of the test there were five stories
in each area of Moral Judgment (Moral Realism, Expiratory Punishment, Collective and Communicable Responsibility, Immanent Justice, Equality). After the pre try some stories were amended from grammatical point of view and some stories were deleted from the test because they could not corrected from concept point of view. Six stories (two from Collective and Communicable responsibility, one from Moral Realism, one from Expiratory Punishment and two from Immanent Justice) were deleted from the test because children had face problems in understanding the concept of those stories.

3.5.3.3 Post try out

For post try out researcher had taken the amended Moral Judgment Test by the pre try out. After that investigator had corrected those errors, stories were presented to fifteen children had average, below average and above average intelligence and the experts and face to face interaction had taken place about the test and their suggestions were solicited. On the basis of interaction with eminent persons in the field of psychology face validity was determined and scoring key was developed and final draft was prepared.

3.5.3.4 Reliability

Reliability of the test was computed by Test- Retest and Cronbach’s alpha method with the help of SPSS and it was found to be 0.85.
3.5.3.5 Validity

There was not any standardized test for moral judgment for formal operational stage. So the researcher after constructing the test items in the form of short stories, send to a panel of five experts. They have given suggestions and guidelines for constructing the items more effective. Their wise and knowledgeable comments had been included for improving the test material. There was one another test by Ranjana Gupta for 12-20 years age of children, because there was no test of age 12-15 years so the investigator validated the test against Ranjana Gupta test and it was found to be 0.52.

3.5.3.6 Administration

Moral Judgment Test could be administrated to individual as well as group. For better understanding administrator could read out the instructions. There was no time limit but administrator can request to students to finish within time limit. There was no right or wrong response in the test. Students were asked to feel free and assured their privacy while giving the responses.

3.5.3.5 Scoring

Scoring of the Moral Judgment Test was based upon Likert’s five point scale. No response was right or wrong. The answer of most mature judgment was awarded highest score. Higher the obtained scores in the test, higher the moral judgment would be.

A copy of the test has been provided in Appendix no. xviii
3.5.4 Academic Achievement Test

An Achievement test is essentially a tool or device of measurement that helps in ascertaining quantity and quality of learning attained in a subject of study or group of subjects after a period of instructions. Ebel, in his book Measuring Educational Achievement, had suggested some precautions while constructing the test. So keeping in view of that investigator had followed following precautions in test construction:

1. How many questions had to be included in the test that was determined by investigator.

2. What types of questions had to be used in the test that was established by investigator.

3. Topics were determined from which questions had constructed. This decision was taken keeping in view the objectives.

4. The level of difficulty of questions was decided at the beginning of the test.

5. In order to control the personal bias of the examiner a scoring key was provided.

The Academic Achievement test had been prepared on C.B.S.E., IX class syllabus. Whole syllabus of the IX class was considered while preparing test. In construction of Achievement test following steps had been followed-
3.5.4.1 Planning the test

The first step for construction of Achievement test was planning. While planning for Academic Achievement test investigator had borne in the mind about the evaluative objectives, knowledge of content, outline of the content and clear concept about allotted time for test, type of questions and level of difficulty and were planned accordingly.

3.5.4.2 Preparation of the Design

The design, in fact, is termed as an instrument which reflects major policy decisions of the examining agency, whether it is a Board or an individual. Investigator made a clear perception about good qualities of Academic Achievement test like validity, reliability, objectivity and usability. While designing the test weightage was given to different aspects i.e objectives, content and type of questions.

(i) Weightage given to objectives

All the evaluative objectives were decided and stated clearly in behavioural terms. The numerical weightage was given to the objectives. At the 100 point scores objectives were distributed in different areas.
Table 3.4: Weightage given to objectives

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Objectives</th>
<th>% of Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Knowledge</td>
<td>12 %</td>
</tr>
<tr>
<td>2.</td>
<td>Comprehension</td>
<td>30%</td>
</tr>
<tr>
<td>3.</td>
<td>Application</td>
<td>33 %</td>
</tr>
<tr>
<td>4.</td>
<td>Skill</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

(ii) Weightage given to content

Content was used as the means of realizing objectives and questions had constructed on its basis. Therefore, necessary weightage was given to them. There was distinction in the nature, importance and scope of each topic. Therefore, the weightage was given to these facts in view; else the test would not represent the whole subject.

Table 3.5: Weightage given to content

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Objectives</th>
<th>% of Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Science</td>
<td>25 %</td>
</tr>
<tr>
<td>2.</td>
<td>Maths</td>
<td>25 %</td>
</tr>
<tr>
<td>3.</td>
<td>Social Science</td>
<td>25 %</td>
</tr>
<tr>
<td>4.</td>
<td>Language</td>
<td>25 %</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>
(iii) Weightage to the form of questions

There were various types or forms of questions. Each type had its own advantages and limitations. Investigator had adopted multiple choice and one word answers to increase the reliability of the test and to remove biasness and subjectivity at the time of evaluation of the test.

3.5.4.3 Preparation of Blueprint

Preparation of blue print is a very crucial and significant step in the construction of Academic Achievement test. The test blueprint is a critical document that guides test development, analysis, and report writing. It describes the data that must be collected, defines the test length, and specifies the proportion of items in a test that will address the various aspects of a curriculum. While constructing blueprint investigator had taken following precautions-

• The proportion of test items in the final form that addressed each curriculum area (for example, mathematics, language, science) was addressed.

• The proportion of items within a curriculum area that assessed different skills was determined.

• The proportion of items that addressed different cognitive processing skills (such as knowledge or recall, interpretation or reflection) was determined.

• The proportion of items devoted to stimulus texts of different kinds in reading was decided.
For constructing blueprint the objectives were taken in column while the content was taken in the row. Each column was divided further into columns to indicate forms of questions. As a general rule, two-thirds of the test consisted of items that two-thirds of the sample had between 30 and 70 percent likelihood of answering correctly (On average, the likelihood should be 50 percent to help maximize the variation in student test scores). The other third of the test was evenly divided between items that more than 70 percent of students taken the test were likely to answer correctly and items that fewer than 30 percent were likely to answer correctly. Although sensitivity to the student achievements that the figures reflected was taken due consideration but it was not lead to the exclusion of important areas of the curriculum simply because students perform very poorly or very well on them. In that way blueprint was prepared. On the basis of blueprint the test was constructed.
### TABLE 3.6: BLUEPRINT OF THE ACADEMIC ACHIEVEMENT TEST

<table>
<thead>
<tr>
<th></th>
<th>Knowledge</th>
<th>Understanding</th>
<th>Application</th>
<th>Skill</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SCIENCE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOLOGY</td>
<td>1 (1)</td>
<td>3 (3)</td>
<td>0 (0)</td>
<td>4 (4)</td>
<td>8 (8)</td>
</tr>
<tr>
<td>PHYSICS</td>
<td>1 (1)</td>
<td>3 (3)</td>
<td>4 (4)</td>
<td>2 (2)</td>
<td>10 (10)</td>
</tr>
<tr>
<td>CHEMISTRY</td>
<td>1 (1)</td>
<td>2 (2)</td>
<td>3 (3)</td>
<td>1 (1)</td>
<td>7 (7)</td>
</tr>
<tr>
<td><strong>MATHS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALGEBRA</td>
<td>2 (2)</td>
<td>4 (4)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>6 (6)</td>
</tr>
<tr>
<td>GEOMETRY</td>
<td>0 (0)</td>
<td>3 (3)</td>
<td>6 (6)</td>
<td>4 (4)</td>
<td>13 (13)</td>
</tr>
<tr>
<td>ARITHMETIC</td>
<td>1 (1)</td>
<td>1 (1)</td>
<td>3 (3)</td>
<td>1 (1)</td>
<td>6 (6)</td>
</tr>
<tr>
<td><strong>SOCIAL SCIENCE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOGRAPHY</td>
<td>1 (1)</td>
<td>4 (4)</td>
<td>7 (7)</td>
<td>4 (4)</td>
<td>16 (16)</td>
</tr>
<tr>
<td>HISTORY</td>
<td>1 (1)</td>
<td>1 (1)</td>
<td>1 (1)</td>
<td>1 (1)</td>
<td>4 (4)</td>
</tr>
<tr>
<td>CIVICS</td>
<td>1 (1)</td>
<td>2 (2)</td>
<td>1 (1)</td>
<td>1 (1)</td>
<td>5 (5)</td>
</tr>
<tr>
<td><strong>LANGUAGE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGLISH</td>
<td>1 (1)</td>
<td>4 (4)</td>
<td>4 (4)</td>
<td>5(5)</td>
<td>14 (14)</td>
</tr>
<tr>
<td>HINDI</td>
<td>1 (1)</td>
<td>2 (2)</td>
<td>3 (3)</td>
<td>2 (2)</td>
<td>8 (8)</td>
</tr>
<tr>
<td>SANSKRIT</td>
<td>1 (1)</td>
<td>1 (1)</td>
<td>1 (1)</td>
<td>0 (0)</td>
<td>3 (3)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>12 (12)</td>
<td>30(30)</td>
<td>33(33)</td>
<td>25 (25)</td>
<td>100(100)</td>
</tr>
</tbody>
</table>

### 3.5.4.4 Final Draft of question Paper/ Writing test items

The next step after the finalization of the blueprint was writing appropriate questions in accordance with the broad parameters set out in the blueprint. At a point of time one small block of the blueprint was taken and questions were written. Thus, for each
block of blueprint which was filled in, questions had got written one by one. Once it was done, the questions met the necessary requirements laid down in the blueprint.

3.5.4.5 Marking Scheme

The fifth step was to prepare the "Marking Scheme". The marking scheme helped to prevent inconsistency in judgement. In the marking scheme, possible responses to items in the test were structured. The various value points for results were graded and the marks allowed to each value point indicated. The marking scheme ensured objectivity in judgement and eliminated differences in score which may be due to idiosyncrasies of the evaluator. The marking scheme, of course, included the scoring key, which was prepared in respect of objective type questions.

3.5.4.6 Pre try out

A set of 150 items out of which 48 questions in science, 31 in maths, 36 in social sciences and 57 in languages were constructed by the researcher. Questions were in the form of one word answer and multiple choice type questions in which four alternatives had been given, in which one was correct and remaining three were wrong. This list was present to experts who are engaged in teaching learning process in that due course, to evaluate and correct. The list of corrected items was administrated on a group of 20 students for pre try out for removal of language problems. Items having very high and very low difficulty value were dropped. Three items in social sciences and six items from language were
dropped owing to very high and (above 0.6) and very low (below 0.2) difficulty value. 10 items from science and 5 items from language were found to very low discriminate power; these items were eliminated from the daft. Time to complete the test was also decided.

3.5.4.7 Post try out

After removing the grammatical and language errors as well as removing of items having very low and very high discriminatory power, items were prepared for the post try out with the consultation of supervisor, content experts and teachers involved in teaching learning process. After the post try out a final draft of Academic Achievement test was prepared. Necessary directions and instructions were prepared for administration of the test. The time limit was fixed 60 minutes on the basis of pilot study results.

3.5.4.8 Reliability

Reliability of the test was calculated by Test-Retest method and it was found to be 0.96.

**TABLE 3.7 RELIABILITY COEFFICIENT OF ACADEMIC ACHIEVEMENT TEST**

<table>
<thead>
<tr>
<th>Section</th>
<th>A</th>
<th>0.98</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section</td>
<td>B</td>
<td>0.96</td>
</tr>
<tr>
<td>Section</td>
<td>C</td>
<td>0.96</td>
</tr>
<tr>
<td>Section</td>
<td>D</td>
<td>0.96</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>0.96</td>
</tr>
</tbody>
</table>
3.5.4.9 Validity

Validity is a broad construct that involves making appropriate interpretations and uses of scores or test information (Messick 1989). Formal validity of the test was ensured by obtaining the consensus of three experts of the subjects in regard to the adequacy of context, alternative responses and also the choices of correct answers.

Experimental validity was obtained by the following methods

(a) Item validity against the criterion of total scores was 0.47

(b) Validity against the criterion of examination scores was 0.92

(c) Validity against the criterion of teacher’s judgment was 0.86

3.5.4.10 Administration

The Achievement test could be administrated individually as well as in group. It could also be self administrated. The simple and clear instructions were printed on the test. The responses were to be marked on separate answer sheets. For each test item respondent had to select his/her items from the given four alternative choices. The children were asked not to leave any question un-answered.

3.5.4.11 Scoring

Responses on each item were assigned one score for correct response and zero for wrong answer. As the responses in the test were not arranged serially so a scoring key was developed. Then
the scores were added up for total score for every area. Higher the score, higher was achievement of child and vice-versa.

A copy of the test is attached in the Appendix xxxiv

3.4 PROCEDURE OF THE DATA COLLECTION

Investigator constructed two tools

(a) Moral Judgment Test

(b) Academic Achievement Test

After construction of tools researcher contacted principals through writing letters and meeting personally to them and told them about the significance of present research. Permission was sought from principals of the school. After hearing their positive response investigator had face to face interaction with teachers and staff members and requested them for cooperation in data collection. On the first day, before administering the test, the students were requested to fill the general information on the test like name, sex, parental education, occupation and location. Then students were asked to fill the Adjustment Inventory for School Students. On the second day, Emotional Intelligence Scale was administered on the identified group of students. On the third day Moral Judgment test was administered on the above specified group of the students. On the fourth day Academic Achievement test was administered on the students. The same procedure was followed in every school. The procedure of data collection was completed in four days in each school.
3.5 STATISTICAL TECHNIQUES USED

Completion of scientific analysis is possible with the use of statistical techniques which have contributed greatly in gathering, organizing, analyzing and interpreting the numerical data. In the mind of a statistician, the world consists of populations and samples. *Parameters are to populations as statistics are to samples.* A parameter is a property of a population. The quantitative data collection through the administration of various tools on selected samples comes in the form of raw data. This data was tabulated, organized, analyzed and interpreted for drawing sound conclusion and valid generalization. Analysis of data means studying the organized material in order to discover inherent facts.

3.5.1 Mean (M)

Mean provides an accurate description of the sample and indirectly of the population. It is the sum of the measurements divided by their numbers.

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

Where

- \(M\) = Arithmetic mean
- \(\Sigma X\) = The sum of scores
- \(N\) = Number of scores

3.5.2 Standard Deviation (SD)

Standard deviation is a widely used measure of variability or diversity used in statistics and probability theory. The standard
deviation is the root mean square (RMS) deviation of the values from their arithmetic mean. It shows how much variation or "dispersion" exists from the average (mean, or expected value). A low standard deviation indicates that the data points tend to be very close to the mean, whereas high standard deviation indicates that the data points are spread out over a large range of values. A useful property of standard deviation is that, unlike variance, it is expressed in the same units as the data.

\[ s = \sqrt{\frac{\sum(X-M)^2}{n}} \]

where

- \( \Sigma \) = Sum of
- \( X \) = Individual score
- \( M \) = Mean of all scores
- \( n \) = Sample size (Number of scores)

### 3.5.3 t-test

A t-test is any statistical hypothesis test in which the test statistic follows a Student's \( t \) distribution if the null hypothesis is supported. It is most commonly applied when the test statistic would follow a normal distribution if the value of a scaling term in the test statistic were known. The t-test can be used for determining the mean performances of two groups whether they are significantly different. Those two groups might be students, cattle, plants or
other objects. When attempting to determine if the difference between two means is greater than that expected from chance, the "t" test may be the needed statistical technique. If the data is from a normal population and at least ordinal in nature, then we are surer that this is the technique to use and for generalization to a population, samples must be representative. t-test is used to ascertain whether two observed statics such as two means, two proportions or two correlation coefficients, indicates differences in a corresponding pair of parameters.

\[ t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \]

where \( \bar{x}_1 = \text{mean of sample 1} \)
\( \bar{x}_2 = \text{mean of sample 2} \)
\( n_1 = \text{number of subjects in sample 1} \)
\( n_2 = \text{number of subjects in sample 2} \)
\( s_1^2 = \text{variance of sample 1} = \frac{\Sigma(x_1 - \bar{x}_1)^2}{n_1} \)
\( s_2^2 = \text{variance of sample 2} = \frac{\Sigma(x_2 - \bar{x}_2)^2}{n_2} \)

Generally hypothesis are framed as null hypothesis as no value judgment seemed appropriate to the investigator to arbitrarily suggest the direction of change in a particular trait/score. The data was subjected to two tailed test of significance.
3.5.4 Correlation

The correlation is one of the most common and most useful statistics. In many data analyses in social science, it is desirable to compute a coefficient of association. Coefficients of association are quantitative measures of the amount of relationship between two variables. There are many types of coefficients of association. They express the mathematical association in different ways, usually based on assumptions about the data. The most common coefficient of association is the Pearson product-moment correlation coefficient (symbolized as the italicized \( r \)), and it is the only coefficient of association that can safely be referred to as simply the "correlation coefficient". A correlation is a single number that describes the degree of relationship between two variables. Statistical correlation refers to a quantifiable relationship between two variables. Furthermore, it is a measure of the strength and direction of that relationship. Two measures for each subject (or object) in the group are required.

Pearson Product Moment Correlation

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

Where

\( r \) = Coefficient of correlation

\( X \) and \( Y \) = obtained scores

\( N \) = Sample size
Standard Error of coefficient of correlation (SE of r or $\sigma_r$)

$$\sigma_r = \sqrt{\frac{1-r^2}{N}}$$

Where $\sigma_r =$ Standard error of coefficient of correlation
$r =$ Coefficient of correlation
$N =$ Sample size (When N is large)