Chapter 3

METHODS AND PROCEDURE

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3.1 Objectives

The objectives of the present research are as follows:

1. To study the effect of learning disabilities on academic achievement.
2. To study the effect of learning disabilities on intelligence.
3. To study the effect of learning disabilities on creativity.
4. To study the effect of learning disabilities on mental health.
5. To compare the academic achievement of learning disable and non learning disable children.
6. To compare the intelligence of learning disable and non learning disable children.
7. To compare the creativity of learning disable and non learning disable children.
8. To compare the mental health of learning disable and non learning disable children.

3.2 Hypotheses

The hypotheses of the present research are as follows:

1. There is no significant effect of learning disabilities on academic achievement.
2. There is no significant effect of learning disabilities on intelligence.
3. There is no significant effect of learning disabilities on creativity.
4. There is no significant effect of learning disabilities on mental health.
5. There is no significant difference between academic achievement of learning disable and non learning disable children.
6. There is no significant difference between intelligence of learning disable and non learning disable children.
7. There is no significant difference between creativity of learning disable and non learning disable children.
8. There is no significant difference between mental health of learning disable and non learning disable children.

3.3 Research Design

Research design adopted to attain the target of the study was 2 X 2 factorial design.

The interaction among type of learning disability (Learning disable/ Non learning disable) and type of sex (Boy/Girl) over different psychological traits namely, academic achievement, intelligence, creativity and mental health is the prime concern of the study. The design of the study is ex-post-facto (2 X 2) which is shown in table below:

<table>
<thead>
<tr>
<th>Type of Sex</th>
<th>Type of Learning Disability</th>
<th>Learning Disable</th>
<th>Non Learning Disable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys</td>
<td>Gr1 Learning Disable/Boys</td>
<td>N=75</td>
<td>Gr2 Non Learning Disable/Boys N=75</td>
</tr>
<tr>
<td>Girls</td>
<td>Gr3 Learning Disable/Girls</td>
<td>N=75</td>
<td>Gr4 Non Learning Disable/Girls N=75</td>
</tr>
</tbody>
</table>

3.4 Variables

3.4.1 Independent variables
- Type of Learning Disability (Learning Disable and Non Learning Disable)
- Type of Sex (Boys and Girls)

3.4.2 Dependent variables
- Academic Achievement
- Intelligence
- Creativity
- Mental Health
3.4.3 Controlled variables

- Age of Student (10 year to 14 Years)
- Socio Economic Status

3.5 Methodology

Every study is distinguished on the basis of its different purposes and approaches. Therefore, so many methods have been developed. As the present study aims to find the effect of learning disability on academic achievement, intelligence, creativity and mental heath of Boys and Girls so the researcher used Descriptive Survey Research Method.

3.5.1 Locale: The present study was confined to Udaipur district of Rajasthan state of India.

3.5.2 Sample: The study was conducted on 150 boys and 150 girls of studying from various co-educational public and private schools. Out of them 75 were learning disable and 75 were non-learning disable students. (The learning disability was determined through a standard tool mentioned later in this chapter)

Thus, the total sample comprises of 300 students. The distribution of sample is shown below:

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Learning Disable</th>
<th>Non Learning Disable</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys</td>
<td>75</td>
<td>75</td>
<td>150</td>
</tr>
<tr>
<td>Girls</td>
<td>75</td>
<td>75</td>
<td>150</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>150</td>
<td>300</td>
</tr>
</tbody>
</table>

The subjects were selected in such a manner that there was equal number of subjects in the 4 categories of research design of the study illustrated in the above table. They all belong to middle socio-economic status. All the subjects were School students of Government and private School of Udaipur division of Rajasthan and their age ranges between 10 to 14 years.
3.5.3 Tests and Tools Used

Personal Bio-Data Sheet was prepared for the study. The name of student, sex, ages their permanent and local address, telephone and required personal information was included in this bio-data sheet.

The standardized psychological tests were used for the study. The selection of tests was done on the basis of the reliability, validity and norms of test.

The tests and tools used in this study are listed in below table

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Variables</th>
<th>Test and Technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Personal Bio-data Sheet</td>
<td>Self-made</td>
</tr>
<tr>
<td>2.</td>
<td>Learning Disability Evaluation Scale</td>
<td>Stephen B. McCarney &amp; Tamara J. Arthaud,</td>
</tr>
<tr>
<td>3.</td>
<td>Academic Achievement</td>
<td>Half Yearly Examination Marks</td>
</tr>
<tr>
<td>4.</td>
<td>Intelligence</td>
<td>Battery of Performance Test of Intelligence By Dr. C.M. Bhatia</td>
</tr>
<tr>
<td>5.</td>
<td>Creativity</td>
<td>Verbal Test of Creative Thinking by Baqer Mehdi</td>
</tr>
<tr>
<td>6.</td>
<td>Mental Health</td>
<td>Mental Health Inventory (MHI) by Dr. Jagdish &amp; Dr. A. K Srivastav (1974)</td>
</tr>
</tbody>
</table>

The tests used for the study are enclosed in (Appendix A to Appendix F)

3.6 Brief Description of Tests and Tools Used

3.6.1 Personal Bio-Data Sheet

The self made personal bio-data sheet was used for the study. It includes 16 questions relating to subject's name, father's name, subject's age, sex, father's
occupation, mother’s occupation, number of siblings, monthly family income, permanent residence, local residence, telephone number, and type of family and total marks obtained out of total marks in half yearly examination. It takes nearly 5 minutes to complete it. (Appendix A)

3.6.2 Learning Disability Evaluation Scale by Stephen B. McCarney, Ed.D. & Tamara J. Arthaud, Ph.D

The Learning Disability Evaluation Scale - Renormed Second Edition (LDES-R2) was developed to enable instructional personnel to document those performance behaviors most characteristic of learning disabilities in children and youth. The instrument is designed to provide a profile based on the most commonly accepted definition of learning disabilities (IDEA, 2004).

The LDES-R2 subscales are
• Listening,
• Thinking,
• Speaking,
• Reading,
• Writing,
• Spelling, and
• Mathematical Calculations.

The LDES-R2 was standardized on a total of 4,473 students, ages 6 through 18 years and grades 1-12. Demographic characteristics of the standardization sample approximate national percentages for gender, residence, race, geographic area, and occupation of parents.

Internal consistency of the LDES-R2 fell at or above .41 for each item to its subscale. Test-retest reliability yielded correlation coefficients ranging from .60 through .70, indicating substantial reliability for each of the 7 subscales. Coefficients for inter-rater reliability for the subscales ranged from .68 to .83 for all age levels. Content validity was established through the initial development process. The scale was compared to the Learning Disabilities Diagnostic Inventory (LDDI) as a measure of concurrent validity. All subscales of the LDES-R2 correlated significantly with the LDDI subscales to which they were compared. The construct validity of the scale supports strong diagnostic validity.
The LDES-R2 uses frequency-referenced quantifiers. Each item on the LDES-R2 is rated on a four-point scale (not developmentally appropriate for age, rarely or never, inconsistently, consistently). Following administration, four types of scores may be obtained: frequency rating for each item (reflecting the severity of the learning difficulty), subscale raw score (the sum of the frequency ratings for each subscale), subscale quotient score, and subscale percentile. Standard errors of measurement (SEM) are provided for each subscale quotient.

The LDES-R2 takes approximately 20 minutes to complete by anyone familiar with the student: the classroom teacher, clinical personnel, or other school personnel. The LDES-R2 complete kit consists of a technical manual, rating forms, and the Learning Disability Intervention Manual-Revised.

The Learning Disability Intervention Manual - Revised (LDIM-R) includes goals, objectives, and intervention strategies for all behaviors on the scale and was designed for the convenient development of the student’s IEP, as well as classroom intervention. The Learning Disability Intervention Manual - Revised used in conjunction with the LDES-R2 provides an assessment and intervention program for learning disabled children and youth. The Parent’s Guide to Learning Disabilities (PGLD) contains interventions for parents to implement in the home to help their learning disabled child. (Appendix B)

3.6.3 Academic Achievement

The academic achievement was judged by the marks obtained in half yearly examination of their routine examination pattern. The percentage marks were calculated on the basis of total marks obtained out of total maximum marks. (Appendix C)

3.6.4 Intelligence: C.M. Bhatia’s performance tests of intelligence

C.M. Bhatia’s Battery of performance tests of intelligence has five subtests (Bhatia, 1953): Koh’s block design test; pass along test; pattern drawing test; test for immediate memory for sounds; and picture construction test.

Koh’s Block Design Test (Test No.1): Four cubes are placed before the subject; all are alike and colored in different ways. The subject handles and
examines the cubes to become familiar with each of them. Card no.1 is then showed to him. The design on the card has to be constructed by the subject using the four cubes. If the subject succeeds within the 2 minute time limit, he is asked to construct design no.2. The test proceeds in this manner with successive designs. At the start of design no.6, five more blocks are given to the subject, bringing the total up to 9; at design no.8, the remaining 7 are given, making the total 16. The test stops when the subject fails twice in succession. The time limit for designs nos. 1 to 5 is 2 minutes each and for designs nos. 6 to 10 is 3 minutes each.
The Pass Along Test (Test No. 2):

The subject takes the first, smallest box together with card no.1. It is pointed out to him that the red block has been placed near the blue end of the box, and the blue block near the red end. The subject is told that the red block must be moved to the red end and the blue block to the blue end, as shown on the card. It is emphasized that blocks must not be lifted, but may only be moved horizontally. The solution of the first box is demonstrated to the subject. Card No. 1 and the first box are again placed before the subject who is asked to do the same as before. Success or failure within the time limit is recorded. The experimenter then proceeds to designs No. 2, 3 etc. with the appropriate boxes, after placing the blocks in their required initial positions. The initial positions are obtained simply by reversing the colored ends of the box. The box is placed before the subject with cubes arranged as on the design card, which is presented to the subject with its number facing up. The test stops when the subject fails twice in succession. The time limit of designs 1 to 4 is 2 minutes each, and for designs 5 to 8 is 3 minutes each.
**Pattern Drawing Test (Test No.3):**

This consists of eight figures of increasing difficulty from the first to the eight. A card is placed before the subject, displayed so that the number of the card appears on top before the subject. The subject has to draw the figure as shown on the card; without repeating any lines and without lifting the pencil off the paper once he has started. The card remains in full view of the subject throughout. The subject attempts to draw the designs on successive cards, and is allowed as many attempts as needed within the time limit. The test stops when the subject fails twice in succession. A maximum of 2 minutes is allowed for each of designs 1 to 4, and 3 minutes for patterns nos. 5 to 8.

**Immediate memory for sounds (Test No.4):**

(a) **Direct:** Immediate memory is closely related to mental development or general intelligence. The subject has to repeat a sequence of letters as told. The sequence should be read out distinctly and with even intonation. To give the subject practice, the test starts with two letters. The experimenter then proceeds increasing the number of letters one at a time until failure is recorded. At each level three alternative sets of letters are given. If the subject fails on the first set, the second and then the third alternatives can be given, if the subject fails all three the test stops.

(b) **Reversed:** Here the subject has to pronounce the letters in reverse order. The experimenter continues the sequence until failure is recorded, meaning failure in all three alternatives of a particular set, as previously.

**Picture Construction Test (Test No.5)**

The pieces of a picture puzzle are placed in front of the subject. All the pieces have to be put together to make a picture. The test consists of five different pictures, for the subject to construct. The test stops when the subject fails twice in succession. The time limit is two minutes each for pictures one to three and three minutes each for pictures four and five.

**Scoring:** Koh’s Black Design Test, Alexander Pass Along Test, Pattern Drawing Test, Immediate Memory of Sounds and Picture Completion Test are four sub-tests included in this battery. In the first among these, designs printed in 10 cards in increasing difficulty are to be arranged using coloured cubes. Speed is the factor
contributing to high score. In the second, graded problems are presented. The coloured boxes are arranged in the reverse order and the individual is to rearrange it to give the shape given in the card. Time is one important factor here also. In the pattern drawing test eight diagrams of increasing order of difficulty are to be drawn without lifting the pencil and repeating the lines. In the memory test, consonants or digits are to be repeated in the same order first and then backwards. Five pictures cut out into 2, 4, 6 or 12 parts are to be assembled in the shortest possible time to gain maximum scores. The total score on the whole test is then determined and it is converted into IQ’s using the tables provided in the test manual. (Appendix D)

3.6.5 Creativity: Non-verbal Tests of Creative Thinking by Baqer Mehdi

There are very few examples in Indian schools of activities where children are able to demonstrate their creativity. As most of their work involving writing it seemed appropriate to assess creativity using paper & pencil tests.

The Operational Definition of Students' creativity by Baqer Mehdi

_Students' creativity is considered to be the creative ability of students represented by their scores on various factors of verbal and non-verbal creativity such as originality, fluency, flexibility and elaboration as measured by Mehdi (1973,1985)._

As it is used in this study, the term, "creativity" refers to a fairly specific type of cognitive ability reflected in performance on a series of paper-and-pencil tasks. The instruments were printed in the form of examination-type booklets and were administered to a class of students in exactly the fashion to which they were quite accustomed in connection with taking academic examinations. A premium was put upon writing facility in that, by virtue of the group administration of the test, a student's "answers" to the "questions" were to be written down by him I her in the test booklet (eg. Getzels and Jackson, 1962, p.16; Wallach and Kogan, 1965, p. 21).

_Baquer Mehdi's Tests (1973, 1975,1985 a &b) of creative thinking, non-verbal was adapted for the present research. There are three non-verbal tests, viz., Picture Construction, Picture Completion, Triangles and Ellipses. The description of the tests and scoring procedures is presented in the following_
sections. Due to the rapid advancement of knowledge and exposure to modern technology while scoring, if some new responses were obtained by the researcher, they were noted down separately. Originality, fluency, and flexibility dimensions for the verbal test, and originality and elaboration dimensions for the non-verbal test were worked out.

Non-Verbal Test of Creative Thinking (NVTCT)

The non-verbal test of creative thinking is intended to measure the individual's ability to deal with figural content in a creative manner. Three types of activity are used for this purpose, viz., picture construction (10 minutes), picture completion (15 minutes), and triangles and ellipses (10 minutes). The total time required for administering the test is 35 minutes, in addition to the time necessary for giving instructions, passing out booklets and collecting them back (Appendix E)

The description of the activities in the test

Picture Construction Activity- Picture construction has long been used as a measure of a child's creative thinking. Torrance used this test in his battery of creativity tests, but in a slightly different manner. Here the subject is provided with a fixed structure, which he can convert to a meaningful picture, by building on his own imagination. Children vary in their responses to these stimuli, both in terms of elaboration and originality of response. This activity allows for unrestricted fluency of ideas, which may enable the subject to use his unconscious mind to help him to construct a picture which is relevant to his thought and personality structure.

In the picture construction activity, the testee is required to construct two simple geometrical figures, a semi-circle and a rhombus, and to construct an elaborate picture using each figure as an integral part. The subject may turn the page to use the figure in any way he likes for making the picture. Emphasis is put on originality and elaboration. Originality is emphasized by instructing the subject that he should try to make as novel a picture as possible, such that no one else will be able to produce a similar one. Elaboration is emphasized by the instruction that the subject may add as many details as he thinks necessary in order to make the picture tell as complete and as interesting a story as possible.
Picture Completion Activity- This activity has also been used by a number of psychologists to study the personality and thought patterns of children. In terms of Gestalt Psychology, "an incomplete figure sets up in an individual tension to complete it in the simplest and easiest way possible. Thus, to produce an original response, the subject has usually to control his tensions and delay gratification of this impulse to closure" (Torrance, 1966). The test can be scored for originality and elaboration. This activity consists of 10 line drawings which can be made into meaningful pictures of different objects. The subject is asked to make a picture which no one else will be able to think of. He is also asked to give an interesting and suitable title to each picture he makes.

Triangles and Ellipses Activity- This activity is based on the idea of Torrance's parallel lines and circles, where repeated figures are given and the subject's novelty is assessed by the construction of different types of figures from the given structure. Generally, non-creative subjects fail to construct new patterns, whereas creative subjects originate new patterns and also elaborate. In this activity, the subject is provided with 7 triangles and 7 ellipses and required to construct different meaningful pictures based on two given stimuli. The subject is encouraged to make multiple associations to a single stimulus.

The scoring procedure of the test

As there is no right or wrong responses in the test, each item is to be scored for originality and elaboration. Activity III, viz., Triangles and Ellipses, may be scored for flexibility, as the testee is asked to make different pictures from the same given stimulus. However, the test constructor confined scores to elaboration and originality for the non-verbal test, so that the flexibility of the non-verbal score was not used in this study. However, the scoring of titles is optional.

Non-verbal Originality: The same scoring procedure is applicable for originality, which is elaborated in test manual. Originality is represented by the uncommonness of a given response. Responses given by less than 5% of the group are included and are given different weights. The weights have to be determined on the basis of the following scheme: if a response has been given by 0.1% to 0.99% of respondents, the response will get an originality score is 5; if the response is 1 to 1.99% originality score is 4; if response rate is 2 to 2.99% the originality score is 3; if the response 3 to 3.99% the originality score 2; if
response between 4 and 4.99% originality score is 1. Responses given by 5% or more of respondents will get an originality score of zero.

**Flexibility Scores** - Flexibility is represented by a person's ability to produce differences in trend of thought. All ideas which differ in approach or trend are treated as one for purposes of flexibility scoring. Thus, if five ideas are produced and all belong to only one category of approach or thought trend, the score for flexibility will be one, but if all of the five ideas are based on five different approaches or thought trends, then the flexibility score will be 5. There could be an intermediate score for flexibility, depending on the number of categories of thought trends to which the responses belong.

**Fluency Scores** - In scoring for fluency, the scorer goes through the responses to the item in question carefully and strikes off those which are irrelevant and I or have been repeated. The remaining number of responses is the fluency score. Elaboration is represented by a person's ability to add pertinent details (more ideas) to the minimum and primary response to the stimulus figure. The minimum and the primary response to the stimulus figure is that response which gives essential meaning to the picture. The response title often indicates exactly what the student is trying to make. Responses, which can be reasonably interpreted and identified, should be scored. Some times the response represents an abstract idea instead of a concrete object. If the figure is not relevant and meaningful, it is ignored. The total elaboration score includes 1 for primary response, plus 1 score each for all the additional details which are given.

**The following points have to be kept in mind while scoring:**
Each item to be scored for fluency, flexibility and originality. *The raw score below P50 will be considered as learning disabled category.* The definition of these terms are given below:

**Fluency:** Fluency is represented by number of relevant and unrepeated ideas which the basis of the appropriateness of the response when considered in relation to the test problem. An unrepeated idea is one which has been expressed only once under a given problem.

**Flexibility:** Flexibility is represented by a person's ability to produce ideas which differ in approach or though trend. All ideas which fall under one category or approach or thought trend are treated as one for purposes of flexibility scoring. Thus if five ideas are produced and all belong to only one category of approach or
though trend, then the score of flexibility will be one, but if all the five ideas are based on five different approaches or thought trends, then the flexibility score will be five. There could be intermediate scores for flexibility depending on the number of categories of thought trends to which the responses belong.

**Originality:** Originality is represented by uncommonness of a given response. Responses given by less than 5% of the group are treated as original. The scores may be directly entered on the answer sheet by closely following the scoring guide. If the scorer come across responses which are not mentioned in the scoring guide, he should briefly mention them on the backside of the scoring sheet and score them for originality after all the test scripts have been scored. The instructions for scoring the new responses for originality are also given on the scoring sheet. Flexibility categories for such new responses will also have to be determined at the time of scoring. If the new responses fall in category which is already given in the scoring guide, the same should be used. But if the new response seems to belong to an entirely new category then a new alphabet serial should be sued for scoring.

**Reliability of the Test**

The test-retest reliabilities of the factor scores and also the total score were obtained on a sample (N=31)

<table>
<thead>
<tr>
<th>Fluency</th>
<th>Flexibility</th>
<th>Originality</th>
<th>Total Creative Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.945</td>
<td>0.921</td>
<td>0.896</td>
<td>0.959</td>
</tr>
</tbody>
</table>

**Validity of the Test**

The validity coefficients against the teacher ratings for each factor are given:

<table>
<thead>
<tr>
<th>Fluency</th>
<th>Flexibility</th>
<th>Originality</th>
<th>Total Creative Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.40</td>
<td>0.32</td>
<td>0.34</td>
<td>0.39</td>
</tr>
</tbody>
</table>

All these correlations are significant beyond 0.01 level.
3.6.6 Mental Health Inventory (M.H.I)

Mental health among the subject was measured by ‘Mental Health Inventory’ (M.H.I.) development by Dr. Jagdish and Dr. Srivastav (1984). This is a standardized tool. The present ‘Mental Health Inventory’ (M.H.I.) has been design to measure Mental Health (Positive) of normal individuals.

On the basis of various sources, more than 100 items were given to experts/judges for examining the suitability of each item for inclusion in the test. Only those item were retained about which the judges were unanimous. On the basis of maximum agreement among the judges, 72 statements were retained. (Appendix F)

The preliminary format of the MHI was tried out administered on a sample of 200 subjects belonging to various socio-cultural, age sex and education group. For item analysis, biserial coefficients of correlation were computed. The signification of correlation at .001 levels was fixed as the criterion for retaining an item. On the basis of significance out of 72 items, 56 items, including 32 ‘false-keyed’ and 24 ‘true-keyed’ have been selected to constitute the final format of the inventory.

The reliability of the inventory was determined by split-half method using odd-even procedure. The following table gives the reliability coefficient of different dimensions of mental health and overall:

<table>
<thead>
<tr>
<th>Dimensions of Mental Health</th>
<th>Reliability Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Self-evaluation</td>
<td>0.75</td>
</tr>
<tr>
<td>Perception of Reality</td>
<td>0.71</td>
</tr>
<tr>
<td>Integration of Personality</td>
<td>0.72</td>
</tr>
<tr>
<td>Autonomy</td>
<td>0.72</td>
</tr>
<tr>
<td>Group Oriented Attitude</td>
<td>0.74</td>
</tr>
<tr>
<td>Environmental Attitude</td>
<td>0.71</td>
</tr>
<tr>
<td>Over all</td>
<td>0.73</td>
</tr>
</tbody>
</table>
Construct validity is determined by finding coefficient of correlation between mental health inventory and general health questionnaire (Goldberg 1978). It was found to be 0.54

In the present scale, 4 alternative responses have been given to each statement, which are always, often, and never. 4 scores to always, 3 score too often, 2 to rarely and 1 score to never marked responses as to be assigned for positive statement where as 1, 2, 3 and 4 score for always, often, rarely and never respectively in case of negative statement.

**Table No.3.4**

Showing item number included in various dimensions of mental health.

<table>
<thead>
<tr>
<th>Dimension Of Mental Health</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Self-evaluation</td>
<td>1, 7, 13, 19, 23, 27, 32, 38, 45, 51.</td>
</tr>
<tr>
<td>Perception of Reality</td>
<td>6, 8, 14, 24, 35, 41, 46, 52.</td>
</tr>
<tr>
<td>Integration Of Personality</td>
<td>2, 9, 15, 18, 20, 25, 28, 33, 36, 40, 47, 53.</td>
</tr>
<tr>
<td>Autonomy</td>
<td>3, 10, 29, 42, 48, 54.</td>
</tr>
<tr>
<td>Group Oriented Attitude</td>
<td>4, 11, 16, 21, 26, 30, 39, 43, 49, 55</td>
</tr>
<tr>
<td>Environmental Mastery</td>
<td>5, 12, 17, 22, 31, 34, 37, 44, 50, 56</td>
</tr>
</tbody>
</table>

**3.7 Procedure**

The learning disabled students were diagnosed through a standardized test named, Learning Disability Evaluation Scale by Stephen B. McCarney & Tamara J. Arthaud. On the basis of scores obtained by the students they were categorized into learning and non-learning disabled group. The sample was selected in a manner that equal proportion of boy and girls exists.

The data was collected from the respondents on various variables under study. The schools to be visited were decided in the initial sampling. And then a written permission was sought out from the respective principal after discussing
the purpose of the present study. Accordingly, a schedule was fixed in each school and the class teachers were approached. The tests were administered in group or individually as per the availability and convenience of the sample.

The precautions taken during administration of the tests are as follows:

Simple and clear instructions printed on the questionnaires were read out and were explained to the subjected.

The subject were assured that the data, which they would they kept totally confidential and will be used purely for the purpose of research.

The investigator tried to build a rapport with the subjects so that they respond to the tests in relaxed state of mind.

Following the ethics of data collection in research, only those individuals were included in the samples that were willing to take the test.

Care was taken to ensure that no items were omitted by chance or otherwise.

After the subjects completed the set of questionnaires it were collected, they were thanked for their co-operation extended during collection of data.

To control the order effect, order of presentation of questionnaire was varied.

3.8 Scoring

Scoring of the tests was done as described earlier or as given in the respective manual.

3.9 Statistical Analysis

In order to obtain empirical verification of the proposed research, raw data was analyzed with the help of following statistical techniques. It is to mention here that all the calculations are done with the help of computer through SPSS (Statistical Package for Social Sciences, Version 21.0). The data is pictorially presented through graphs wherever necessary.
Mean and standard deviation

Mean and standard deviation of all the variables were computed with regard to academic achievement, intelligence, creativity & mental health.

Student’s-test:

The significance of the difference between means was assessed with the help of independent group t-test and checked at 0.05 level of significance.

Two Way ANOVA:

The main effects of independent variables learning disability and sex and their interaction was found through applying two-way analysis of variance for dependent variables namely, academic achievement, intelligence, creativity & mental health.

3.10 Conclusion

The present chapter deals with the methodological process adopted for the present research. It includes locale, sample, research design, description of test and tools used, procedure of data collection and statistical techniques used. The next chapter deals with the analysis of results.