CHAPTER IV

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CHAPTER IV

PLAN AND PROCEDURE

4.1 Introduction

In Psychology, sufficient research has been conducted about persons suffering from a variety of mental ailments but comparatively fewer attempts have been made to gather information about people enjoying sound psychological health. About mentally ill persons, hundreds of books and research reports are available. On the other hand, the meagre material available about gifted and creative individuals is an evidence of the neglect of an important field of educational and psychological research. During the second world war, people heard and read numerous stories of brave and dare devil soldiers who surprised the whole world by putting up a masterly display of courage, creativity and imagination. They discovered best solutions even for most complicated problems. After the end of war, psychologists were attracted towards the investigation of that wonderful ability which enables the human beings to make new inventions and helps the life worth living. This wonderful and amazing ability has been labelled as 'Creativity'.
Creativity is a familiar yet oddly elusive concept. We all think we can think we can recognize creativity in others (and even in ourselves at times), since this is regarded as one of the abilities of the good teacher, but we would probably be hard pressed to advance a definition acceptable to all our colleagues. And we might find some disagreement over whether one can be creative in the sciences as well as in the arts, in the home as well as in the potter’s studio, in bringing up children as well as in writing books. Further disagreement would probably arise if we began to discuss ways of teaching creativity to children, or even whether such teaching is possible, whether in fact creativity can be learnt at all or whether it is a precious gift with which we are born (or not as the case may be).

Creativity was attributed to a divine source being termed as "speak of genious" or "revelation". But today it is defined as the psychic functioning beings. Though, a unique power, it most often seems to be mystical. The earliest scientific approach to the study and understanding of the nature and implications of "creativity" was undertaken in the 1950’s in the USA under the initiative and guidance of J.P. Guilford of South California University. Guilford developed the 'Structure of Intellect' model which is a three-dimensional figure representing various intellectual factors. He tried to show how content, operation and products interact to give a unique factor of the mind. He identified five factors:

Creativity is generally associated with divergent production which is a problem-solving activity involving originality, flexibility, fluency and sensitivity to new problems, definition skills, ability to abstract, synthesize, organize a wide variety of ideas into a coherent, meaningful whole not seen before, elaboration, etc. For instance, if a child is asked to write the use of a knife in as many cases as possible, he exercises his divergent mental operations and gives a number of novel uses of the knife, different from the ordinary or traditional functioning of the equipment. This unconventional or unusual style of thinking or mental operation is, according to Guilford, the typical form of creativity.

There are different kinds of creativity and are identified in various forms like music, dance, painting, art, sculpture, literature, science, mathematics, industry, technology, and so on.

Creativity provides a novel and attractive turn to the history of a nation, a community and in fact to that of whole humanity. This connection gets convincing support from the history of evolution of civilization. It is because of the efforts of handful of these inventors and explorers
that the humanity has seen the bright sunshine of civilization. To provide added happiness and comforts to mankind, the suffered they sacrificed their lives too for this noble cause. A handful of gifted individuals rather than teeming millions of ordinary people can play a more important role in the renaissance and progress of a nation. It is not essential for a country to be most populous in order to make progress because we cannot produce even one creative individual by combining together ten non-creative individuals. Thus, it becomes imperative for every nation to chalk out an adequate programme for the identification of creative students and then to make arrangement for their education and training in a suitable environment and thus to provide them opportunities to develop their creative potential. Money spent on the education of such children will not go waste because they are the persons who will guide people in different walks of life in their later lives. It is they who will make serious efforts to enable the society to reach the peak of glory and progress. Indifferences and carelessness on the part of a country in this regard may prove fatal for her because it will obligate many promising prospective scientists, writers, poets, painters and musicians to part with their creativity before it gets an opportunity to blossom forth.

All the individuals possess creative thinking ability but they do not possess it in equal amounts, that is, they fall on different points
along the continuum of creative thinking ability. So far as creativity is concerned, nature has not been unduly liberal towards a particular country or a particular period in history. Creative persons are present in all countries and in all ages. Generally people have been of this view that only writers, poets, painters, musicians and scientists are creative persons. But now-a-days a number of psychologists have started feeling that creativity can exhibit its pleasant influence in any sphere of life. A doctor, a teacher, a butler, a clerk, a peon, a mother, a labourer all can be creative persons in their respective fields of work. A mother will certainly have creative thinking ability in abundance if she makes her child a useful member of society by bringing him up a novel way. Sometimes, a child insists on getting a particular thing which is difficult to arrange or which may prove harmful for the child. In such situations some parents lose their temper and start giving sound thrashing to the child, whereas creative parents strike a way out of the impasse and consequently the child gives up his obstinacy and resumes his play or stops weeping or starts laughing and dancing. A women preparing a new delicious dish by using ordinary things of daily use, is also a creative being. A labour inventing a method of doing more work by putting in less labour, is also a creative labourer. After experimenting with various methods of teaching, if a teacher effects such changes in them as enable
the students to learn in an effective way, then he too is a creative teacher. Besides, a creative teacher succeeds in devising some novel way of bringing about modifications in the behaviour patterns of students. Sometimes the talks in a meeting or a conference are deadlocked and the split becomes imminent or the conference is doomed for a failure. In such a difficult situation, if a member floats a suggestion which removes the deadlock and makes all the members heave a sigh of relief, then he is certainly a creative individual. In summary, it can be said that creative persons are present in all walks of life. But it is essential that a creative person will be equally creative in field other than his own field of work.

Scientists working in research laboratories think themselves creative persons because they help in understanding the nature from a novel angle. The engineers can assert that scientists create nothing because they simply perform experiments. On the other hand, it is they who create novel objects by making a creative use of the principles discovered by scientists. People working in industrial concerns can put forward their claim that it is they who create things because engineers merely prepare outlines. The salesman can advance their own claim on creativity by arguing that all industrial products will go waste if they do not create a wish in the minds of people to buy new
products. Thus everyone considers his own work to be more important and creative than the work of all other people. But, in fact it is way of doing a work which is creative and any man can do his work in a creative way if nature has bestowed upon him the gift of creativity in abundance. In other words it can be said that only creative persons can do their work in a creative way. 4.2 Creative Intellectual Traits

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Experimental testing in areas logically recognized as aspects of creative thinking has revealed quite a number of creative abilities. The investigative method has been factor analysis in accordance with multiple-factor theory which holds that intelligence is composed of a number of independent or near-independent abilities. Independent abilities are uncorrelated within the population but not necessarily unconnected within an individual.

The experimental procedure has been to hypothesize what functions highly creative persons perform more efficiently than less creative persons. Highly creative persons were thought to be more fluent in their thinking, being able to generate from their memory stores alternative ideas in great variety and large quantity. Three different kinds of fluency were found. Highly creative persons were also thought to be more flexible, readily revising interpretations, categorizations, and uses of
information. Three kinds of flexibility were found. It was also thought that the highly creative persons should be able to elaborate extensively upon what he knows, offering large numbers of additions and details. Experimental results confirmed this hypothesis.

Fluency is defined as facility in retrieving information from the brain's memory store. To make a test of fluency meaningful, therefore, every individual should have the same supply of information in his memory store. Experimenters can approach this conditions by giving test problems calling for information that everyone tested probably possesses.

The test for an ability called ideational fluency asks the subject to list all the things he can think of that are, for example, white and edible. The subject may be reply: bread, flour, sugar, snow, milk, salt, whipped cream, foam. The score is the total number of responses produced in a specified time. Test time is controlled to provide subjects with uniform test conditions.

The task in the ideational fluency test resembles the very common effort to recall information which satisfies class specifications (white and edible, in this case). In problem-solving, the individual's "search model" provides the class specifications.
A second type of fluency, associational fluency, is the ability to recall ideas which satisfy a certain relation. If asked for words that mean almost the opposite of soft, the subject may reply: hard, difficult, tough, unyielding, rigid. Associational fluency characterizes thinking by analogy.

The third kind of fluency is experimental fluency, the production of alternate organized thoughts. It has been called expressional fluency because it was first found in a test that calls for the production of sentences. A sequence of words in a sentence represents a thought system.

One kind of flexibility is the readiness to reclassify information. Given a set of words, can the subject group and regroup them meaningfully in several different ways? Another kind of flexibility is the ability to revise meaning. In the Consequences test, some subjects are more adept than others at revising their conceptions of an event, such as the unlikely circumstance of everyone losing the same of smell. They can suggest several remote and otherwise unusual consequences. The third kind of flexibility involves changes in uses of familiar objects or parts of objects, such as using a wire from a guitar for slicing cheese.

Elaboration is seen in facility in giving details to round out a complex innovation, such as an organised plan. The nature of the given system
suggests the added embellishments. One test actually presents an outline of a plan for a school bazaar and asks the subject to add the detailed steps and procedures.

Most of the abilities mentioned so far belong to the newly recognised category of divergent production abilities. Divergent production is the generation of logical alternatives to fit the needs of given information. It is this kind of activity that has been ignored in traditional intelligence tests and also slighted in education.

In J.P. Guilford's structure of intellect theory (Guilford 1967), divergent production is one of the five major kinds of mental activity. The other activities are cognition (in the narrow senses of simply knowing or understanding); memory (fixating what is learned; not the same as the memory store); convergent production (generation of a fully determined idea); and evaluation (judging whether information satisfies certain criteria). If one is interested in all aspects of creative problem-solving all five kinds of mental activities must be tested.

4.3. Testing for Creativity:

"Creativity" is an ambiguous word, but when it is used in the phrase "testing for creativity" its meaning may be restricted to those qualities or
traits of individuals that predispose them to produce novel ideas and novel effects, psychologists and educators now generally reject the popular belief that only the few who become distinguished for output of exceptional novelty and worth are creative. Along with personality traits in general, the traits most and worth are creative. Along with personality traits in general, the traits most relevant to creative output are believed to be continuously variable in the general population. To accept the belief that everyone is creative to some degree, we have only to realize that all genuine problem-solving involves creative events at some points and that problem-solving is an activity shared by all.

In today's highly technological society, the critical demand for inventive scientists and engineers has highlighted the need for some means of identifying those individuals with the greatest creative promise in education, where creative qualities have heretofore been too much neglected in both testing and teaching, it is desirable to assess each individual's creative potential in order to determine what he needs to develop that potential.

Of all the traits that predispose individuals to create output, most is known regarding certain intellectual, or cognitive, abilities. The intellectual qualities most concerned with
creativity, however, are conspicuously absent from standard intelligence test. When Lewis M. Terman was preparing his initial intelligence scale, he found that his test of ingenuity did not correlate with teachers' ratings of brightness versus dullness, and he therefore omitted that test. To this day intelligence scales have emphasized understanding and the possession of knowledge in problem-solving. They have served rather well in predicting individual performance in school, but not nearly so well in predicting adeptness at problem-solving in the years after school.

4.4 Objectives

The present study aimed at in order to find out the high creative and low creative adolescents studying in class IX in high schools of Imphal district. The specific objectives of the study were given below:

1. To find out high and low creative adolescents studying in the high schools of Imphal district.

2. To find out the verbal creative thinking of high and low creative adolescents studying in class IX in high schools of Imphal district.

3. To find out the non-verbal creative thinking of high and low creative thinking adolescents studying in class IX in high schools of Imphal district.
4. To determine any relationships between the high and low creative students in non-verbal creative thinking.

5. To determine any relationship between the high and low creative students in verbal creative thinking.

6. To find out any difference between the high and low creative adolescents in non-verbal creative thinking.

7. To find out any difference between the high and low creative adolescents in verbal creative thinking.

4.5 Scope and Delimitation

The study was conducted on three groups of pupil of standard IX studying in three different types of schools in Imphal district. As far as practical the investigator tried to include pupils representing Meeteis, Tribals and Muslims and pupils belonging to other communities. However the study was delimited to the following areas:

a) The comparison of high and low creative thinking was restricted to the pupils studying in the three types of schools. Only two aspects of creativity i.e. high and low and those traits and qualities which are included in the present study were applicable only to those students who are studying in standard IX
b) The finding and implications of the study were based on the basis of the data collected from the student which are included in the study.

4.6 Hypothesis Formulated

In the present study, the investigator formulated the following hypothesis:

H.1 There is statistically no difference in verbal creative thinking among the adolescents studying in class IX of Imphal district.

H.2 There is statistically no difference in non-verbal creative thinking among the students studying in class IX of Imphal district.

H.3 There is statistically no difference in verbal creative thinking of high and low creative adolescents studying in class IX of Imphal district.

H.4 There is statistically no difference in non-verbal creative of high and low creative in non-verbal creative thinking of adolescents studying in class IX of Imphal district.

H.5 There is relationship between high and low creative adolescents in the verbal and non-verbal creative thinking.
4.7 Statistical Techniques Applied

The investigator adopted the following statistical techniques in order to estimate any degree of difference or relationship among the high and low creative students in their verbal and non-verbal creative thinking.

1. \( \chi^2 \) (chi-square) Test in order to determine high and low creative students in their verbal and non-verbal creative thinking.

2. 't-test'in order to determine any significance difference.

3. Co-efficient of correlation in order to determine any degree of relationship.

4.8 The Sample Selection

The importance of the theory of sampling lies in the fact that for a large population, it is neither practical nor necessary to collect data from each and every member of the population. The factors of time and cost are usually important considerations in social science research. It is more economical and efficient to base studies on samples and for the most practical purposes the conclusions drawn from a sample can be just as valid as conclusions drawn from the analysis of the entire universe of cases.

Considering the requirement of a good sampling, Goode and Halt remarked "A sample must be representative and it must be adequate".
The present study aims at studying the differences between the three groups of meitei, tribal and muslim adolescents studying class IX in high schools of Imphal district with reference to their verbal and non-verbal creative thinking. The study was therefore, confined to the high schools of Imphal district.

Since there are a very large number of students in Imphal district, it becomes extremely difficult to select a representative sample from them. Mention may be made up, there are 201 High and Higher Secondary Schools in Imphal district of which 17 Governments and 3 Private Higher Secondary Schools and 70 Governemnt, 33 Aided and 72 Private HHigh Schools. Out of these only 2 Government Higher Secondary Schools, 1 Private Higher Secondary School and 1 Aided High School were included in the study. Further all the class IX students who can considered as adolescents studying in the schools were included in the study. Thus altogether there are 41 students from 2 Government Higher Secondary Schools, 57 students from 1 Private Higher Secondary School and 53 students from 1 Aided High School which comes to 151 students.

4.9 Construction of Tool

In order to assess the verbal and non-verbal creativity of the adolescents the investigator constructed 23 items. It was prepared with due considerations of the Torrance's verbal and non-verbal tests. A good number of books, research journals and articles, question papers, reference books etc. relating to verbal and non-verbal
Creativity were consulted for the purpose. Thus, a draft for the try-out of the test for study was ready. Before a 23 item try-out test was finalised again in consultation with the experts in evaluation before administering it to the pupils. Thereafter try-out was administered to 40 pupils tens from each category of schools that too 50% boys and 50% girls. The students included for the try-out were more or less representative of the sample schools whereby the final test were administered. The layout of the pupils castewise and sexwise on whom the try-out was administered is given in Table 4.1

Table 4.1

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of the School</th>
<th>Government</th>
<th>Aided</th>
<th>Private</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Johnstone Higher</td>
<td></td>
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<tr>
<td>2.</td>
<td>Secondary School!</td>
<td>21</td>
<td></td>
<td></td>
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<tr>
<td>3.</td>
<td>Model Higher</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Secondary School!</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Usha Bhavan</td>
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<td></td>
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<tr>
<td></td>
<td>High School</td>
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<tr>
<td></td>
<td>M.B.C Higher</td>
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<td></td>
<td>Secondary School!</td>
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<tr>
<td></td>
<td>Grand Total</td>
<td></td>
<td></td>
<td></td>
<td>151</td>
</tr>
</tbody>
</table>
The co-operation of the heads of schools was sought. Proper physical conditions such as seating arrangement, ventilation, freedom from outside noise etc., were taken care of. All the required arrangements were made and students are informed in advance about the nature and purpose of the test. Instructions were given quite clearly and firmly, calling attention booklet and to the use of the separate 'Answer sheet' for recording the responses of the pupils. An example was worked out on the black-board. Pupils' doubts were clarified A conductive rapport was established before they started attempting the items. Pupils were given enough time to write all the answers. The time taken by the students ranged from 2 hours to 2 hours and 40 minutes.

On the basis of the try-out of the tests the following decisions were taken and incorporated in the final test: That is "The number of the items were reduced from 25 to 10 in verbal creating test and in non-verbal from 25 to 11 in order firstly, to weed out the most easy and difficult items from the final test and, secondly, to magnify the quantum to test load so as to be able to administer the test in less time at a stretch.

4.10 Scoring of the Test
4.10 Scoring of the test

In both the verbal and non-verbal tests each and every item which were found correct or satisfied to the investigator was counted as 5 marks. Where pupils were asked to answer every item on the test a pupil's overall score were taken on verbal and non-verbal separately on the basis of the marks obtained by the pupils. Further in order to make a comparative statement mean of the verbal and non-verbal creative thinking were calculated.

4.11 Organisation of the Report

The present study has been reported in six chapters. The first chapter is mainly concerned with Background of the study. Theoretical and conceptional framework are given in Chapter II. Chapter III deals with Review of the Related Literature which throws light on the work done in this area in India and abroad. Chapter IV is concerned with the Procedure followed in the study. Description of the detailed Analysis of the Data were reported in Chapter V. Summary, conclusions and Suggestions for further research are given in Chapter VI.