CHAPTER FIVE

METHODOLOGY
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The present Study is a survey and correlational type of study. The data about the main variables were collected by administering appropriate tools to the selected sample and were analysed applying suitable statistical techniques. The study was carried out in two phases. In the First phase a large sample of 1,000 IX standard High School children were studied. Then out of these large sample two sub-samples of High Creative and Low Creative children were selected and were studied intensively with reference to the variables selected for the study.

On the basis of the analysis of the data the factors which favour and the factors, which deter development of creative abilities would be identified. Finally measures to foster creative abilities of children are suggested.

5.1 SAMPLING

For the purposes of the study a total sample of one thousand IX standard children were selected. The sample was chosen with the idea of making it representative of all the variables considered for the Study such as gender, locale, and type of school, intelligence, socio-economic status, school adjustment and background characteristics of students. The sample was thus made representative of IX standard from the High schools. Types of institutions were chosen on the basis of criteria like Management (Government, Aided), composition (boys, girls and co-education), whereas locale was represented by selecting institutions located in urban and rural areas as majority of the schools in South
Kanara District are co-educational schools and the number of Boys and Girls schools are less and considering the difficulty of giving adequate representation to different composition of schools, the composition of the school is not considered as a variable in the Study. The sample consisted of 31 co-educational schools, 3 boys schools and 6 girls schools.

Altogether there are 207 High Schools in South Kanara District. Out of these schools 40 schools were randomly selected (this works out to be nearly 20% of the total number of schools) duly representing each of the 5 Talukas of (Mangalore, Bantwal, Puttur, Sullia and Beltangady), Urban and Rural areas and Government and Aided schools. Out of the 40 selected schools 21 were Urban schools, 19 were Rural schools, 20 were Government schools and 20 were Aided schools. Children for the Study were chosen from selected schools adopting a random selection based on the nominal role procedure from ninth standard only.

Details of the sample is given below in the table no 5.1

<table>
<thead>
<tr>
<th>SI No</th>
<th>Name of the Institution</th>
<th>Locale</th>
<th>Pupils</th>
<th>Composition</th>
<th>Management</th>
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<td>1</td>
<td>Canara High School, Urva Mangalore</td>
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<tr>
<td></td>
<td>School Name</td>
<td>Type</td>
<td>Students</td>
<td>Gender</td>
<td>Boarding</td>
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<td>Type</td>
<td>Class</td>
<td>Sex</td>
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<tr>
<td></td>
<td>School Name</td>
<td>Type</td>
<td>Gender</td>
<td>Status</td>
<td></td>
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<tr>
<td>32</td>
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<td>Co-education</td>
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<td>Government High School, Manchi</td>
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<td>Co-education</td>
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<td>37</td>
<td>Government High School, Kadaba</td>
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<td>Pompei High School</td>
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<tr>
<td>40</td>
<td>St. Remonds High School, Vamanjur</td>
<td>Rural</td>
<td>32</td>
<td>Boys</td>
<td>Aided</td>
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</tbody>
</table>

The sample comprised of 1000 children of these 489 were boys and 511 were girls.

Regarding locale children were drawn from five Talukas of South Kanara District namely Mangalore (City and Taluk), Bantwal, Puttur, Sullia and Belthangady. For urban, group of children were drawn from city schools of Mangalore. Children for Rural group were drawn from four other Talukas. Finally 517 children from urban area and 483 children from rural area were selected.
After administering the Creativity tests for all the 1000 children initially selected for the Study, two sub-samples of High Creative and Low Creative children were selected out of the 1000 children tested on the basis of their total creativity scores (Verbal + Non-verbal Creativity scores). These two sub-samples of High and Low creative children consisted of 145 and 133 children respectively.

To determine the attitude of teachers towards Creative children, a random of 30 teachers were selected (both male and female teachers) from among the teachers teaching IX standard class in the selected High schools in South Kanara District.

Keeping the objectives of the Study in mind and the null hypotheses formulated for the study, a careful scrutiny of various measuring devices available in the field was done. Subsequently, as it was observed that most of these tests had already been used in different studies in the Indian set up, of course with respect of different areas of study, a selection of tests for the present Study was done based on the requirements of the Study.

5.2 TOOLS USED FOR THE STUDY

Different tools were selected to measure the variables selected for the study. The tools are described in detail in the following pages. The following Table 5.2 gives the details of the various tools/tests used in the present Study.
Table 5.2

Showing the tools used in the study

<table>
<thead>
<tr>
<th>SI No</th>
<th>Tools used</th>
<th>Author</th>
<th>Variables measured</th>
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<tbody>
<tr>
<td>1.</td>
<td>Tests of Creative Thinking (Verbal and Non verbal)</td>
<td>Baqer Mehdi</td>
<td>Creativity Verbal and Non verbal</td>
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<tr>
<td>2.</td>
<td>Socio-economic Status Scale (Revised)</td>
<td>Kuppuswamy</td>
<td>Socio-economic Status</td>
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<td>3.</td>
<td>School Adjustment Inventory</td>
<td>M.N. Bhagia</td>
<td>School Adjustment</td>
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<td>4.</td>
<td>Non verbal test of Intelligence</td>
<td>Dr. M.G. Premalatha</td>
<td>Intelligence of children</td>
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<td>5.</td>
<td>Creative Activities Checklist</td>
<td>Paul Torrence</td>
<td>Creative Activities done by the children</td>
</tr>
<tr>
<td>6.</td>
<td>Teacher’s Attitude Scale</td>
<td>Developed by the Investigator</td>
<td>Teacher’s Attitude towards Creative children</td>
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</tbody>
</table>

5.2.1 Baqer Mehdi’s Tests of Creative Thinking:

Reviewing previous researches, one finds divergent views on the criteria of creativity. This has however not come in the way of the search for a basis, which is likely to provide a better understanding and definition of creativity. This would imply the possibilities for bringing together a number of related issues under a single rubric. One of the ways of doing this would be to see whether there is a possibility or not of identifying a satisfactory dimension that underlies different aspects
of creativity. Associative dimensions of creativity make provision for one such lead and it, therefore, can meet the psychometric criterion also.

Different researchers like Torrance, Guilford, Wallach and Kogan have developed many tests and Test Batteries to measure both Verbal and Non verbal Creative abilities. In India also many tests of Creativity have been developed by researchers like Pathak, B.K., Passi, Baqer Mehdi, K. Ramachandrachar and so on keeping in mind socio cultural milieu of India. All these tests have been used by other investigators in their studies. Creativity tests developed by Western researchers cannot be used in Indian condition.

As it goes without saying that all psychological tests whether verbal or non-verbal are culturally loaded and as such are not wholly applicable to a different culture. Therefore it was decided to use only those tests developed in Indian conditions. In the present study when a number of standard Creativity Tests were considered, Baqer mehdi’s Verbal and Non-verbal tests were considered appropriate for the study. These tests are quite popular among researchers and they can be administered easily to large groups.

Description of the Tests

The battery is meant to identify creative talents at all stages of education except pre-primary and lower primary. The types of tasks included in the Tests have been chosen so that they could be most easily and economically administered over a wide age range of sample, starting from lower primary school and going up to the graduate level.
The Battery is in use for more than a decade now and has been found as consistently reliable and valid tool in the research studies conducted in the area of creativity. It can safely be used for identifying Creative talents at a relatively young age, thus educational programmes for the development of creative talent among school children could be easily arranged.

a) Description of the Verbal Tests of Creativity:

The verbal test is part of the total Battery, which consists of both verbal and non-verbal tests.

The verbal test of creativity includes four sub-tests, namely Consequences Test, Unusual Uses Test, New Relationship Test, and Product Improvement Tests.

1) Consequences Test: The Consequences Test consists of three hypothetical situations a) What would happen if man could fly like birds? b) What would happen if our schools had wheels? c) What would happen if man does not have any need for food?

The subject is required to think as many consequences of these situations as he can, and write them under each situations in the space provided. The situations being hypothetical minimize the effect of experience and also provide the subject with an unlimited opportunity to make responses. The Test encourages free play of imagination and originality. An example is given on the Test booklet to acquaint the subjects with the nature of the Test. The time allowed for the three problems is four minutes each.
2) **Unusual Uses Test:**

This test presents the subjects with the names of three common objects - a piece of stone, a wooden stick, and water and requires him to write as many novel, interesting and unusual uses of these objects as he may think of. The example given on the Test Booklet properly acquaints the subjects with the nature of the Test. This Test measures the subject’s ability to retrieve items of information from his personal information in storage. Evidently it measures also the subject’s ability to shift frames of reference to use the environment in original manner. The time allowed for the three tasks is five minutes each.

3) **New Relationships Test:**

This Test presents the subjects with three pairs of words apparently different - tree and house, chair and ladder, air and water and requires him to think and write as many novel relationships as possible between the two objects of each pair in the space provided. The Test provides an opportunity for the free play of imagination and originality. The time allowed for each pair of words is five minutes.

4) **Product Improvement Test:**

In this test, the subject is asked to think of a simple wooden toy of a horse and suggest addition of new things to it to make it more interesting for the children to play. The time allowed is six minutes.

The total time required for administering the test is forty eight minutes in addition to the time necessary for giving instructions, distribution passing out test booklets for children and collecting them back.
The Reliability of the Test:

The Test-retest Reliabilities of the factor scores and the total creativity scores are as follows:

Fluency Scores .945
Flexibility Scores .921
Originality Scores .896
Total creativity Score .959

As will be seen, both the factor scores and the total creativity score reliabilities are considerably high ranging from .896 to .959. These values are highly satisfactory. The reliability of the total creativity score, which comes out to be .959, is again quite high. In one study inter-scorer reliabilities for the factor scores were found to range from .653 to .981

Validity of the Test

Validity coefficient for factor scores against teacher rating is as follows.

Fluency .40
Flexibility .32
Originality .34
Total creativity score .39

The validity coefficients for factors scores and the total creativity score are high enough (significant beyond .01 level) to place confidence in the use of the Test.
b) Description of Non-Verbal tests of creativity

The Non-Verbal Tests are part of the Total Battery, Which Consists Of Verbal And Non Verbal Tests. The Non-Verbal Tests of creative thinking are intended to measure the individual’s ability to deal with figural content in a creative manner. Three types of activities are used for this purpose, viz., Picture Construction, Picture Completion, Triangles and Ellipses. The total time required for administering the test is 35 minutes, in addition to the time necessary for giving instructions, distribution of booklets and collecting them back.

i) Picture Construction Activity:

The activity presents the subject with two simple geometrical figures, a semi-circle and a rhombus, and requires him to construct an elaborate picture using such a figure as an integral part. The subject is allowed to 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 the instruction that the subject should try to make as novel a picture as possible, such that no one else will be able to produce. 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 story as possible, Ten minutes are allowed for the two tasks.

The pictures are scored for elaboration and originality. The subject is asked to give an interesting and unusual title to each picture. The titles may also be scored for verbal elaboration and originality and the scores added to the verbal creativity score obtained on the Verbal creativity Test.
ii) **Incomplete Figures Activity**

The activity consists of 10 line drawings, which could be made into meaningful pictures of different objects. The subject is asked to make a picture, which no one else in the group will be able to think of. He is also asked to give an interesting and suitable title to each picture he makes. The subject is given 15 minutes for the 10 items. Each item is scored for elaboration and originality. Titles may also be scored for verbal elaboration and originality and the scores added for the verbal creativity score obtained on the Verbal Creativity Test.

iii) **Triangle and Ellipse Activity:**

In this activity the subject is provided with 7 triangles and 7 ellipses and he is required to construct different meaningful pictures based on the two given stimuli. As the subject is here encouraged “to make multiple associations to single stimuli” the responses could be scored for flexibility also besides elaboration and originality, but as this is the only activity in which flexibility scoring is possible, it is recommended that here too the test user should confine himself to elaboration and originality scoring alone. A total time of 10 minutes is allowed for this activity. The subject is also asked to give an interesting and suitable title to each picture, which should also be scored. The scoring of the titles however is optional.

The three activities taken together provide ample opportunity to the subject to use his imagination with different types of figures tasks and come out with some novel ideas.
Reliability of the Tests: -

The reliabilities of factor scores and also total creativity scores are considerably high, ranging from 0.932 to 0.947. The inter-scorer reliabilities using 34 test scripts were found to be 0.981, 0.980 and 0.917 for elaboration, originality and total creativity scores respectively.

Validity of the Tests: -

Validity coefficients for factor scores and the total creativity score against teacher ratings are as follows:

- Elaboration 0.346
- Originality 0.329
- Total Creativity score 0.385

Significant beyond 0.01 levels

A copy of the Tests is given in the Appendix - 1

As these tests need to be administered to the Kannada medium students of ninth standard at the High school level there was a need to translate these tests which were in English into Kannada. Therefore the English Version of both verbal and non verbal test were given to experts in Kannada for translating them into Kannada keeping the spirit of the original version.

Preparing for the Administration of the Tests

It is recommended that the test administrator should first get himself fully acquainted with the Tests by carefully going through the
Test-Booklet, which contains both the general instructions for each activity. The timings given for each activity should be strictly adhered to.

Before administering the test, the following points should be carefully noted:

1) The place for administering the tests should be such that children may work comfortably and without disturbance. The usual setting for test administration is the classroom. Care should be taken that the class is not overcrowded. A maximum of 30 to 35 students may be taken up for group administration.

2) To avoid a threatening situation which is frequently associated with testing, the pupils should be told that they would soon be involved in an interesting activity in which they would be required to give interesting and novel responses to certain activities provided in the Booklet.

3) The language used by the test administrator should be very simple.

4) The test administrator should see that each child has available with him a pen or pencil. He should however have a stock of pencils with him, so that he may meet any emergency situation.

5) The test administrator should preferably have a stopwatch with him for timing each activity. A wristwatch with a center second may also do.
6) If both the Non-Verbal and Verbal Tests are to be administered, it is recommended that they be given in two separate sittings. The Verbal Test may be given first. If the two Tests are to be administered the same day, a break of about two to three hours should intervene between the two tests.

i) Preliminary Instructions to Pupils:

After the instructions for motivating the children as mentioned in point (2) above have been given, the test administrator should distribute, the booklet and ask them to fill in the columns for name, class etc. After they have filled in the required columns, the test administrator should ask them to put down their pens and pencils. He would then ask them to look at the general instructions, which the test administrator should read aloud letting the children go through with him silently.

Verbal Tests:

1) "The instructions given in the booklet contain some interesting problems, which if tackled, imaginatively and creatively, may result in interesting and novel responses; you will enjoy doing these problems".

2) "The activities given in this Booklet relate to problems of your daily life. They do not have right or wrong answers you have to think of as many novel and interesting things about them as you can. Try to think of such things as no one else in your class may have thought of. Therefore, write as many novel and interesting
ideas as you possibly can, in order to enable us to know about your ability to think about things in a creative manner”.

3) “You have been given four activities to do. Each activity has been separately timed. Try to work as quickly as you can. If you finish an activity before the time for it is up, do not go to the next activity until you are told to do so. Use your remaining time to think quietly about the different tasks of the activity and write whatever new ideas come to your mind. At the end you will be given five minutes extra. If you get any new idea please write it in the extra time allowed to you”.

4) “Attempt every task of the four activities. When you are asked to begin, immediately start your work. If you have to ask anything, please do it now, if you have difficulty while answering raise your hand from your seat so that your difficulty may be removed”.

After the general instructions have been given, the test administrator should ask the children to open the booklet and should read the instructions for the first activity and also give the example mentioned in the booklet.

**Instructions for Activity I**

1) “On the following pages you have been given some situations, which will appear to you as impossible. You have to think what would happen if such situations actually arise.

2) Give as many ideas as may come to your mind but try to think as many novel ideas as you possibly can. Ideas which you think should not be thought by no one.
3) You will be given fifteen minutes for the three items of this activity. After every five minutes you will be told the time so that you may move on to the next item in the activity.

4) Below is given an example, which will help you to know what you have to do”.

“Example: What will happen if birds and animals speak like man?

Some possible responses:

1. This world will change into a different kind of society.
2. New leader will emerge from amongst the animals.
3. It is possible that a donkey will become our Prime Minister.
4. Men may confide their secrets to their animal friends”.

When the test administrator finishes reading instructions, he should ask the children to go ahead with the three tasks in the activity. At the end of every five minutes, he should announce the time to enable the children to go to the next item.

At the end of fifteen minutes, the test administrator should ask the children to put down their pens and open the page for Activity II.

Instructions for Activity II

1. “On the following pages you have been given names of certain things which could be used in many different and new ways. You have to think in how many different and new ways the things may be used.
2. Write as many uses as you can, but try to think those, which are novel i.e., those which you think no one else might have thought.

3. You will be given twelve minutes for the three items of this activity after every four minutes you will be told the time so that you may move on to the next item in the activity.

4. Below is given an example, which will help you to know what you have to do

“Example: Newspaper

Some possible responses

1. To read the news
2. To make paper toys
3. To get protection from sun
4. To wrap something
5. To cover a dirty place.”

The test administrator should announce time at the end of every four minutes.

Instructions for activity III

1. “On the following pages you have been given pairs of words, which can be related to each other in many different ways. You have to think in how many different and new ways are they related.
2. Write as many relationships as you can, try to think which are novel

3. You will be given fifteen minutes for the three items of this activity. After every five minute you will be told the time so that you may move onto the next item in the activity.

4. Below is given an example which will help you to know what you have to do.

Example: Man and Animal

Some possible relationships:

i) Both have life.

ii) Both need food and water

iii) Both can fall ill

iv) Both are afraid of enemy

v) Both have the experience of feeling cold and hot’”

Instructions for Activity IV

“Just keep in mind a simple model of a toy horse. You have to imagine in what ways you can change this into an interesting and novel one. Do not bother about the cost of the new parts you would like to use. Write all the ideas in serial order. Time given is six minutes.
When the time for Activity IV is up, the test administrator should announce that 5 minutes extra time would be allowed to do the additional work”.

**Non-Verbal Tests:**

After administering the Verbal Tests two to three hours gap will be given and the test administrator will start distributing the Non-Verbal Tests booklets to the same group of students. Then he will give the following instructions to the students. As this test is only on drawings the students are instructed before hand to bring pencil and eraser.

Looking at the drawings, which are to be used as a base for making novel and interesting pictures they have to complete it with some sense in it. They have to give an interesting and imaginative title also.

There are three activities to do. Each activity is separately timed. After finishing one activity they are instructed not to attempt the next without they are told to do so. In the end extra time of five minutes will be given to complete whatever is remaining.

After the general instructions have been given, the test administrator should ask them to open the Booklet and should read the instructions for the first activity.

**i) Instructions for Activity I**

“On the next page you have been given two simple line drawings. Using each as a base, you have to draw pictures, which no one else will be able to think of. You can turn the page in any
direction like up side down, right, left, etc. Try to add novel ideas to it. After completing give an interesting and unusual title”.

Then the test administrator will show the example of the line drawing given at the top and ask the children to go ahead. The time allotted is ten minutes.

**ii) Instructions for Activity II**

There are ten incomplete figures. The children have to complete the figures with the help of new lines and give an interesting and unusual title.

Fifteen minutes will be given to complete the drawings. Every five minutes children will be asked to move to the next.

**iii) Instructions for activity III**

“There are few triangles and ellipses, taking each drawing as a base, try to draw different pictures, which are novel and interesting”.

If they can’t finish the triangles first they can go to the ellipses and make pictures based on them.

Ten minutes will be given for the activity. After the last activity is over the test-administrator should announce that five minutes extra would be given for the additional work.

**Scoring of Verbal Tests:**

As there are no right or wrong responses for the tests, much care has to be exercised at the time of scoring.
The following points have to be kept in mind while scoring. Each item is to be scored for fluency, flexibility and originality.

Instructions for Scoring:

1) **Scoring for fluency:** In scoring for fluency, the scorer should go through the responses to the item in question carefully and strike off those, which are irrelevant or repeated. He should then count the remaining number of responses and enter this number as the fluency score for the item in the appropriate box in the scoring sheet.

2) **Scoring for flexibility:** Flexibility is represented by a person’s ability to produce ideas which differ in approach or thought trend. In scoring for flexibility, the scorer should first acquaint himself with the categories of responses given for each item in the scoring guide. After he has gone through all the responses to a given item, he would see how many different categories the tester has used. The flexibility score will be the total number of different responses given.

3) **Scoring for originality:** Originality scoring is done on the basis of statistical uncommonness of responses. The more uncommon the response, the higher the originality weightage. In the scoring guide the originality weightages have been mentioned for all the original responses, and should be used as such. However, if the test user finds in his own sample, certain responses which have not been mentioned in the scoring guide, he should note them down separately on the reverse side of the scoring sheet, and when he has scored all the answer scripts, he should work out the originality weightage for those responses on
the basis of the scoring scheme and then add these scores by putting a plus sign with the previous scores.

4) **Scoring of Non-Verbal Test:** Each item is to be scored for elaboration and originality. Only the items in Activity III may be scored for flexibility. Scoring, however, is optional.

**Elaboration:**

Elaboration is represented by a person’s ability to add more ideas to the minimum and primary response to the stimulus figure. If the figure is not relevant and meaningful it should be ignored. The total elaboration score will consist of a score of one for the primary and minimum response plus one score each for all the additional new ideas. An idea once scored in a picture should not be scored again in the same picture.

**Scoring for the Title**

Titles too are to be scored for elaboration and originality. In scoring the title for elaboration, again care has to be taken to identify the primary and minimum response and all additions should be taken as elaborations over it.

In the scoring guide, the originality weightages have been given for all the original responses and should be used as such. The instructions for scoring the new responses for originality are also given on the scoring sheet.

**Flexibility:**

In the Non-Verbal Tests only Activity III, viz., Triangles and Ellipses may be scored for flexibility, as the test user is asked to make different pictures from the same given stimulus.
5.2.2. Socio – Economic Status Scale: -

Sociologists, economists, psychologists and educationalists have recognized the possible impact of socio-economic status on different aspects of behavior. There are large number of studies, which point towards a high positive correlation between SES and variables like – intelligence, achievements, aspirations etc. As there was a need to have a tool to assess the SES of subjects in Indian conditions in various research studies, Kuppuswamy (1862) devised and standardized an SES Scale to suit the Indian conditions.

The SES scale form B was used in the present Study in which students were required to fill up the particulars regarding their parents and guardians. This Scale consists of three parts tapping three variables entitled as A, B and C relating to education, occupation and income (of the parent or guardian) respectively. Information about these variables is collected through the following Bio-data sheet.

Bio-Data sheet:-

The bio-data sheet designed to collect personal data includes the following items-

1. Name
2. College/school
3. Class
4. Combination
5. Male/Female
6. Parent’s name and Educational Status
a) Father’s name:
Level of Education: Illiterate/Primary/High school/college graduate

b) Mother’s name:
Level of Education: Illiterate/Primary/High school/college graduate

c) Profession and Annual Income:

   i) Father’s profession:
      Annual income:

   ii) Mother’s Profession:
      Annual income:

Scoring levels of Socio-economic Status: -

<table>
<thead>
<tr>
<th>Items</th>
<th>Weight score</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Education*</td>
<td></td>
</tr>
<tr>
<td>1. Professional degree or Hons. M.A or above</td>
<td>7</td>
</tr>
<tr>
<td>2. B.A. or B.Sc. Degree</td>
<td>6</td>
</tr>
<tr>
<td>3. Intermediate or post high school</td>
<td>5</td>
</tr>
<tr>
<td>4. High School Certificate</td>
<td>4</td>
</tr>
<tr>
<td>5. Middle School Completion</td>
<td>3</td>
</tr>
<tr>
<td>6. Primary School or literate</td>
<td>2</td>
</tr>
<tr>
<td>7. Illiterate</td>
<td>1</td>
</tr>
</tbody>
</table>
### B. Occupation*

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Profession</td>
<td>10</td>
</tr>
<tr>
<td>2. Semi-profession</td>
<td>6</td>
</tr>
<tr>
<td>3. Clerical, Shop Owners, Farm Owners, etc</td>
<td>5</td>
</tr>
<tr>
<td>4. Skilled worker</td>
<td>4</td>
</tr>
<tr>
<td>5. Semi-skilled worker</td>
<td>3</td>
</tr>
<tr>
<td>6. Unskilled worker</td>
<td>2</td>
</tr>
<tr>
<td>7. Unemployed</td>
<td>1</td>
</tr>
</tbody>
</table>

### C. Income*

<table>
<thead>
<tr>
<th>Income</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Above Rs 5000 per month</td>
<td>12</td>
</tr>
<tr>
<td>2. Between Rs 4000 and Rs 5000</td>
<td>10</td>
</tr>
<tr>
<td>3. Between Rs 3000 and Rs 4000</td>
<td>6</td>
</tr>
<tr>
<td>4. Between Rs 2000 and Rs 3000</td>
<td>4</td>
</tr>
<tr>
<td>5. Between Rs 1000 and Rs 2000</td>
<td>3</td>
</tr>
<tr>
<td>6. Between Rs 500 and Rs 1000</td>
<td>2</td>
</tr>
<tr>
<td>7. Below Rs 500</td>
<td>1</td>
</tr>
</tbody>
</table>
G = Total score (Add A, B, C)

<table>
<thead>
<tr>
<th>SES status</th>
<th>Description</th>
<th>Total scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>High</td>
<td>19-29</td>
</tr>
<tr>
<td>II.</td>
<td>Middle</td>
<td>9-18</td>
</tr>
<tr>
<td>III.</td>
<td>Low</td>
<td>Below 9</td>
</tr>
</tbody>
</table>

* Professor Kuppuswamy's SES Scale was used for SES classification in this study suitably modifying the income classification so as to suit to the present day income structure.

Each part consists of 7 items and for each of these items the author has provided weightage score. After collecting information on each variable, the weightage score for each part is to be found out. The weightage score of three parts are added up and thus provides the total weightage score. This score is considered for deciding the SES status of a given case.

5.2.3. Bhagia’s School Adjustment Inventory; -

This Inventory standardized by Nirmal Kumar Bhagia, consists of items intended to evaluate the subjects adjustment with respect to academic matters, school mates, teachers, school organization or school environment in general and self. The inventory can be used for secondary and higher secondary students. There are in all one sixty-five items. On the right side of each statement are given three responses ‘Yes’, ‘No’, ‘?’ and the subjects are required to answer them according to what they consider to be true for them in each case.
Interpretation of Scores

The Inventory score of an individual pupil gives an estimate of what a pupil feels about or seeks in the school environment and what he is most likely to do in school-situation. Higher level of school indicate adjustment of the presence of more positive characteristics and problems about various aspects of school. Lower scores, on the other hand, indicate lower or poor school adjustment i.e. presence of more negative characteristics which add adverse feelings or problems and absence of more positive characteristics and feelings about various aspects of school. In other words, students who get high scores tend to be well adjusted to the school environment i.e. they are more satisfied and happy at school and their behaviour in the school is more satisfactory. Students who get low scores tend to be poorly adjusted i.e. they are dissatisfied and unhappy at school and their behaviour in the school is not satisfactory. The scores on five categories (Scales) provide an estimate of the following aspects.

i) Score on category ‘A’ indicates how far a pupil is satisfied with his studies, subjects and class work, feels confident, serious and successful in school work, and is free from the fear of Tests and examination.

ii) Score on category ‘S’ indicates how far a pupil likes his mates; feels happy in their company and enjoys relationship, experiences approval and popularity among mates and gets into social interaction by forming friendship and being co-operative.

iii) Score on category ‘G’ indicates how far a pupil is satisfied with school-administration and general environment facilities and conditions at school; likes miscellaneous administrative
conditions, feels interested and participates in co-curricular activities and experiences attachment with the school.

iv) Scores on category ‘T’ indicates how far a pupil likes the teachers of his school, their teaching, treatment and personality, experiences, their approval and acceptance, and feels close and respectful to them.

v) Score on category ‘P’ indicates how far a pupil is satisfied from his ‘self’ at school, feels free from disturbed state of mind, worries, sadness, inadequacies, personal handicaps, immoralities, under aggressions and conformity, possesses personal qualities like regularities punctuality, resourcefulness, responsibility etc.

The level of school adjustments is categorised into five levels. The following Table show the details about the score limits of these five categories.

**Table no. 5.3**

**LETTER – GRADES ASSIGNED TO TOTAL AND CATEGORIAL SCORES**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Class</th>
<th>RANGE OF SCORES</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A</td>
<td>S</td>
</tr>
<tr>
<td>A</td>
<td>Excellent</td>
<td>Above 31</td>
<td>Above 32</td>
</tr>
<tr>
<td>B</td>
<td>Good</td>
<td>31-25</td>
<td>32-26</td>
</tr>
<tr>
<td>C</td>
<td>Average</td>
<td>24-17</td>
<td>25-18</td>
</tr>
<tr>
<td>D</td>
<td>Poor</td>
<td>16-9</td>
<td>17-11</td>
</tr>
<tr>
<td>E</td>
<td>Very poor</td>
<td>Below 9</td>
<td>Below 11</td>
</tr>
</tbody>
</table>
The Inventory was developed with the help of a representative sample of 2,550 IX to XI grade pupils selected from 72 schools widely scattered throughout the state of Rajasthan. The sample distribution of scores followed closely normal distribution. The mean for the group is 104.40 with a standard error of 0.51. The mean scores of the five scales or categories of school adjustments (A, S, G, T and P) are 20.05, 22.27, 17.32, 22.28 and 21.58 respectively with standard errors ranging from 0.112 to 0.113. The standard deviation (S D) of the total distribution is 26.2 with a standard error of 0.36 and that of sub scale standard deviations are 6.41, 6.32, 5.54, 6.73 and 6.13 respectively with standard errors ranging from 0.08 to 0.09 as there was no significant difference between the mean scores of IX, X and IX grade groups. Common norms were developed.

The Inventory was originally developed in Hindi language later it was translated into Kannada language and standardized by T. Padmini. She reported satisfactory levels of reliability for the Kannada version. This Kannada version of the Inventory is used in the present study.

**Reliability and Validity**

The scale has odd- even reliability co-efficient of 0.83. Test retest coefficient is 0.96 indicates the stability of inventory scores. The internal validity is evident in view, of its content, internal consistency, relationship of its categories with its total scores, and inter-relationship between categories validity coefficient was calculated by comparing scores with ratings of Teachers and found to be 0.69.
Administration of the School Adjustment Inventory

The inventory is practically self-administering. However the following procedure should be adopted.

After distributing the copies of the Inventory, the examiner should call the attention of the students to the instructions appearing on the front page of the inventory and ask them to read these carefully. Instructor may read them loudly emphasizing the following points.

(a) Their truthful answers would help to improve conditions of the school; they themselves would also be benefited.

(b) Their answers will be treated as strictly confidential. Nobody, except the administrator of the inventory who is their well-wisher, would be able to see them.

1) All the doubts, if raised by any pupil, should be removed and every effort should be made to convince them that his/her responses would be used only for the improvement of school conditions. In short, the Inventory should not be administered until a feeling of co-operation among the students has been developed and their confidence is gained.

2) The students are expected to understand and interpret questions for themselves. In case, however, if any explanation is sought concerning the meaning of certain words, they should be made clear to them before the testing begins.
3) Students should not be seated very close to one another, they should not be allowed to converse with one another while responding to the Inventory.

4) There is no time limit. It has been found, however that 40-45 minutes are usually sufficient to complete the Inventory.

Scoring

The stencil consists of various columns corresponding to different pages. To obtain the score, the appropriate column of the scoring stencil should be laid over the responses of that page. Then the number of code marks on the stencil falling immediately over the circles made by the subject on the Inventory, should be counted. The number of such code marks should be noted down separately for each category at the bottom of each page of the Inventory. The total of each code for all the pages would give score for each category, which should be noted down on the front page of the Inventory. The combined score of all the categories would represent the total school adjustment score of an individual pupil.

5.2.4. Non-verbal Test of Intelligence:

Non-verbal test of Intelligence was used to measure the intelligence of children. This test measures Non verbal intelligence of children of age ranging from 7 to 13+ years. This test was developed by Premalatha.

This test consists of seven subtests mentioned below

1) Similarities Test  
2) Classification Test  
3) Progressive Series Test  
4) Analogies Test
1) Similarity Test: In the similarity test there are fifteen rows. In each row there are six figures. The child has to identify the figure similar to the first figure given in that row. The time allotted is two minutes.

2) Classification Test: This test consists of sixteen rows and the child will have to identify in each row the odd man out. The time to complete this Test is two and half minutes.

3) Progressive Series Test: In this Test some rows contain five figures, some rows contain four figures and in some rows figures are not placed to give a meaning. In some other rows figures are not placed in ascending order. The child has to arrange it either in ascending order or in the proper order to give meaning.

4) Analogies Test: There are seven figures in each row and the first figure in each row is related to that of the second. Third figure is related to any one of the four figures given in that row. The subject has to select the correct figure, which is related to the third figure. The time allotted is three and half minutes.

5) Absurdities Test: Totally there are twenty-six figures and in each figure there is some sort of absurdity. Some important part is left out in some figures. The child will have to identify the absurdity or the parts left out in each figure. The time allotted is three minutes.

6) Substitution Test (1): There are six figures in the row and each figure is numbered from one to six. In the rows below the same
figures have been repeated. The child will have to number the figures as given above. One and half minute is given to complete the test.

7) Substitution Test (2): In this Test the top row is numbered one to nine. Each number has a symbol. In the rows given below are numbers and the child will have to write the corresponding symbol in the space provided time allotted to complete it is two minutes.

A copy of the Test is given in the Appendix No.1

Administration of Non-Verbal Test of Intelligence

After distributing the Booklet the examiner should call the attention of students to the instructions given in the Booklet and ask them to read the instructions carefully. Instructor may read them loudly emphasising the following points.

The examiner instructs, “This Test is not similar to the tests that are conducted in your schools. There are seven different types of tests. The answer should be marked in the same Booklet according to the instruction and the example given. Each test has got its own time limit”.

After each Test the students will be further instructed to proceed to the next.

The total time given is eighteen minutes for 183 items. Each item carries one mark only. Maximum possible score is 183.

A copy of the Test is given in the Appendix No. 1
5.2.5 Creative Activities Check List

A wide variety of tasks has been developed by Torrance and his colleagues for use in assessing Creative thinking from kindergarten to graduate school. Torrance’s Check List is one among them. This is a list of creative activities, which children do on their own in various fields. It includes activities related to language arts, science, social studies, art and other fields. There are altogether one hundred questions. The students have to put a tick (√) mark to the activity, which they have actually undertaken.

The Check List was translated by the Investigator herself making due alterations in those items in the Check List which were not suitable for Indian Socio-cultural conditions.

5.2.6 Attitude Scale: Attitude towards Creative Children

An Attitude Scale to measure attitude of teachers towards creative children was developed by the Researcher. The Scale contains thirty-six items, which can be rated on a five point rating scale. Likert’s Method of Summated Rating was followed to develop this attitude Scale.

To begin with a number of items expressing positive, negative and neutral attitude of teachers towards creative children were drafted by the Investigator herself. Before drafting these items she discussed this issue with several teachers and also consulted several sources. After writing about 75 items the Investigator made the Preliminary editing of these items to remove any language errors or ambiguity in meaning. Then these items were given for editing to a group of three highly experienced and knowledgeable lecturers of colleges of
education. They were instructed to further edit the items with respect to language and meaning and also with respect to the direction of attitude implicit in the items. They were instructed to remove those items, which they considered unsuitable for an attitude scale. They were asked not to consider their own attitude whatever it might be, towards Creative children. They were informed to be objective as far as possible in editing the statements. After thorough editing of all the 75 items the panel of judges rejected 25 items and retained 50 items only to be suitable for an Attitude Scale.

Later these 50 items were listed in a random order mixing positive, negative and neutral items to be rated on a 5 point scale. Consisting of anchoring adjectives namely Strongly Agree, Agree, Neutral, Disagree and Strongly disagree. A scoring system of giving 5,4,3,2,1 mark for these 5 points respectively was adopted. This preliminary scale was administered to a group of randomly selected High School teachers. The responses were scored and the data was subjected to Item Analysis. Those items which did not show discrimination between teachers having different degrees of attitude were rejected. No further Statistical Analysis was undertaken. After this Item Analysis 36 items were retained to form the final Attitude Scale. Clear instructions were formulated to administer the scale.

**Scoring and Interpretation**

The responses to the statements are scored as explained above. The marks obtained per each item are summed up to yield a total score which indicates the degree of attitude by the individual as there are 36 items extreme positive attitude yields a score of 36x5 = 180 and extreme negative attitude yields a score 36x1 = 36 and neutral attitude
yields a score of $36 \times 3 = 108$. Hence the range of score in the scale is in between 36 to 180 with a neutral point of 108. Greater the total score stronger is the positive attitude towards the attitudinal object in this case of creative children. Lesser the score stronger is the negative attitude towards the attitudinal object scores nearing neutral point indicate neutral attitude.

After scoring Spearman-Brown's split-half reliability coefficient was calculated and it was found out to be 0.62.

5.3 RESEARCH DESIGN AND PROCEDURE OF THE STUDY

The study is a descriptive analytical survey involving ninth standard students of South Kanara District. The data pertaining to different variable selected for the Study was collected from the High Schools of all the Talukas of South Kanara District.

The study was carried out in two phases. In the first phase the Tests of Creative Thinking were administered to the selected sample of 1000 IX standard High School children. The responses were scored following the procedure of scoring these tests described earlier. The raw scores of all the 1000 children on both the Verbal and Non verbal Tests of Creative Thinking were converted into ‘t’ scores with a mean of 50 and SD of 10 with the formula $t = \frac{10(x - M)}{SD} + 50$

A frequency distribution was set up for the ‘t’ scores of all the 1000 children. The Socio-economic Status scale was used to collect the data about the Socio-economic Status of all the 1000 children and they were grouped into different levels of Socio-economic Status groups. Their achievement marks in the previous annual examination were collected from the school authorities as indicators of Academic
Achievement. These data were analysed and interpreted with reference to Objectives and Hypotheses of the first phase.

In the second phase of the study, two sub groups of High and Low Creative scores were selected. Taking into consideration the frequency distribution of Creativity scores (‘t’ scores) of all the 1000 children, those children whose total Creative scores were beyond +1SD were selected as children of High Creativity. 145 children could be selected in this group. Those children whose total Creativity scores were below −1SD were selected as Low Creative children. 133 children could be included in this group. For these two sub samples of High Creative and Low Creative children, Tests of other variants namely School Adjustment, Non verbal Intelligence Test, Creative Activities Check-list were administered following the procedure of administration described earlier. The data thus collected were analysed and interpreted for an intensive study of these sub groups of High and Low Creative children with reference to the Objectives and Hypotheses of the second phase.

In the second phase, Attitude Scale to measure the attitude of teachers towards Creative children was administered to a group of 30 teachers who were teaching in the selected schools.

On the basis of thorough analysis of the data collected relating to the variables selected for the study, an attempt was made to identify the favouring and deterring the development of creative abilities in High school children in South Kanara District.
5.4 STATISTICAL TECHNIQUES:

The following statistical techniques were used in analysing the data.

1) The various measure of central tendency and variability were computed for the distribution of scores on various tests.

2) ‘t’ test was employed to study different group differences.

3) The Pearson Product Moment Correlation was used to study the correlation between different variables.

4) Chi-Square ($x^2$) test was used to study the interdependence of different variables.

5) Graphical representation of the data.

5.5 DE - LIMITATIONS

The present Study indeed requires in depth assessment on a wider scale, may be even at the state level. It is however, rather too exhaustive a study to be undertaken by the present Researcher, as there are obvious constraints such as time and finance. Also it would be considerably difficult to identify different interacting factors in different areas of the state, which is composed of different cultural, economic and social groups. In view of this the Researcher has restricted her study to the District of South Kanara, which is uniquely different from other districts of the State, economically, socially and educationally too.

Students of standard VIII may not be settled in their new environment and may not provide the needed data. The students of
standard X have their eyes set on the forth coming public S.S.L.C examination and therefore would be least interested in extending effective co-operation to the Researcher. In these circumstances the Researcher decided to limit her work on students of standard IX and that too on random selection basis but of course keeping in view the interacting factors to be studied.

The Study is limited to only 40 selected schools of South Kanara District.

The factor of composition of schools (Boys, Girls and Co-education) was not considered as a separate variable in the Study.

Indepth analysis of the interacting factors for development of creativity was limited to the sub-samples of High and Low creative children.