Chapter V  
PLANNING AND PROCEDURE

5.1 Introduction. The third chapter contained detailed account of the researches on poetry preferences carried out in the past. Apart from giving him an insight into problem this has also helped the researcher in the planning for the present study.

5.2 Need For Planning. Planning is a necessary adjunct even for an ordinary day to day work. And when a work is spread over a number of days, many months, planning must be at the core if the work is to be completed without any confusion and dissarray. The present research is a multidimensional study. Hence, every care must be taken in preparing and executing the plan to arrive at the definite and valid conclusions.

Basically the present study falls in the area of reading. Reading is a complex process as well as active process too. Hence, the detail planning was a must. This chapter presents the planning and procedure of the study. This chapter has been divided into the following subtitles:

5.3 Design
   5.3.1 Selection of the methodology for the study
   5.3.2 Selection of Experimental Design
   5.3.3 Basic Requirements of 2x2x2 F.D.
   5.3.4 Conducting of the Experiment.
5.4 Population
5.5 Sampling
5.6 Research Tool
5.7 Data Collection
5.8 Data: Its nature and conversion
5.9 The methods of the Analysis of the data

5.3 Design.

5.3.1 Selection of the Methodology for the Study. "Though the research is a science and science is a social institution."¹ One of its chief values is that observations and conclusions of some individuals can be passed on meaningfully to others. A researcher can reach at such fruitful position when the methodology selected for the study by the researcher is most appropriate.

The existing knowledge base about children's reading preferences has been developed largely from descriptive research focussing on the books children read and on the judgements they expressed about the reading materials. Data have been collected concerning library selections, book-club ordering pattern and favourite or recently read books. The usual procedure for determining preferences has been to classify the books into interest categories related to their topics, themes, literary

forms, characters and some combinations of these factors. Preferences are then inferred from the number of books reported within each category. Even if one assumes that on the books which children selected and read are accurate, at least two serious problems are inherent in studies in which reader's preferences are inferred from books selected or actually read. One problem is due to variation into the number of existing books from category to category. Variation in the number of books available across categories will result in a selection bias in favour of interest categories containing the most books and consequently, in incorrect inferences about the group's preferences.

A second problem associated with inferring preferences from books selected or read relates to the issue of whether the interest categories into which books are classified by researcher actually reflect the attributes responsible for their selection and popularity among adolescents.

An alternative approach to inferring preferences from books selection on a post hoc basis involves identifying in advance specific reading material characteristics likely to be related to reader preferences. Reading material can then be prepared to include planned variations in these characteristic and careful control of the other variables which may affect preferences. Though this type of systematic manipulation of independent variables is standard research methodology in many
fields, it has seldom been used in investigations of children's (adolescents) reading interests. Such a procedure was used in present research because it permits experimental control of important variables that are uncontrol in normal reading investigations.

Moreover, the nature of the problem itself leads the researcher to select the methodology for the investigation. In the presented poetry preferences have been measured in relation to sex, intelligence and creativity of the Xth grade pupils. It is clear that there was a dependent variable and three independent variables. Moreover, the main purpose of the study was to find out the relationships between the response and treatment variables. For this purpose the experimental design was adopted. An experimental design is essentially a contrivance to study the different effect, if any, of the treatment variables upon dependent variable. In general, if combinations of two or more treatment variables are simultaneously applied to groups of experimental subjects, it is reasonable to assume that these treatment variables will interact among themselves. So that the effect of combination of two treatment variables are not directly predictable from the individual effect of the separate treatment variables. This fact is fundamental in the more complex design.
5.3.2 Selection of Experimental Design. With the reference to above discussion, the question was posed as to which experimental design be selected. The experimenter's stated objectives among others were as under:

1. He wanted to study the main effect as well as the interactive effects of the three independent variables together with linear trends of poetry preferences.
2. He wanted to execute the experiment as speedly as he could, regardless of cost.
3. He realized that controlling human factor was a difficult task.
4. He wanted to analyse the data in a straightforward manner without any ambiguity.

Looking at the above objectives, many experimental designs would come forward to claim for their right viz. Randomized Block Design, Repeated Measure Design, Factorial Design and others. All would satisfy some of the above objectives but Factorial Design would satisfy all and sundry objectives of the experimenter. There are also drawbacks of factorial design in considering the cost and the large number of sample size required for the experiment.

Hence, the experimenter chose to go for factorial design (F.D) of 2x2x2 dimensions with identical three replications in order to arrive at valid conclusions.
5.3.3 **Basic Requirement of 2x2x2 F.D.** In order to invoke 2x2x2 F.D. the following pre-requisites were needed:

A. Three independent variables each at 2 levels viz., sex, intelligence and creativity were selected. Sex, naturally was set at 2 levels - Boy and girls. Intelligence and Creativity were set at 2 levels - high and low.

B. Dependent variable consisted in poetry preference scores to be arrived at from the pupil's performance of the HPPS. HPPS was developed according to the research evidence gained from pilot study.

C. The 2x2x2 F.D. would have 8 cells. So eight selected independent groups would be need for the experiment.

5.3.4 **Conducting of the Experiment.** Having formed 8 groups for 2x2x2 F.D. and having HPPS and answer-sheets thereof were ready, the treatment was given to the experimental groups in the month of December 1983. The schedule followed is given in Appendix G. Three sets of treatment were given as shown in the schedule. The experimenter himself administered HPPS all the times. The sets of the HPPS were given in a groups of the students.

5.4 **Population.** The title of the study indicates that the population of this study was X grade high-school students. Moreover that this study has been carried out during the year of 1983-84 in Gujarati medium high schools of Bhavnagar District. Hence population of this study was the X grade students of
Gujarati medium high schools of Bhavnagar District. Rural and urban areas were included in the population. The researcher had considered those areas as urban areas which were declared as urban areas by census counting office of Gujarat State. Rest of the area was considered as rural area.

This study was an experimental study and its chief objective was to discover the effect of intelligence, creativity and sex of the students upon poetry preferences, the researcher had created homogeneous group of the said variables from the above mentioned population.

Detailed account of the population was described in the previous chapter.

5.5 Sampling. There were three independent variables and a dependent variable in the present experiment. Because of this nature of the subject of the study, 2x2x2 factorial design was adopted to carry out the experiment. Hence the design of the sample can be presented in the following diagram.

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Diagram 5.1 shows that all the variables — sex, intelligence and creativity — were run at two levels. Diagram 5.1 also shows that there were eight groups of the students required for the sample. The group of the students were as under:

1. High I.Q. and high creativity boys
2. High I.Q. and low creativity girls
3. Low I.Q. and high creativity boys
4. Low I.Q. and low creativity boys
5. High I.Q. and high creativity girls
6. High I.Q. and low creativity girls
7. Low I.Q. and high creativity girls
8. Low I.Q. and low creativity girls
To get the group of the students, it was decided to select them from the sample which was drawn for the developing HPPS. Desai Bhatt Group Intelligence Test and Creative Expression Test were given to the sample which consisted of 1000 students for the purpose of creating the required groups.

The frequency distribution and its statistical characteristics of the I.Q. and Creativity Scores of the 1000 students were presented in Table 5.1 and 5.2 respectively.
Table 5.1
FREQUENCY DISTRIBUTION AND ITS CHARACTERISTICS
OF THE I.Q.SCORES OF THE STUDENTS

<table>
<thead>
<tr>
<th>Class Intervals</th>
<th>Boys</th>
<th>Girls</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>136 to 140</td>
<td>01</td>
<td>02</td>
<td>03</td>
</tr>
<tr>
<td>131 to 135</td>
<td>05</td>
<td>04</td>
<td>09</td>
</tr>
<tr>
<td>126 to 130</td>
<td>07</td>
<td>20</td>
<td>27</td>
</tr>
<tr>
<td>121 to 125</td>
<td>18</td>
<td>07</td>
<td>25</td>
</tr>
<tr>
<td>116 to 120</td>
<td>31</td>
<td>30</td>
<td>61</td>
</tr>
<tr>
<td>111 to 115</td>
<td>42</td>
<td>36</td>
<td>78</td>
</tr>
<tr>
<td>106 to 110</td>
<td>57</td>
<td>38</td>
<td>95</td>
</tr>
<tr>
<td>101 to 105</td>
<td>96</td>
<td>54</td>
<td>150</td>
</tr>
<tr>
<td>96 to 100</td>
<td>118</td>
<td>56</td>
<td>174</td>
</tr>
<tr>
<td>91 to 95</td>
<td>78</td>
<td>35</td>
<td>113</td>
</tr>
<tr>
<td>86 to 90</td>
<td>96</td>
<td>32</td>
<td>128</td>
</tr>
<tr>
<td>81 to 85</td>
<td>58</td>
<td>20</td>
<td>78</td>
</tr>
<tr>
<td>76 to 80</td>
<td>24</td>
<td>09</td>
<td>33</td>
</tr>
<tr>
<td>70 to 75</td>
<td>19</td>
<td>07</td>
<td>26</td>
</tr>
</tbody>
</table>

Total 650 350 1000(N)

Mean (M) 97.3 105.82 99.635
Median (MD) 97.63 105.65 99
SD 12.54 13.30 13.072
Q1 88.70 96.48 89.90
Q3 105.42 114.90 108.00
Q 8.3 9.05 -
P10 - - 83.5
P90 - - 123.8
SK (Skewness) - - 0.14
Ku (Kurtosis) - - 0.21
Table 5.2

FREQUENCY DISTRIBUTION AND ITS CHARACTERISTICS
OF THE CREATIVITY SCORES OF THE STUDENTS

<table>
<thead>
<tr>
<th>Class Intervals</th>
<th>Boys</th>
<th>Girls</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>900 - 929</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>870 - 899</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>840 - 869</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>810 - 839</td>
<td>7</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>780 - 809</td>
<td>5</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>750 - 779</td>
<td>14</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>720 - 749</td>
<td>17</td>
<td>5</td>
<td>22</td>
</tr>
<tr>
<td>690 - 719</td>
<td>25</td>
<td>14</td>
<td>39</td>
</tr>
<tr>
<td>660 - 689</td>
<td>52</td>
<td>30</td>
<td>82</td>
</tr>
<tr>
<td>630 - 659</td>
<td>80</td>
<td>33</td>
<td>113</td>
</tr>
<tr>
<td>600 - 629</td>
<td>97</td>
<td>56</td>
<td>153</td>
</tr>
<tr>
<td>570 - 599</td>
<td>108</td>
<td>46</td>
<td>154</td>
</tr>
<tr>
<td>540 - 569</td>
<td>91</td>
<td>52</td>
<td>143</td>
</tr>
<tr>
<td>510 - 539</td>
<td>73</td>
<td>43</td>
<td>116</td>
</tr>
<tr>
<td>480 - 509</td>
<td>39</td>
<td>28</td>
<td>67</td>
</tr>
<tr>
<td>450 - 479</td>
<td>22</td>
<td>19</td>
<td>41</td>
</tr>
<tr>
<td>420 - 449</td>
<td>10</td>
<td>9</td>
<td>19</td>
</tr>
<tr>
<td>390 - 419</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>360 - 389</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>650</td>
<td>350</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td>Boys</td>
<td>Girls</td>
<td>Total</td>
</tr>
<tr>
<td>------------------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>Mean (M)</td>
<td>599.05</td>
<td>587.93</td>
<td>595.42</td>
</tr>
<tr>
<td>Median (MD)</td>
<td>593.38</td>
<td>584.5</td>
<td>592.36</td>
</tr>
<tr>
<td>SD</td>
<td>81.80</td>
<td>82.80</td>
<td>82.24</td>
</tr>
<tr>
<td>Q1</td>
<td>544.28</td>
<td>530.77</td>
<td>540.01</td>
</tr>
<tr>
<td>Q3</td>
<td>645.81</td>
<td>715.21</td>
<td>557.33</td>
</tr>
<tr>
<td>Q</td>
<td>50.77</td>
<td>92.22</td>
<td>8.66</td>
</tr>
<tr>
<td>P10</td>
<td>512.57</td>
<td>496.64</td>
<td>505.91</td>
</tr>
<tr>
<td>P90</td>
<td>845.6</td>
<td>941.5</td>
<td>827.6</td>
</tr>
<tr>
<td>SK (Skewness)</td>
<td>0.21</td>
<td>0.124</td>
<td>0.112</td>
</tr>
<tr>
<td>Ku (Kurtesis)</td>
<td>0.15</td>
<td>0.195</td>
<td>0.026</td>
</tr>
</tbody>
</table>

After the scoring and totalling it was necessary to determine the criterion for comparison and to prepare comparable groups. All the number of the students were arranged in order of scores, from high to low. It was decided to use statistical technique for creating the categories such as high and low I.Q. as well as high and low creativity of the students. But it is debatable point amongst statisticians that which percentage of the population choose to create the criterion group.

Hence, the first and third quartiles were employed to create required categories in the population. According to this technique the population has been divided into four
categories, such as $Q_1$ of I.Q., $Q_3$ of I.Q., $Q_1$ of Creativity and $Q_3$ of Creativity.

$Q_1$ and $Q_3$ of the I.Q. and Creativity are presented in Table No. 5.3

<table>
<thead>
<tr>
<th>Statistical Characteristics</th>
<th>Quartile-1</th>
<th>Quartile-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of the Criterion</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Boys</td>
<td>Girls</td>
</tr>
<tr>
<td>I.Q.</td>
<td>88.70</td>
<td>96.48</td>
</tr>
<tr>
<td>Creativity</td>
<td>544.28</td>
<td>530.77</td>
</tr>
</tbody>
</table>

Table 5.3 reveals that the $Q_1$ of boys and girls I.Q. were 88.70 and 96.48 respectively and $Q_3$ of boys and girls I.Q. were 105.42 and 114.90 respectively. While $Q_1$ of the creativity of the boys and girls were 544.28 and 530.77 respectively and $Q_3$ of the creativity of the boys and girls were 645.81 and 715.21 respectively. When the researcher started to assign the subject for treatment groups (Criterion groups), it could be seen that less number of the pupils were there in the said categories. So it was decided to keep the group (cell) size for factorial design at 10 students. This
cell size was adequate for the purpose of the research as was evident by Edward and Cochran. Thus to create high IQ and high creativity groups of the students 10 boys and girls were selected from the Q3 of I.Q. and Q3 of creativity, 10 boys and girls were selected from Q1 of I.Q. and Q1 of creativity for creating groups of low I.Q and low creativity. To create the groups of high I.Q and low creativity boys and girls, the boys and girls who were in Q3 of I.Q but in Q1 of creativity were selected to create the groups of low I.Q and high creativity boys and girls, the selection was done from Q1 I.Q. and Q3 creativity. For the purpose of these selections four types of students lists were prepared. The first list showed high I.Q and high creativity students, second list showed low I.Q and low creativity students. But the third list of the students showed the high I.Q and low creativity and fourth list showed the low I.Q and high creativity students. Thus the sample for experiment consisted of 80 students.

5.6 Research Tool. Three tools were used for data collection in this study.

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Desai Bhatt Group Intelligence Test and CET were ready-made tests that were used for creating treatment groups for experiment. But HPPS was developed by the researcher. The psychometric property and characteristics of the research tools are described herewith:

1. **HPPS**: Information regarding the HPPS has already been presented in the Chapter IV.

2. **Desai Bhatt Group Intelligence Test.** This group intelligence test was verbal intelligence test, and it was constructed and standardized by Dr. K.G. Desai and Dr. C.L. Bhatt in 1967.

   It was constructed and standardized for the students of Std. VIII to XI and 12th to 18th years age groups. They had standardized the test by experimenting it over 3,001 boys and 2,653 girls of urban and rural area of Gujarat state. It was printed test and was commercially available in the market.

   It was a speed test and developed on the basis of Otis Advanced Examination and Army Alpha tests. It contained 100 problems. 40 minutes would be given to the testees for solving the 100 problems and testees were instructed to solve as many as problem as they could in the time limit. At the beginning of the test, there was a provision for practice work. The problems for the practice work were representative of the whole test.

* Appendix E - Desai Bhatt Group Intelligence Test.
The test contained 100 test items of 10 major area. The name of the area were: Following Directions, Opposites, Disarranged Sentences, Proverbs, logical inferences, Similarities Memory, Analogies and Series etc.

The reliability and validity of the test were measured by more than one techniques. The reliability of the test was measured by Split-half technique, Test-retest method and Kuder Richardson formula. While validity was measured by comparing Desai Group test (verbal) Bhatt Group Test (Verbal and Non-verbal) and Bhavsar Group Test (Non-verbal). The reliability and validity of the test are presented in Table 5.4.
Table 5.4

**THE RELIABILITY AND VALIDITY OF D.B. GROUP INTELLIGENCE TEST**

<table>
<thead>
<tr>
<th>Methods</th>
<th>Number</th>
<th>Coefficient of Correlation</th>
<th>SEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability: Split half</td>
<td>114</td>
<td>.93</td>
<td>.013</td>
</tr>
<tr>
<td>Test-Retest</td>
<td>147</td>
<td>.84</td>
<td>.025</td>
</tr>
<tr>
<td>Kuder-Richardson Formula</td>
<td>928(B)</td>
<td>.87</td>
<td>.025</td>
</tr>
<tr>
<td></td>
<td>748(G)</td>
<td>.90</td>
<td>.029</td>
</tr>
</tbody>
</table>

**Validity-Criterion**

<table>
<thead>
<tr>
<th>Group Test</th>
<th>Number</th>
<th>Coefficient of Correlation</th>
<th>SEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desai Group Test (Verbal)</td>
<td>121</td>
<td>.88</td>
<td>.037</td>
</tr>
<tr>
<td>Bhatt Group Test (Verbal and Non-Verbal)</td>
<td>135</td>
<td>.72</td>
<td>.05</td>
</tr>
<tr>
<td>Bhavsar Group Test (Non-verbal)</td>
<td>120</td>
<td>.77</td>
<td>.05</td>
</tr>
</tbody>
</table>

Table 5.4 shows that split half reliability of the Desai Bhatt Group intelligence test was .93 while test-retest reliability was .84. The test constructor had found the reliability according to Kuder-Richardson Formula also and it was done sex wise. Coefficient of correlation of boys performance was .87 and girls performance was .90.

Referring to Table 5.4 the reliability and validity of D.B. Group Intelligence Test, it is observed that the researcher had computed content validity by comparing the scores with other printed test scores. To compare the scores of D.B. Group
Group intelligence test with Desai Group test the coefficient of correlation was .88. The constructor had compared the test scores with the scores of Bhatt group test and Bhavsar Group test also, the coefficient of Correlations were .72 and .77. Hence it can be interpreted that the Desai-Bhatt Group Intelligence test was reliable and valid test.

The test constructor had also developed the norms according to age and sex. He had already calculated I.Q. and percentile rank from the row scores. For these reasons this test was the proper test for creating criterion group of the students for the experiment.

3. **Creative Expression Test.** Dave had constructed and standardized the Creative Expression Test (CET) as a part of his Ph.D. Degree. He had standardized the test over 2,014 tenth grade high school students of the urban and rural area of Saurashtra. As this test is not published, it is not available commercially in the market.

This test was constructed on the basis of the theory of the remote association. With the help of this theory Originality

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5 Janakrai G. Dave. To Construct and Try Out the Creative Expression Test for checking the Creative Expression in Mother-tongue of the X grade students of Saurashtra Region, Unpublished Ph.D. Thesis, Rajkot : Saurashtra University, 1980.
Fluency which are the dimensions of creativity, can be measured. It was multifactorial speed type test. The whole test was prepared in two A-B parallel forms. It contained seven sub-tests in each form. The testees have to response linguistically to every subtest. There were linguistic stimuli in 1st to six sub-tests. But in the last one subtest, there was pictorial stimulus. By the nature, the test was free response test but limited time was allotted to each and every subtest. The total time limit for the whole test was 30 minutes and 15 minutes were required for the general instructions and to acquire some necessary information regarding the subjects which was asked on the front page of the test. Hence, 45 minutes were required for implementing the test.

The first subtest had two items and each item had a different alphabet. Testees were instructed to construct such words in which the given alphabet was used. The second subtest consisted of two items of the words. The testees were instructed to construct as many words as they can after reading the given words. In the third subtest testees had to show maximum uses of the given three objects. The fourth subtest consisted of three items which show the situations and the testees were asked to imagine what will happen when such situation take place. There were two problems in the fifth subtest. The testees were instructed to give the possible solutions. In sixth subtest there was an instruction what will you do in such circumstances. The testees were expected to write maximum solutions of this
problem. There was a picture in seventh and last subtest. The testees were instructed to write their impressions and thoughts after seeing this picture.

The constructor of the CET had employed various methods for measuring reliability of the test. The data regarding the reliability of the test are presented in Table 5.5

<table>
<thead>
<tr>
<th>No.</th>
<th>Methods</th>
<th>No. of the testees N</th>
<th>Corrections</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Internal Evaluators (The Constructor and two other)</td>
<td>40</td>
<td>Fluency - 0.873 &amp; 0.935, Originality - 0.857 &amp; 0.826</td>
</tr>
<tr>
<td>2.</td>
<td>Test - Retest (After two weeks interval)</td>
<td>A - 50</td>
<td>Fluency - 0.832, Originality - 0.852</td>
</tr>
<tr>
<td>3.</td>
<td>Test of Parallel forms A - B</td>
<td>B - 50</td>
<td>Fluency - 0.812</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Originality 0.942</td>
</tr>
</tbody>
</table>

Referring to table 5.5, Reliability of the CET, it is observed that the test constructor had employed three different methods for measuring reliability. The coefficient of correlations of the internal evaluations, test - retest and test of parallel forms methods were of fluency 0.873 and .935, 0.832, 0.812 and of originality 0.857 and 0.826, 0.852, 0.942 respectively.
Validity of the CET was also found. For the validation this test was administered upon 100 testees. After analysis of the responses it was found that all the testees of both the parallel forms A & B were significantly correlated at 0.01 level to the whole test. Moreover, when the criterion validation technique was employed and Gilitwala\(^6\) Creativity test was taken as a criterion, the results of both tests of verbal items were found highly correlated. The coefficients of correlation were 0.541 and 0.525 respectively, significant at 0.01 level.

Percentile norms had been established by the constructor as a part of standardization of CET. The norms were established in two ways. First, the norms were established of the row score of fluency and originality of each subtest. Secondly, the norms were also established of the standardized scores of the fluency and originality of the whole test.

As far as scoring is concerned, it was decided to give 1 mark for every relevant response of the fluency dimension of the test. But for the scoring of the originality aspect a marking-key was prepared. To prepare the marking-key the test constructor had selected 100 testees randomly from the sample which was used for the standardization of the test. Then weightage of the originality was decided in the reference of

the group of each response. The weightage to the individual response was given by looking at infrequency of the responses of the group. The highly infrequent response of the individual with the reference of the group gets highest marks. In this way the weightages of the response of the originality were decided from zero to ten marks. But the response which was not mentioned in the marking key, gets ten marks automatically. All the responses were presented alphabetically in the marking-key and in other column marks were stated opposite each response. In fact this prepared marking key was useful for the scoring of the originality of the new sample.

To measure the creativity of the students in the study, this CET was used because:

1. It was a reliable, valid and standardized test to measure creativity.

2. Besides this, it was rather appropriate for the sample of this experiment. This test was standardized upon the sample of the tenth grade boys and girls of urban and rural area of Saurashtra. And this experiment was also carried out over the sample of tenth grade students of rural and urban area of Bhavnagar District of Saurashtra.

3. From the administrative point of view, it had two parallel forms, speed test and easily available scoring-key.

4. Poetry is a verbal art and the CET was a verbal test. Both require verbal and mental activity.
The printed parallel forms A & B of the CET are kept in Appendix F.*

5.7 Data Collection. The present study was the experimental study. 2x2x2 Factorial Design was adopted to carry out this experiment. It had three treatment variables and a response variable. Intelligence and creativity were the treatment variables and poetry preferences were the response variable. To create the treatment groups of the students, ready-made tests were employed. Hence, the data of the ready-made tests were in the form of the score but to ascertain the poetry preferences, the data were in the form of rankings. To collect the data for creating treatment groups of the students the necessary copies of Desai Bhatt Group Intelligence Tests were purchased from the market but because of CET and HPPS were not available in the market, they had been printed out. Before printing the CET, the kind permission of the constructor was obtained.

The data for this experiment was collected during the academic year of 1983-84. The data collection had been done at two stages as follows:

1. First Stage: Data were gathered for the development of HPPS and creating the treatment groups of the students.
2. Second Stage: Data were collected for the experiment.

* Appendix F. Creative Expression Test forms A - B
The procedure of the data collection at every stage is described as under:

1. **First Stage**: In this stage data were collected for the construction of HPPS and assign the students in particular groups for the experiment. The administrations of the tests had been done mostly by the researcher himself in the schools. But in six schools the data had been collected by his colleagues. However, the researcher had also given the demonstration of administrating the tests before the colleagues. Moreover, to maintain the similarity in administration, written instructions had also been given with the help of these written instructions they could administer the tests properly. The order of the administration of the tests was as under:

   1. Desai Bhatt Group Intelligence Test
   2. Primary form of HPPS
   3. Creative Expression Test

   This order was maintained throughout the data collection process. The data collection process was started from the first period of the day at every school. Three hours were required for the whole process. Hence, it was decided to give 10 minutes interval between the sittings. Desai Bhatt Group Intelligence Test and HPPS were administered in first sitting and CET was administered in second.

   At the beginning of the administration, the primary information of the students was written down on the first page
of the test. After the completion of primary information of the students, all the instructions were read aloud and explained patiently. The style of showing the responses and the method of the corrections of the given responses were shown with the help of chalk stick and black-board with some illustrations. Moreover, if there were any individual difficulty in understanding the instructions, the administrator solved the problem first and then the students were instructed to start writing.

As Desai Bhatt Group Intelligence Test was a time limit test and the constructor had allotted 40 minutes to complete the test. Hence, the instruction regarding the time limit was strictly followed. A stopwatch was used to keep the time limit. It was observed that all the students were working individually.

In the second round of the first sitting, HPPS was administrated. The process of the administration of the HPPS had already been described in chapter IV.

In the third round, the CET was administered. It had two parallel forms. Hence, different forms were given to students sitting side by side. There were seven subtests and each had particular time-limit and particular instruction in CET. Hence, the instructions of all subtests were explained and time-limit for each subtest was strictly maintained.

Overall, the administration of the tests had been done smoothly. But in a few cases students asked for explanation
about some items, the administrator explained patiently. The students' enthusiasm of responding the tests could be observed. The teachers of the schools also co-operated joyfully during the administration. The principals of the schools had made necessary arrangement for administrating the tests.

In this way the responses had been collected from 1014 students of the selected schools. In this stage, the data for measuring the reliability of HPPS was also gathered. Test-retest method was adopted for measuring reliability.

Three sets of HPPS were administered to an accidentally drawn sample of 50 boys and 50 girls of X grade. After an interval of about two months, same three sets of HPPS were administered to the same groups.

5.7.2 Second Stage: Data for the experiment was gathered in this stage.

After creating treatment groups of the students and developing HPPS, the researcher located the schools in which the students who were selected for the treatment, were studying. It was found that the students of the treatment groups were spread out in six schools of the district. Three out of six schools were girls schools and the rest of them were mixed schools.

The HPPS was divided into three sets. Hence, the replications were necessary. It was also decided to administered the sets of the HPPS with one week interval. Thus, it was necessary
to go to all the schools three times and arrange the three sittings at one week interval each. To avoid the effect of time factor, the researcher had prepared a time table for each school. Then the researcher had obtained written permission from the principal of the school for a sitting with particular students. After getting kind permission of the principals, the researcher had arranged a sitting with the selected students to explain the objectives of the study and importance of the responses. Moreover, the researcher had already reminded to the students on a previous day to be present next day for each sitting. As a result of this reminder the problem of absentees could be nullified. In this stage of data collection the researcher had received heartly co-operation from the students as well as the principals. All the principals had provided a separate room for the sitting.

Each set of HPPS contained six poems of various sort of contents. Hence, the students had to show their preferences for the six poems. Moreover, there were characteristics for these poems. The students had to show their preferences for the characteristics. It was found that to finish all this process 40 to 60 minutes were required. Though it depended upon the students.

This data had been collected during the second term of the academic year 1983-84.
5.3 Data: Its Nature and Conversion. The responses of the 1014 students were gathered on three tools. Desai Bhatt Group Intelligence Test, CET and HPPS. In this section the nature of the data and the process of the conversion of the data into score are described.

The data of this study were varied by nature. There were two types of data collected. I.Q. and creativity of the students were psychological data and poetry preference were affective type of data. I.Q. and creativity were continuous type of data while poetry preferences were discrete type data. From the statistical point of view, I.Q. and creativity of the students were nominal type of data while poetry preferences were ordinal type data.

The scoring process of Desai Bhatt Group Intelligence Test was simple. A scoring key was available. First of all, all the answer sheets were checked with the help of the scoring key. According to the test manual, credit one mark for each correct answer. Hence, the correct answers were counted and the obtained total marks were put on the corner of the right side of the answer sheets. Then the actual age of the students were decided with the help of their birth dates which were noted down in the general registers of the schools. The age were also written down just under the total marks. There was a comprehensive chart for transformation of the scores into I.Q. and percentile of either sex, in the test manual. Thus, the I.Q. of the students could be counted with the help of the chart speedily.

The scoring process of CET was somewhat complicated. First of all, two dimensions of the creativity would have to be evaluated. The numbers of the relevant responses to any items of the subjtests were the scores of fluency and the numbers of deviate responses with the reference of the groups' responses were the scores of the originality. The degree of the originality
was decided with the help of a scoring key which was prepared by the test constructor. The degree of originality was from zero to ten in the scoring key. It was instructed that to allot 10 marks to such response of originality which was not included in scoring key.

Every response to the item of each subtest of fluency and originality were given the score. The sum of all the scores upon every subtest regarding fluency was considered as a score of the fluency. In same way the sum of all the scores which were obtained upon all subtest regarding originality was considered as a score of originality of a student. Though, the score of both the dimensions were row score because there were varieties of subtest and the result of these varieties students had done various sorts of task, so it was not proper to consider the sum of the score of all the subtests either of fluency or of originality was a score of fluency and originality. Hence, it was decided to follow Torrance\textsuperscript{7} method. According to Torrance, for the purpose of transformation of the row score into score all the row scores were converted into T score. The transformation of the row scores was linear. Moreover, both parallel forms - A and B - of CET were considered equal. For the purpose of T transformation the frequency distribution table

\begin{table}
\centering
\begin{tabular}{|c|c|c|c|}
\hline
Row Score & T Score 1 & T Score 2 & T Score 3 \\
\hline
10 & 16 & 18 & 20 \\
9 & 15 & 17 & 19 \\
8 & 14 & 16 & 18 \\
7 & 13 & 15 & 17 \\
6 & 12 & 14 & 16 \\
5 & 11 & 13 & 15 \\
4 & 10 & 12 & 14 \\
3 & 9 & 11 & 13 \\
2 & 8 & 10 & 12 \\
1 & 7 & 9 & 11 \\
0 & 6 & 8 & 10 \\
\hline
\end{tabular}
\end{table}

of the row score of all the subtests were prepared. Then mean score and standard deviation were calculated. The mean scores and standard deviation of all subtests of the whole sample are presented in Table 5.6.

Table 5.6

<table>
<thead>
<tr>
<th>The Order of the Subtests</th>
<th>Fluency Mean</th>
<th>Fluency SD</th>
<th>Originality MEAN</th>
<th>Originality SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25.77</td>
<td>12.44</td>
<td>314.80</td>
<td>115.03</td>
</tr>
<tr>
<td>2</td>
<td>22.36</td>
<td>11.40</td>
<td>277.95</td>
<td>93.73</td>
</tr>
<tr>
<td>3</td>
<td>15.80</td>
<td>6.10</td>
<td>118.88</td>
<td>37.58</td>
</tr>
<tr>
<td>4</td>
<td>13.06</td>
<td>5.18</td>
<td>129.62</td>
<td>35.24</td>
</tr>
<tr>
<td>5</td>
<td>7.35</td>
<td>3.44</td>
<td>53.60</td>
<td>28.80</td>
</tr>
<tr>
<td>6</td>
<td>6.76</td>
<td>2.28</td>
<td>63.74</td>
<td>20.04</td>
</tr>
<tr>
<td>7</td>
<td>10.54</td>
<td>4.11</td>
<td>55.76</td>
<td>30.30</td>
</tr>
</tbody>
</table>

With the help of Mean and S.D. of both the dimensions the row score had been transformed into standard score that means the row score had been converted into Z score. And at then the Z score converted into T Score. For the purpose of this transformation it was decided to follow Lyman method.  

The following equations were applied for the transformation:

\[ Z = \frac{X - \bar{X}}{S} \quad \ldots \quad (1) \]

The explanations - $X$ = Row Score

$\bar{X}$ = Mean Score of row score frequency distribution

$S$ = SD of the frequency distribution of row scores

\[ T = 10z + 50 \quad \ldots \quad (2) \]

Where:  $T$ = Score

$z$ = Standard Score

By the use of these two equations transformative tables were prepared. So the row score of all the students included into the sample of the study obtained upon all the subtests were read out relatively from $T$ transformative tables.

To calculate the total score of fluency and originality of the whole test, the sum of the $T$ Scores of fluency and originality on all the subtests were calculated. Then to find out the composite creativity scores, the sums of the total fluency score and originality scores were obtained. So at last the three scores - fluency, originality and creativity scores had been calculated for each student.

The scoring process of HPPS was as follows:
The students had shown their preferences by giving the number 1, 2, 3 etc. The students had given number 1 to most liked poem and number 6 had been given to least liked poem. Thus, they gave the number to the poems according to their choices. It means number 1 indicates the most preferred poem and on the contrary number 6 indicates the least preferred poem. Then these preferences were converted into preference score. For this purpose, it was decided to give 6 marks (maximum number of the poems in a set) to each 1st preference, 5 marks to each 2nd preference, 4 to each 3rd preference, 3 marks to each 4th preference, 2 marks to each 5th preference and 1 mark to each 6th preference. In short the highest marks had been given to number 1 choice and lowest marks had been given to number 6 choice in descending order.

At first, it was counted how many 1, 2, 3, 4, 5 and 6 preferences had been obtained by each poem. This score was treated as a row score. This row score was converted into preference score by the process which was already mentioned above.

It can be concluded that the nature of the data was numerical and row scores were converted into standard score by the mentioned formula.

5.9 The Methods of the Analysis of the Data. The gathered numerical data upon three tools were analysed in this study. The sample of this study had 1014 students. But the scores of 1000 students were analysed because due to incomplete responses 14 answer-sheets were dropped out.
The students' poetry preferences were measured in relation to sex, intelligence and creativity. For this purpose 47 hypotheses were formulated and three questions were asked. The data were analysed for the testing of these hypotheses and answering the questions. Hence, the analysis had been done in the order of hypotheses. The analysis devices and its presentation order were decided according to nature of the hypotheses.

The following methods were employed to analyse the data.

5.9.1 **Analysis of Variance.** Computation of the means and variances of the whole experiment for 2x2x2 factorial design. Calculation for ANOVA was done in 2x2x2 factorial design for each type of poem.

5.9.2 **N.K.Sequence Range Test:** N.K.Sequence Range Test was given to measure first order interactive effects of the variables.

5.9.3 Coefficients of correlations were calculated for three replication.

5.9.4 Rank Correlations were calculated to study the preference scores of different groups.

5.9.5 $X^2$ test (Friedman Method) was applied to measure the differences in the characteristics of the poems and differences among the poem as rated for preferences.
5.9.6 The percentages were calculated to study the most and least preferred characteristics of the poems and interactive effects of the variables upon the preferences for the characteristics.

The next part of the research refers to Data Analysis and Interpretation which have been dealt with in greater detail in Chapter VI.