"Creation around which we have always placed an aura of mystery consists in forming the mind forward. Few of us have ever learned the art of thinking forward, because education and experience have always emphasized thinking backward. Strange to say, in most of our educational processes, we deal rather consistently with the past, but without much definite understanding as to how it fits the future."

-ROBERT P. CRAWFORD
CHAPTER II

CREATIVITY: ITS DEVELOPMENT

2.1 INTRODUCTION
2.2 THE MEANING OF CREATIVITY
2.3 FOUR COMPONENTS OF CREATIVITY
   2.3.1 Creativity and Person
   2.3.2 Creativity and Process
   2.3.3 Creativity and Press
   2.3.4 Creativity and Product
2.4 FLOW CHART OF CREATIVITY
   2.4.1 Fluency
   2.4.2 Flexibility
   2.4.3 Originality
   2.4.4 Elaboration
2.5 CREATIVE LEARNING AND ENRICHMENT MODELS
   2.5.1 First stage
   2.5.2 Second stage
   2.5.3 Third stage
2.6 ENRICHMENT TRIAL MODEL
   2.6.1 General Exploratory Activities
   2.6.2 Group Training Activities
   2.6.3 Individual and Small Group Activities
2.7 CREATIVE THINKING MODEL
   2.7.1 Creative Learning Model
   2.7.2 First Level: Divergent Functions
2.7.3 Second Level: Complex Thinking and Feeling Processes

2.7.4 Third Level: Involvement in Real Challenges

2.8 CREATIVITY DEVELOPMENT TECHNIQUES

2.8.1 Brainstorming

2.8.2 Attribute Listing

2.8.3 Morphological Analysis

2.8.4 Checklists of Questions

2.8.5 Synectics

2.8.5.1 Direct Analogy

2.8.5.2 Personal Analogy

2.8.5.3 Fantasy Analogy

2.8.5.4 Symbolic Analogy

2.8.6 General Steps of Structure of the Synectics Process

2.8.6.1 Problem As Given (PAG)

2.8.6.2 Analysis

2.8.6.3 Purge

2.8.6.4 Problem As Understood (PAU)

2.8.6.5 Evocative Question (EQ)

2.8.6.6 Examination (Exam)

2.8.6.7 Force Fit (FF)

2.8.6.8 View Point (VP)

2.8.6.9 Excursion

2.9 NATURE OF CREATIVITY

2.9.1 Success Orientation

2.9.2 Peer Orientation
2.9.3 Sanctions Against Questioning and Exploration
2.9.4 Misplaced Emphasis on Sex Roles
2.9.5 Divergency Equated with Abnormality
2.9.6 Crucial Teacher Skill

2.10 OBSTACLES TO CREATIVITY
2.10.1 Pressure to Conform
2.10.2 Authoritarian Attitudes
2.10.3 Ridicule
2.10.4 Rigidity of Personality
2.10.5 Rewards
2.10.6 Quest for Certainty
2.10.7 Over-emphasis on Success
2.10.8 Hostility toward the Divergent Personality
2.10.9 Intolerance of the 'play' Attitude

2.11 TEACHER'S ROLE IN DEVELOPING CREATIVITY IN SCHOOL

2.12 PERSONALITY: ITS TRAITS AND FACTORS:
2.12.1 Definitions of Personality
2.12.2 Four Levels of Development of Personality Theory
2.12.3 Personality Traits
2.12.4 Trait Modelities (Factor Model of Personality)
2.12.5 Personality as Extraversion and Introversion: The Jungian View

2.13 CREATIVITY AND PRESENT STUDY
2.1 INTRODUCTION

Education in our country as well as in other countries is facing a grave crisis these days. In fact, education does face a crisis everywhere during the transitional period of social changes. In critical role of creative innovation in our rapidly changing society cannot be overstated. Since our cave-dwelling ancestors discovered fire and chiselled their first tools, the study of civilization has been a panorama of the effects of new ideas upon the health, safety, comfort, education, convenience and entertainment of man. But even in view of such astounding advances in science and medicine as our huge saturn rockets, heart transplants, colour television, atomic reactions. There is no reason to believe that the development of such extra-ordinary creations will decrease. In fact, with such modern tools as computers, electron microscopes and solid-state electronic devices, the rate of innovation should continue not only help to compensate the loss suffered due to incomplitable environmental influences but also help to develop our destiny. Of course it may involve rare or conflict between education and our ability to keep ahead creativity.
According to Alex F. Osborn "the invention at automatic energy was a spectacular triumph at human imagination."

It is also important to note that the scientists, politicians, industrialists, writers, artists and researchers of the future are currently in our schools. Present educational practices typically fail or foster creative growth. They perhaps even stifle in imagination of our learners.

To know the meaning of creativity, the concept of creativity defined by various psychologists are worth to be noted in the forth coming chapter.

2.2 THE MEANING OF CREATIVITY

Creativity is currently a very popular subject in educational and psychological circles. There are so much confusion surround the term creativity that it is most difficult to discuss and use it. Creativity could not fetch a single definition. The main reason is that different thinkers consider it in different views. The definition of the word 'Creative' offered by 'Fowler's modern English Usage' reflects this impression very precisely.

He comments:

"Creative is a term of praise much affected by critics. It is presumably intended to mean original or something like that but is preferred because it is more
value and less usual.¹ It has been called a 'Luscious, round meaningless word' and said to be so much in honour that is the cinching term of approval from the school room to the advertier's studio'.

It is true that of creativity is to be studied scientifically, it must be defined in a way that permits objective, observation and measurement.

But Mackinnon is cautious against accepting any single definition of creativity as final he defines:

"Definitions of creativity range all the way from the nation that creativity is a simple problem-solving to conceiving it as the full realization and expression of all of an individual's unique potentialities. One would be ill-advised to seek to choose from among the several meanings the best single definition of creativity. Since creativity properly carries all of these meanings and many more besides creativity is, indeed, a multi-faceted phenomenon."²

This multi-facetedness of creativity has led researcher to a variety of approaches for studying creativity

-------------


resulting in various theories and diversity in points of view about creativity and has created certain conceptual dilemmas which are still persistent in the field. Approaches to the study of creativity differ from person to person, emphasizing one aspect or the other, but enough light has been thrown on the subject to recognise creativity, as a mental ability or 'many' splendid things which warrants varied way of expression and development.

A thorough analysis of fifty definitions of creativity was done by Rhodes (1961) who indicated four stands of creativity: person, Process, Press and Product. Systematic investigators in the field of creativity has used either or a combination of these four stands of creativity and the definition of creativity that one has given hovers around that aspect.

Creativity in short is a quality which each human being is capable of exhibiting in his living. Individuals differ, however, as a result of both nature and nurture in the amount and kind of creativity they display. Furthermore creativity can be enhanced in most individuals and thus can increase in our society as a whole of we put into practice in education.

Creativity is discussed from each of these points of view briefly under the following captions.
2.3 FOUR COMPONENTS OF CREATIVITY

Four components of creativity are usually known as creativity as 4 P's. These four P's are very important to know the fundamental idea of creativity. Psychologists view the creativity from different dimensions. Hence it will be better to discuss the term creativity from different points of views, namely from psychological traits of 4 P's viz.

(1) Person
(2) Process
(3) Press
(4) Product

Now we study these four components regarding with creativity as under:

2.3.1 Creativity and Person

Psychologists, Clinicians and the Factor analysts have shown much interest in defining creativity in terms of traits. Hallman R.J.'s psychometric method has identified in the creative personality. Such traits as originality, ability to transform meaning and ability to elaborate. A.H. Maslow believes that the healthy and self actualizing persons will be creative. And he adds that creative personality is spontaneous, expressive, effortless, innocent.

unfrightened by the unknown or the ambiguous, able to integrate opposites and able to accept tantativeness and certainly able to tolerate bipolarity. Fromm speaks of only four traits:

1. Capacity to be puzzled
2. Ability to concentrate
3. Capacity to accept conflict
4. Willingness to be reborn every day.

Rogers has a similar list: openness to experience internal locus of evaluation and ability to toy with elements.4

2.3.2 Creativity and Process

John Dewey (1910) was the first man who thought of creativity as process.5 He emphasized only mental functioning and pointed out the following steps in typical problem-solving: These creative thoughts can be put up by following creative process.

![Dewey Model Diagram]

**FIG. 2.1 DEWEY MODEL**

4. Ibid. pp. 193 to 194
5. Ibid. p. 87
After this model Graham Wallas in 1926 suggested another model with four steps. According to Wallas the process of creativity is a mental functioning. The steps are as under:

- Preparation
- Incubation
- Verification
- Illumination

**FIG. 2.2 WALLAS MODEL**

At that time Spearman supported Wallas and he thought of certain as purely a process (1930). For him creative thinking is the process of seeing or creating relationship with conscious or subconscious processes operating. But in 1931 Rosman opposed their view. He suggested that the word 'Incubation' is not proper because it shows the condition or a state of mind rather than a psychological operation.

Hence he defined the process of creativity having seven steps as shown in the figure to follow:

---

6. Ibid, p. 258
7. Ibid, p. 117
The creativity components like Guilford and Torrance also believed the creativity as a process. When Guilford defined divergent thinking as "The process of hypothesis forming, testing and result communication." His view became clear on the basis of definition of Tarrance. The creativity is defined by Yamanoto (1964) as "The process of forming new ideas or hypothesis testing these ideas and communicating the results." All these definitions lay stress only on the working within the psyche of the man or a creator.


2.3.3 Creativity and Press

Press means an interaction between human being and their environment. Maslow proved to be a pioneer to define creativity on the basis of press. He explained that creativity involved a fundamental change in personality structure and that this chance occurs in the direction of fulfilment. But the basic idea of Maslow can be traced back in the Freudian considerations of neurotic etiology.

Freud's view holds that sublimation of repressed unconscious wishes of the pregenital urges and of libidinol urges determine creativity. Vinacke has defined creativity as:

"An integrated harmony between external world reality and individual's internalized needs."¹⁰

Such definitions emphasizing press clearly identify "Openness to experience" as the main basic.

2.3.4 Creativity and Product

When we are confronted with the question "What is the measure of creativity?" The answer is as follows:

"The product which the creative individual makes" is the real measure. Greater and newer the products, better the creativity.

Measure of creativity is nothing but "the output of a person after an input of a problem" in machine language.

¹⁰. Ibid, P.4
All these views give the idea of creativity as a measure or a product. In the third decade of this century, Alder defined creativity as "a compensatory product of the inferiority drive." In the fourth decade Sharpe defined it as "a product of distinctive drive and unconscious wishes that aspire to become immortal."

Psychologist Westheimer and Maslow also thought of creativity in terms of product. Guilford's exploration of indicators of creativity through factor analytical studies showed fluency, flexibility and originality as measurable units and it is only through these that we talk of creativity in psychological measurement.

2.4 FLOW CHARTS OF CREATIVITY

Some investigators appear to regard the phenomenon of creativity as a single dimension of personality. Guilford thinks that the creative disposition is made up of many components and that its composition depends upon where you find it. The definition of creativity as a product supports above assumption. In the field of psychology any multi-dimensional aspect can be measured by the most scientific technique of factor analysis. Being a multi-dimensional aspect, creativity too can be measured by factor analysis. On the basis of an aptitude project of Guilford and his
associates, the components of creativity are available.\textsuperscript{11}

Those factors are further subdivided into groups. This can be very well understood by the chart mentioned here:

Each of the factors of the above components will be explained in detail as under:

2.4.1 Fluency

It refers to a fast flow of ideas and tendencies to change directions and modify information. It is a quantitative representation of an individual. It is subdivided into the following sub-components:

FLOW CHART OF CREATIVITY COMPONENTS
(i) **Ideational Fluency**

It is a production of ideas where free expression is encountered and quality is not evaluated. The idea produced may be as simple as a word as complex as the title for a picture or story or as phrases and short sentences that convey unitary thoughts.

(ii) **Associational Fluency**

It pertains to the completion of relationships, in distinction from the above factor of fluency, which involves giving ideas that fit a class. This ability is obviously of use to a creative writer, who wants to find quickly a variety of verbal expression without the use of dictionary.

(iii) **Expressional Fluency**

It refers to the spontaneous production of new ideas to fit a system or a logical theory. Thus, this factor of fluency also restricts the area of new ideas like associational fluency.

(iv) **Word Fluency**

It is concerned only with words. It is the generation of words which is required specially.

2.4.2 **Flexibility**

It is one type of readiness of change behaviour to meet changing circumstances. It shows in how many
different ways a person can respond to a stimulus.

It identifies the produced ideas in a number of classes of objects which are represented as responses of a stimulus. It is subdivided further into two factors:

(i) **Spontaneous Flexibility**

It shows how fast a person can change the group or how divergently one can think. For the scoring of the flexibility, one changes the category of the uses of the given thing encountered.

(ii) **Adaptive Flexibility**

It is some divergent transformation quality which involves changes.

2.4.3 **Originality**

It is related to the uncommon responses or unusual suggestions, which can link the different things in a strange way. Thus newness along with usefulness is necessary for originality factor.

2.4.4 **Elaboration**

It is related to the variety of implications. The expanding and combining activities of higher thoughts is necessary here, which shows a production of detailed steps, variety of implications and consequences.
Recent investigation of creativity factors by Indian Scientists Chauhan and Tiwari gives eight factors of creativity. Four as discussed in the above paragraphs and four new factors. All the eight factors are listed below:

1. Creative Production
2. Fluency
3. Originality
4. Flexibility
5. Ingenious Solution to Problems (ISP)
6. Elaboration
7. Sensitivity to Problems
8. Redefinition

2.5 CREATIVE LEARNING AND ENRICHMENT MODELS

If creative learning and problem solving are essential components of an effective development programme and are important aspects of effective instruction material for the students, then what models would guide the school teachers or educators? Here three stage model provides the guidelines for instructional practice.

The Three Stage Model

Feldhusen and Kolloff (1978) developed a creative environment model which stresses the development of basic thinking skills, cognitive strategies and independent
learning in gifted children. 12

2.5.1 First Stage

Stage one activities in the model are designed to teach and strengthen basic divergent, convergent and imagination activities and to foster basic language and mathematics skills.

2.5.2 Second Stage

Stage second is concerned with fostering broader strategies using convergent divergent evaluation and cognitive skills. The gifted students assume somewhat more self-direction in these activities.

2.5.3 Third Stage

Stage third introduces gifted students to independent project activity in which they can use their basic skills and abilities, information acquired through reading and listening and cognitive strategies taught in stage two to develop facility in self direction. The teacher now assumes the resource role. The students plan and conduct their own investigation inquiry or project. The goal is to develop increased capacity for such self direction, self motivation and use of creative skills.

FIGURE : 2.5

THE PURDUE THREE STAGE MODEL
STAGE I
DEVELOPING BASIC DIVERGENT AND CONVERGENT THINKING SKILLS AND AFFECTIVE RESPONSES,
TEACHER LEADS,
SHORT TERM ACTIVITIES.
EG. fluency, flexibility, originality, elaboration, logic, critical thinking, values clarification, self understanding

STAGE II
DEVELOPING HIGHER LEVEL COGNITIVE STRATEGIES, WORK-STUDY PRODUCTION SKILLS,
STUDENTS TAKE MORE INITIATIVE.
EG. creative problem solving, research methods, library skills, time management, interviewing, inquiry techniques, writing

STAGE III
DEVELOPING INDEPENDENCE IN RESEARCH AND CREATIVE PRODUCTION,
STUDENTS TAKE INITIATIVE,
TEACHER SERVICE AS RESOURCE PERSON AND GUIDE.
EG. experimental research, writing reports, formal presentations, extended synthesis projects, creative performances

Figure 2.5. The Purdue three-stage model
2.6 ENRICHMENT TRIAD MODEL

Renzulli and Smith (1981) developed the Enrichment Trial Model. The three levels of enrichment activities are illustrated in Fig. 2.6. The enrichment Trial Model emphasizes the need for students to have variety of exploratory experiences and to learn to use many basic skills of critical and creative thinking, in preparation for interest-centred involvement in the investigation of real problems at a very high level of complexity and challenge.

![ENRICHMENT TRIAD MODEL](image)

2.6.1 General Exploratory Activities

The first type of Enrichment Trial Model is usually known by "General Exploratory Activities". It gives students opportunities to 'sample' a variety of topics outside the regular curriculum. It may involve such activities as guest speaker, field trip or films or media presentations.

---

or work with interest development centres in class-rooms.

2.6.2 Group Training Activities:

The second type Enrichment Trial Model is often known by "Group Training Activities." It provide opportunities for learning process, inquiry and methodological skills involves teaching students 'process' skills including methods of problem-solving, thinking skills, research or inquiry method of a general nature and method of research that are specific to disciplines in which students are particularly interested.

(See Figure 2.6, on next page)

2.6.3 Individual and Small Group Investigation

The third type of Enrichment Trial Model is usually known by Individual and small group. It uses for students to become 'producers' of knowledge. Thus it places a strong emphasis on defining a real problem formulating and original solution developing a product and sharing the results or products with appropriate guidance. It involves a problem for which the student has considerable motivation and emotional investment. Type third opportunities arise from the students involvement and personal commitment to solving a particular problem in an effective and creative way.

2.7 CREATIVE THINKING MODEL

Treffinger (1980) has presented a model of creative
Figure 2.6 Enrichment Triad model (Renzulli, 1977)
learning that involves three levels of sequential stages. Which is illustrated in Fig. 2.7. The model emphasizes that creative learning involves with a cognitive and affective dimension. Students thinking and feeling process must be considered as teachers plan ways to enrichment their learning in creative ways.

2.7.1 Creative Learning Model

It is defined as three level. They are shown here below:

First Level : Divergent Functions
Second Level : Complex thinking and feeling processes
Third Level : Involvement of Real challenges.

These three levels are explained in detail as follows:

2.7.2 First Level : Divergent Functions

First level is usually known as "Divergent Functions". In this level, students learn to use the basic tools that will enable them to work successfully with complex reasoning and problem solving task. It includes many enjoyable and popular activities such as brain-storming, attribute listing and SCAMPER. They can be easily related to many content or subject matter topics at a variety or grade levels.

   In Ibid. P. 20
2.7.3 Second Level: Complex Thinking and Feeling Processes:

Second level is called "Complex Thinking and feeling processes. At this level students learn and practice more complex methods and systems for creative thinking and problem solving. (See figure on next page)

2.7.4 Third Level: Involvement in real Challenges

Third level is known as involvement in real challenges. At this level students develop confidence and competence in dealing with Real problem and Challenges. Real problems viewed in Treffinger's model are those for which the students have a great deal of personal concern or involvement. In the description of ownership of a problem Treffinger has emphasized three criterias:

(1) Interest
(2) Influence
(3) Imagination.

Above three criterias are explained in detail here below:

(1) Interest
The criteria 'Interest' involves whether you want to do something about the problem.

(2) Influence
Influence consist whether it is possible for you to take action on the problem.
Cognitive
Independent Inquiry
Self-direction
Resource Management
Product Development
"The Practicing Professional"

Cognitive
Application
Analysis
Synthesis
Evaluation
Methodological and Research Skills
Transformations
Metaphor and Analogy

Cognitive
Fluency
Flexibility
Originality
Elaboration
Cognition and Memory

Affective
Internalization of Values
Commitment to Productive Living
Toward Self-actualization

Affective
Awareness Development
Open to Complex Feelings, Conflict
Relaxation, Growth
Values Development
Psychological Safety in Creating
Fantasy, Imagery

Affective
Curiosity
Willingness to Respond
Openness to Experience
Risk Taking
Problem Sensitivity
Tolerance for Ambiguity
Self-confidence

Figure 2.7. Creative learning model. Treffinger, D. J. Encouraging Creative Learning for the Gifted and Talented. Ventura, CA: Ventura County Schools/LT1, 1980.
(3) **Imagination**

Imagination involves whether you are really searching for new or creative solutions.

Treffinger's creativity learning model emphasize the need for gradual or systematic development of creative thinking and problem solving skills through carefully designed instructional or enrichment programmes.

2.8 **CREATIVITY DEVELOPMENT TECHNIQUES**

Creativity cannot be taught as a process but by developing situations that demand imagination originality and problem solving. The children are more likely to be creative. Under this chapter, investigator describes in brief some techniques for developing creativity, viz. Brainstorming, Attribute listing, Morphological Analysis, Check list of questions synetics and some special programmes.

2.8.1 **Brain Storming**

The principles of brain storming described as Alex F. Osborn are as under:

1) Differ evaluation during the phase of producing ideas, especially evaluation of a negative critical kind.

---

2) Quantity begets quality. The more ideas are generated. The higher the probability of hitting upon some brilliant ones.

3) The more fantastic the ideas, the better it will be. A fantastic idea— one that does not seem at all a practical idea— serves the important function of demolishing conventional patterns of thinking while the idea itself may not be practicable, it may trigger other ideas that might not only be novel but also useful.

4) Hitch-Hike on previously expressed ideas. There is no reason to fell ashamed in building on other ideas or one's own previous ideas. In other words, be open to suggestive power of others or one's earlier ideas.

Brainstorming generally is done in groups, it can be done by individuals. Brainstorming is not useful as a technique where the problem has a unique solution that can be reached by analysis. On the other hand, brainstorming is particularly useful for problems that can have multiple solutions, of which some may be better than the others.

Brainstorming is not very useful unless the topic selected for brainstorming is specific. If the topic is vague, the brainstormers will carry different frames of reference and the ideas generated will have a diffused applicability.
During brainstorming the leader should encourage the panelists to provide concrete suggestions or ideas rather than abstractions or good intentions. These concrete ideas stimulate niche-hiking and action orientation. They have an energy charge that abstraction back. They also curb the tendency of some to give lengthy perambles to their ideas. Ideally, the ideas should be expressed with brevity, clarity and specificity of an executive order.

Brainstorming leads to many ideas. After these ideas are generated it is often necessary to identify a few ideas for more intensive investigation. One useful technique is to have each member of a panel vote on the potential of each ideas for solving the problem at hand. Sometimes the ideas can be grouped into classes and then each idea within a group may be voted upon. Sometimes it may be useful to formulate the criteria for assessing the potential of the ideas generated before the ideas are voted upon. If the ideas initially generated are very many, voting may have to be done more than once. That is to say, ideas voted the best in the initial round of voting may again be put to a vote to get a small number of high potential ideas. These ideas may then be taken up for much more intense scrutiny.

Brainstorming is not only a technique, it is a culture. Its clear message is that for divergent thinking at least, a democratic and collaborative culture works.
During brainstorming session people drop their defensive-ness, and instead of competing for power and status, they compete for the excellence and creativity of their ideas. Brainstorming reinforces a sense of participation, especially if brainstorming is followed by voting on the best ideas. As is well known, participation increases commitment to implement the participatively chosen course of action. Finally, brainstorming increases self-confidence and a sense of resourcefulness. The avalanche of ideas it produces provides a clear demonstration of the power of the human mind to overcome obstacles. The implications of using brainstorming for decreasing authoritarianism in collectivities ranging from the family to industry, government and educational institutions.

After high potential ideas are selected it may be useful to form task forces for developing each idea. Each task force may be requested to prepare for management in say, a month a brief report that assesses the potential of the idea, an operational plan to make the idea work, some estimate of costs and benefits and administrative other steps that may be needed to discuss and execute the innovation. This way, a large number of persons get a chance to participate in the introduction of innovations.

2.8.2 Attribute Listing

Attribute listing is a useful technique for designing or redesigning a specific product or service or activity.
The technique was developed by Robert Crawford. 16

According to Crawford, magic inspiration is not the only even major source of creativity. Much creativity arises from changing the attributes of an object or an activity or from grafting on to the object or activity and attribute or attributes some other object or activity.

In attribute listing, the attempt first is made to list the basic but modifiable attributes or properties or specifications of a particular object or activity. Then an attempt is made to generate alternatives to the current attribute or specification.

Very often if may be useful to list abstract attributes of a concrete object or activity. This may help in generating more ideas than if the concrete attributes are listed.

Crawford has summerised the principles of attributes listing as under:

1) Creation is not inspiration alone, it is largely adaptation and experimentation.

2) Creation is not just mechanically combing different products or ideas. It is useful modification of an

attribute, or assimilation of attributes of other things.

3) In trying to modify the current attributes of an object, it is desirable to search for concrete alternatives.

4) Creativity can be systematised by looking first for closely related substitutes of the current attributes of then progressively going in for more and more far out alternatives.

5) Creation is not just stealing of ideas. It is continuing stream of modification suggested by idea in use which result overtime into greatly charged products or objects.

More specific the object or activity one wishes to change, the better would be the result given by attribute listing. Also it helps to separate the modificable from the unmodifiable attributes of the object and to concentrate one's attention on the modificable attributes. A useful procedure is to list exhaustively all the obvious attributes of an object or activity, such as the current size, colour, shape, function, weight, major components, material etc. for an object and current duration function, steps, sub-programmes etc, for an activity. Next it is desirable to identify some of these attributes that can possibly be altered without destroying the main function of the object or activity.
Next the alterable attributes may be stated or more abstract, general attributes. Asking what functions these attributes perform, and how critical these functions are to be main use of the object or activity would not only help in listing necessary attributes in abstract terms, but also help one in fixing priorities of attributes and in encouraging one to look for alternative ways of satisfying functional requirements.

2.8.3 Morphological Analysis

Morphological analysis is a variant of attribute listing. The technique was developed by Dr. Zwicky. The basic idea is that if one identifies some critical modifiable attributes as in attribute listing and writes down several alternatives for each of these attributes, one can generate a very large number of alternative designs of an object or an activity.

Arnold\(^\text{17}\) has suggested that there is one basic difference between attribute listing and morphological analysis. Attribute listing works best when the product, object, activity sought to be modified is very specific. On the other hand morphological analysis can also be applied profitably to modify general objects or activities. Obviously, when attempting to use morphological analysis for generating fresh ideas about a class of object, the more

fundamental attributes listed for generating alternatives and the more off-beat the alternatives that are considered the alternative designs that emerge are likely to be more interesting.

Attribute listing and morphological analysis are not merely techniques like brainstorming, they embody important creativity favouring attitudes and values. The chief such value is one of tinkering or trying out a new combination. This makes for an experimental, innovative bent of mind. It also alerts one to possible new applications of ideas.

2.8.4 Checklist of Questions

People generally regard speaking the truth as a good thing. Questions as somebody put it, are the creative acts of intelligence for often they emerge divergent thinking. Somebody who asks "Is it?" triggers a somewhat frantic scramble for the justification of this widespread belief. Whether or not it ideas one to the conclusion that truth is not a good thing. It is likely to clarify more than before what we mean by truth, what is good about it and what is not so good about it, the circumstances under which it may be good and the consequences of truth and falsehood.

A variety of questions can aid invention or
improvement. Alex Osborn has illustrated the power of questions in leading individual to inventions improvement. Some of the more powerful questions that can improve an object or an activity are:

- What can be added to an object to improve it?
- What can we subtract or delete from it without damaging it?
- What can we alter in it?
- Can we rearrange its components?
- How can we adapt the object for use other than the present one?
- Can we magnify the object greatly?
- What could be the opposite of the object?
- What object would have opposite properties?
- Can we miniaturise the object?
- Does the object have uses than the present one?
- Are there new ways of utilising the object?
- Are there alternative ways of producing the object?

Like brainstorming and attribute listing, questions checklist also incorporates important creativity enhancing values. The chief one is dissatisfaction with the status-quo. The habit of questioning everything is indispensable if our culture is to be innovative one. Imagine what would have happened if this habit of questioning, so prominently

18 Alex F. Osborn: Op cit, pp. 198-206
displayed in the Upanishads, has been sustained later in Indian History.

The resurgence of the west after fifteenth century is mainly because it recaptured the Greek spirit of inquiry and put it to practical use.

2.8.5 Synectics

The word 'Synectics' has been adapted from the Greek word 'Synecticos', which means fitting together diverse elements. This technique was founded by a brilliant thinker named William J.J. Gordan and it was co-founded by George Prince. It is a very remarkable technique of group problem solving and to a non-initiate. It looks like a mad method for finding solutions. This may look like methods, but there is a method to it.

The founders of synectics have devised systematic ways of accessing to and harnessing the preconscious. They have found out that 'to do' is 'to imitate the process of incubation in the preconscious mind. Incubation is the phrase of problem solving in which the pre-conscious mind is working out the solution of a complex problem without the conscious mind being aware of this. The pre-conscious mind does not think logically, it thinks analogically, associatively, visually.

-------------------
The principal mechanisms used in synectics for solving problems are the use of several different kinds of mind stretching analogies, and a good deal of fantasizing.

Types of analogies:

(1) Direct analogy
(2) Personal analogy
(3) Fantasy analogy
(4) Symbolic analogy

These four types of analogies are explained in detail as under:

2.8.5.1 Direct Analogy

Direct analogy involves seeking a direct comparison of the phenomenon under discussion with some other phenomenon that is similar enough.

2.8.5.2 Personal Analogy

The attempt here is at a particular kind of empathising the person is asked to retain his individual human sensibility, but is simultaneously asked to transpose himself into a situation and to report what he feels, sees, hears, thinks etc.

2.8.5.3 Fantasy Analogy

In this, the group member are urged to image a constraining free solution, in much the same way as our wish fulfilling day dreams. Group members are urged to fantasize same perfect solution even if it flies in the face
of known scientific principles.

2.8.5.4 Symbolic Analogy

The symbolic analogy is also called book-title. In this the leader may take a key-word under discussion and ask group members to come upon with a short provocative phrase that the essence of the word under discussion but such that it is asthetically satisfying or paradoxical.

George prince has described the structure of the synectics process. The general steps are described as under:

(Synectic Flow Chart is given in Fig/ on next page)

2.8.6 General Steps of Structure of The Synectics Process

(1) Problem as Given (PAG)
(2) Analysis
(3) Purge
(4) Problem as Understood (PAU)
(5) Evocative Question (EQ)
(6) Examination (Exam)
(7) Force Fit (FF)
(8) View Point (VP)
(9) Excursion

These general steps of structure of the synectics process are explained in detail as under:

2.8.6.1 Problem as Given (PAG)

A general statement of the problem to be solved
PROBLEM AS GIVEN PA G

ANALYSIS EXPLANATION BY EXPERT

PURGE

GENERATION OF PROBLEMS AS UNDERSTOOD (PAU)

CHOICE OF PROBLEMS AS UNDERSTOOD (PAU)

EVOCATIVE QUESTION (EQ) FOR EXAMPLE (EX)

CHOICE OF EXAMPLE

EVOCATIVE QUESTION (EQ) FOR PERSONAL ANALOGY (PA)

EVOCATIVE QUESTION (EQ) FOR BOOK TITLE (BT)

CHOICE OF BOOK TITLE (BT)

EVOCATIVE QUESTION (EQ) FOR EXAMPLE (EX)

CHOICE OF EXAMPLE (EX)

EXAMINATION OF EXAMPLE

FORCE FIT (FF)

FIGURE: 2-8

SYNECTICS FLOW CHART
as it may have been given to the group members by an outside source or as generated by themselves.

2.8.6.2 Analysis

An explanation of the problem by the expert, making the strange problem familiar. This should be in enough detail so that there is an understanding of the problem but since the expert will be a participant he need not try to make every one as knowledgable as he is.

2.8.6.3 Purge

The universal response to the statement of a problem is "How about solving it this way?" We have found it constructive to encourage people to air these immediate solutions. In some cases they are good in view point and if not, as the expert explain why the suggestion would not work every one understand the problem better.

2.8.6.4 Problem As Understood

After the PAU has been explained each participant writes a restatement of the problem as he sees it or a goal. He believes, it would be desirable. It is useful to write several 'PAU' which imply different approaches to the problem. We tell participant to bear free to wish for anything one can image, even if it violate laws they know hold true.

2.8.6.5 Evocative Question (EQ)

This is a question that requires an analogical
or metaphorical answer. We have EQ's that produce three different kinds of analogy

(a) Example (Direct analogy)
(b) Evocative Question (EQ) for Persanol analogy (PA)
(c) EQ for Book title (Symbolic analogy)

2.8.6.6 Examination (Exam)

It is customer in this step to examine factually a selected example, to play with one of the examples. Two sorts of facts are produced,

(i) descriptive facts about the example
(ii) super facts statements that are more speculative and strange.

2.8.6.7 Force Fit (FF)

Although the analogical mechanisms lie in the heart of the synectic method, they must be "Force Fitted" to the problem, if they are to be effective through the strain of this new fit the problem is stretched and pulled and refocussed in order that it may be seen in a new way. If no deliberate attempt is made to find relevance in apparent irrelevance, then one analogy can merely lead to another and another, and potentially fruitful view points will be bypassed. A force fit suggest new context and thus provides the raw material for new lines of speculation.
2.8.6.8 View Point (VP)

"Give me a place to stand" boasted Archimedes, "And I can move the world". In synectics this "Place to stand" is the material as the examination strange angles from which to view the familiar facts of the problem. A usefully strange example can suggest not one but many different potential solutions or view points. One of the basic difference between the synectics method of operation and traditional problem-solving procedures is that the later seek solutions synectics seeks new lines of speculation and these in turn lead to potential solution by means of the Force Fit.

2.8.6.9 Excursion

A team describing the synectics procedure from selection of PAV through Force Fit. If no new view point is developed, another "Excursion" is being developed through all or part of the procedure that is sometimes new examples can be made to the same EQ, or a new EQ may be used; or when FF reveals a new aspect to the problem, a new PAV may be stated.

Synectics is a group-technique and it thrives on the diversity of its members. The role of the leader is not to set an agenda or assess members contributions or assess and announce the consensus. His role is rather that at keeping group members stimulated by shifts in focus.
through calling for different kinds of analogies. Also he has to be good at sensing a solution and calling for a Force Fit at the right time. His role is that of building up a cerebral charge so that an illumination can become highly likely. For this to happen, he may not only ask for various kinds of analogies. But he may also encourage group members to play with words, laws and metaphors to achieve strange perspectives, try to invert perspectives (for example by suggesting that it is iron that attracts the magnet rather than vice-versa) repeat inconvenient laws of nature, juxtapose colliding analogies and so forth.

Synectics is not merely a technique for solving different problems. It may also be a powerful technique for training people to become more flexible and original. And of tolerate ambiguity and irrelevance. Practice with synectics tends to make and mind supply, capable of rapid and breath taking shifts of focus, a capability that may considerably increase originality.

2.9 NATURE OF CREATIVITY

Nature of creativity depends upon sometime\Ị cultural influences. Some cultural influences has seem an important role in nurturing creativity. In educational
system, Torrance suggest following cultural influences which are crucial for nurturing creative talents.

(1) Success orientation
(2) Peer orientation
(3) Sanctions against questioning and exploration
(4) Misplaced emphasis on sex roles
(5) Divergency Equated with abnormality
(6) Crucial Teacher skills

These cultural influences are explained in detail as under:

2.9.1 Success Orientation

Success orientation, when greatly overemphasized is detrimental to creative growth because creative learning involves experimenting taking risks, making mistakes and correcting them. If making errors is forbidden and they are severely punished children soon give up all hope of success and stop trying to learn. To nurture creativity, teachers may have to modify their concepts of classroom success and permit children to succeed first in ways possible to them and use the resulting growth to motivate them to higher levels of creative functioning. There is a

strong need for more ways in which children can succeed in school.

2.9.2 Peer Orientation

Teachers can do much to lighten the tyranny of the group pressures that inhabit creative development. In creative problem solving experiences respect can be developed for unusual, minority ideas. Ability and interest groupings can lighten these pressures for many children. Arranging for appropriate sponsor or patrons for promising youngster can be very powerful. The child who start earliest in his special efforts has the best chance of developing to the highest level in his field. Sponsors can give promising youngsters a chance to develop in creative ways at an early age.

2.9.3 Sanctions against Questioning and Exploration

Teachers generally recognise the need for children to ask questions and inquire about the wonder and mysteries about them, such tendencies frequently are squelched.

2.9.4 Misplaced emphasis on sex roles

Schools can do the reduce the tyranny of this misplaced emphasis. Boys and girls in different ways suffer in creative development from society's misplaced emphasis on sex role differences. One way is through activities that approve independence in thinking and judgement as well
as sensitivity and receptiveness other way is organizing various kinds of cocurricular activities.

2.9.5 **Divergency equated with abnormality**

Teachers should be alert to look at behaviour disapproved by the norm group for signs of creative potential. Such potentialities may not occur in the kinds of behaviour valued by the schools, at least not until recognized and given intelligent guidance and direction.

2.9.6 **Crucial Teacher Skill**

Almost any penetrating analysis of what is required for successful nurturance of creativity lead to a recognition of the need for helping teacher improve certain skills. Torrance outlines a series of in-service teacher workshops designed to improve skills which are crucial for nurturing creativity which are listed below:

(a) Recognizing and acknowledging potentialities
(b) Being respectful of questions and ideas
(c) Asking provocative questions
(d) Recognizing and valuing originality
(e) Developing elaboration ability
(f) Unevaluated practice and experimentation
(g) Developing creative readers
(h) Predicting behaviour
(i) Guided planned experiences
2.10 OBSTACLES TO CREATIVITY

As creative capacities can not be deliberately controlled but only be encouraged they can be easily inhibited. Ralph J. Hallman\textsuperscript{21} identifies nine common barriers to creative imagination which are listed and explained as under:

1. Pressure to conform
2. Authoritarian attitudes
3. Ridicule
4. Rigidity of personality
5. Rewards
6. Quest for Certainty
7. Over emphasis on Success
8. Hostility toward the divergent personality
9. Intolerance of the 'play' attitude.

2.10.1 Pressure to Conform

The pressure to conform is perhaps the major inhibitor of creative responses. These pressure may take the

form of teacher-chosen goals and activities standardized routine and tests or an inflexible curriculum.

2.10.2 Authoritarian attitudes

Authoritarian attitudes and environment repress the creative potential of young people. They inhibit learning to be free, learning to be self-directive and self-responsible. Education by authority directs students to learn what others have already discovered, what other believe, what others have organized. Authoritarian education places emphasis on following directions, doing what one is told, and on solving problem which have fixed and predetermined answers.

2.10.3 Ridicule

"Ridicule and similar attitudes destroy feelings of self-worth in students and therefore have a tendency to block off creative efforts. Domination of pupils for any reason, treats of any kind, fears which may be engendered for failure to obtain right answers or to know the proper information dissipates any creative tendencies which may be latent.

2.10.4 Rigidity of Personality

Those traits which make for rigidity of personality inhibit creative expressions. Those traits may vary from psychopathic conditions to be unconsciously learned habit
which simply annoy others. Inflexible defense mechanisms and compulsive fears on the part of teachers are common offenders. The facades which we erect in order to shield our true selves and our ego-centred interest dampen the exploratory and often risky ventures which characterize creative activities.

2.10.5 Rewards

An overemphasis on such rewards as grades arouses defensive attitude on the part of pupils and to that extent threatens inventiveness. Perhaps all forms of evaluation which are external to a given situation defer the productive tendency, including even mandatory criticisms.

2.10.6 Quest for Certainly

An excessive quest for certainly stills the creative urge. This habit is instilled by teachers who demand the right answers, who insist on what they themselves want in the way of responses, who demand the predetermined solutions. These attitudes are extended by students into other affairs and express themselves in the forms of demands to know what is right with respect to dress, what clubs to join, and what otherwise will be socially acceptable things.

2.10.7 Overemphasis on Success

An overemphasis on success drains off energies
from creative processes and focusses them upon outcomes, perhaps upon some status symbol, or on the merely instrumentally valuable goals which might have been achieved such over emphasis blocks creativeness because it has the tendency to direct attention away from growth and from continued improvement.

2.10.8 Hostility towards the Divergent Personality

Either on the part of teachers or peers may serve as a cultural block. Every creative act is unique idiosyncratic and novel. For this reason alone creative persons tend to be individualistic non conforming and often curiously one sided. This is not to say, of course, that all off-beat personalities are creative. The divergent attitudes can as easily become a pose and a sham and a rigid defense mechanism. The task of the teacher is to penetrate such shams and to discriminate between them and the genuinely inventive personality.

2.10.9 Intolerance of the 'play' attitude

An intolerance of the play attitude in connection with school work characterizes the environments which stifle creativeness. Innovation requires freedom to toy with ideas and materials encouragement to deal with irrelevancies and permission to deep into fantasy and make believe. This attitude allows the ideas and other material under
consideration to take on plastic qualities and so to lend themselves to rearrangements and fusions which mark the creative act creativity as profound fun.

2.11 TEACHER'S ROLE IN DEVELOPING CREATIVITY IN SCHOOL

Educationalists are interested in understanding different school environments and conditions which affect creativity development positively. Researchers have shown that the school conditions, the child's needs and motivations, teacher's behaviour in the class, teacher-pupil relationship, method of teaching and materials of teaching are important factors to help developing creativity of the child.

The teacher's role in the school is very important which influence the children in many ways, the teacher's classroom behaviour and approach to the type of learning teacher's controlling strategies, openmindedness, authoritarianism and other teaching characteristics affect the children. The teacher's level of creativity directly influences student's creativity, incentive and behaviour.

Sparnes and Harding have listed twenty principles through school experiences which are worth to be noted for this study. Behler has quoted in his book as under

1) Be on the alert for new ideas and encourage the pupil to develop all their creative talents.

2) Make children more sensitive to environmental stimuli.

3) Encourage manipulation of objects and ideas.

4) Teach how to test systematically each idea. Starting as early as third grade, show pupils how to define a problem and keep testing each idea. The neuristics described by polyamight be used as a guide.

5) Develop tolerance of new ideas.

6) Beware of forcing a set pattern.

7) Develop creativity class-room atmosphere, a free, relaxed and unhurried one.

8) Teach the child to value his creative thinking. Encourage students to note their ideas in concrete form whenever possible, perhaps in special note-book set aside for that purpose.

9) Teach skills for avoiding peer sanctions. If a highly creative pupil rubs too many class-notes the wrong way, help him to become more aware of feelings of others.

10) Give information about the creative process. You might do this by acquainting students with Walla's four steps in problem-solving and by neuristics.
11) Dispel the sense of awe of master places. Indicate some of the methods and difficulties experienced by famous creative people to dispel the notion that only a gifted few experience brilliant and perfect insight at the first try.

12) Encourage and evaluate self-learning. Avoid over-structuring the curriculum.

13) Create thorn in flesh. Ask controversial questions and call attention to disturbing data.

14) Create necessities for creative thinking. Confront your students with provocative problems. You might use the suggestion of Bruner and Biggs as guide.

15) Provide for active and quiet periods. Remember the impact of habitual set and functional.

16) Make available resources for working out ideas.

17) Encourage the habits of working out the full implications of ideas.

18) Develop constructive criticism, not just criticism.

19) Encourage the acquisition or knowledge in a variety of fields.

20) Develop adventurous, spiritual teachers.
2.12 PERSONALITY : ITS TRAITS AND FACTORS

2.12.1 Definitions of Personality

There have been many attempts to set down in a brief statement what is personality. Peterson's (1968) clinical studies of social behaviour is the total response repertoire. He sees personality as the reaction of the individual. In his view:

"Personality is a will-o'-the wisp concept which eludes precise definition. It is a way of saying that personality is the way a person behaves." 23

Goldon Allport's views are different to classify the personality. His interest in personality range far and wide. He has concerned himself with the uniqueness and complexity of the human personality.

Allport defines personal dispositions as generalized neuropsychic structures which are peculiar to individual.

The "here and now" principles of uniqueness and contemporaneity round out Allport's electric theory of personality. Allport divides his position on personality in terms of (1) Structure (traits) (2) Development(Proprium) and (3) Understanding. His definition of personality

Personality is the dynamic organization within the individual of those psychophysical systems that determine his characteristic behaviour and thought"  
(Allport, 1961, P.28)

Guilford put the idea of definition of personality by the differential approach. He felt that personality is found in individual differences. He said:

"An individual's personality is his unique pattern of traits. A trait is any distinguishable relatively enduring way in which one individual differs from others."

Gardner Murphy's (1947) bio-social approach to the study of personality is electric, but the emphasis rests as squarely on field theory as it goes on biological determinants. These are organic traits of personality of which there are three kinds:

(1) general dispositions of the tissue such as metabolic rate.
(2) dispositions of specific traits such as muscle tonus, and
(3) tissue tensions: dispositions that arise such as anger.

Other investigators have extended and developed this idea in great detail. However the limits of precision of present day personality instruments make this approach
very nearly incapable of pinning down a definition of personality according to trait theory.

Personality's social stimulus value has also received a great deal of attention. In this view the essence of personality is found in the interplay of persons and their social environment. McCurdy states in this way (1981, p.58)

"A human person is that psychological compound which is capable of establishing emotional relations with objects, sensed, imagined and conceived. Personality is the actual existence of these relations.

The concept of patterns of personality has engaged the concentrated attention of numerous researchers over many years. This concept focuses on the idea that there are crucial developmental challenges or demands made by the environment which nearly everyone encounters. It awaits further elaboration and clarification but it is undoubtedly the most advanced and thorough-going explanation of personality.

If we draw together the essence of these views of personality, in an effort to pin down a definition which is somewhat manageable, we define it as follows:

"Personality is a stable system of complex characteristics (variables) by which the life pattern of the individual may be identified."
2.12.2 Four Levels of Development of Personality Theory

The development of a scientific theory of personality involves a systematic method for building and renovating a series of explanatory ideas. These ideas gradually emerge from common sense observations of human behaviour. We may recognize four different levels of personality theory.

(i) The conceptual scheme

Applied to personality, the conceptual scheme is a way of looking at a phenomena of human variables. This conceptual scheme is rooted in the biological drives (instincts) and in genetic development. Conceptual schemes have proliferated. They have been elaborated upon with considerable imagination by many personologists.

(ii) A system of Classification

The second level of theoretical development in personality classification, which is more technically termed taxomony, sets out to differentiate personality variables according to their properties.

(iii) Hypothetical-propositional statements of relationships

A third level of theory is the proposition. This statement asserts how two or more personality variables are related. It has the power of placing factual observations in definite order in the relationship observed and
verified. Moreover it has predictive utility.

(iv) **Interpretative Theories of Explanation**

The fourth level of personality theory is the interpretive theoretical statement. Unlike hypothetical theories, interpretive theories are at once more general and capable of leading into specific propositions.

2.12.3 **Personality Traits**

Psychologists and many others have long searched for the sources of variation within the person, while sociologists and to a lesser degree, anthropologists have searched in the environment in the situation for person differences. This means, essentially, that we shall be concerned with the subject of individual differences in personality, with the differences characteristics of individual.

(a) **Intrinsic Properties of personality - body type**

When we compare, we engage in an analytical process by which we seek to observe the similarities and differences in the properties of things. The properties observed were measured and charted and generalizations were drawn as to whether the body type was tall, thin, plump muscular. These were the intrinsic properties by which comparisons were made.

(b) **Extrinsic properties of personality - abstractions**
Extrinsic properties are pure abstractions and exist only in the mind of the beholder. Personality described in terms of traits represents an abstraction of a high order. The properties of the personality are then, in this sense traits.

A trait is any distinguishable relatively enduring way in which one individual differs from others. (Guilford 1959, P.6).

Thus a trait may be a general attitude, a habit, a physical quality, or some characteristic form of behaviour, although there is no agreement as to what to include in trait theory. It include intelligence, aptitudes, temperament attitudes and interests among personality traits.

2.12.4 Trait Modalities (Factor model of personality)

The nature of traits has been a major concern of many investigators. The basic question is How are traits formed? How does behaviour become generalized into psychological traits? From a genetic stand-point it has been proposed that so called gene blocks are the responsible agents. The genes, as the units of heredity are believed to compare a group of traits which are maintained as a unit because of the tendency of individuals to marry within their own general socio economic and educational level.

(1) Somatic Traits
There are two kinds of somatic traits (a) Morphological and (b) Physiological.

(a) Morphological traits to the body structure, such as height, weight and pigmentation. It work respecting the physique might be thought of a concerned with morphological traits.

(b) Physiological traits refer to the functioning of the organs such as the heart rate, pulse rate and metabolic rate.

(2) Motivational Traits

Motivational traits identifies another categories as:

(i) Needs
(ii) Attitudes
(iii) Interests

(i) Needs

In Maslow's view, he proposes seven degrees of need which may be described as follows:

(a) Physical needs: These are the same categories we identified as the primary drives—hunger, thirst, sleep, etc. Such a need must be met as it arises before the next need can be approached.

(b) Safety needs: The desire for freedom from fear and insecurity are needs in which one seeks to avoid harmful or painful incidents. These needs
are met after the physiological ones have been satisfied.

(c) Belonging Needs: Belonging needs are higher order needs than the first two. Because the child is brought up by adults.

(d) Love: Love needs are next satisfied. Man always will have the desire to love someone and to be loved in return.

(e) Self-esteem needs: Here man feels that he is worth-while that he can master his own environment and that recognition of these capabilities by his fellowman is important.

(f) Self-actualization: Self actualization is next to the highest order of needs. Maslow sees man as having a strong desire to know and understand himself and the world about him. Such needs are both cognitive (knowing these things) and aesthetic (seeing beauty in their realization).

(g) Aesthetic needs: Aesthetic needs are those dealing with a desire for symmetry, order, system and structure in the world about us.

(ii) **Attitudes**:

An attitude is both an orientation toward or away from an object, concept or situation and a readiness to respond in a predetermined manner to these or related
objects, concepts or situations. (Hildegard and Alkinson 1967 P. 583)

(iii) **Interests**

Interests are third motivational trait. "An interest may be defined as an individual generalized tendency to be attached to a certain class of activities." (Guilford 1959, P.205) The term "Interest" implies a pleasure and satisfaction in dealing with, responding to, in fact, being attracted to certain aspects as the environment. We are interested in certain kinds of work activities over other kinds. We speak of a person's vocational interests as related to the activities of the work of the world for which he has a preference. Interest is a many-faceted force including inclination to be attracted to those activities in which one is more successful than he is in other kinds of activities.

(iv) **Aptitudes**

Closely related to interest, attitudes and needs are aptitudes. Aptitudes refer to a person's ability to perform certain kinds of tasks. Aptitude traits are thought to be very numerous. The term aptitude is preferable to the term ability, although they are often used almost interchangably. Ability implies goodness of performance. Aptitude implies what underlies the dimensions of ability. Aptitude suggests what the individual is
prepared to perform or has the capability of learning. It may be well to call attention to a related term achievement. The aptitude necessary to reach this level of achievement resides in such traits as finger dexterity reaction time, and a variety of mental factors such as memory span for letters and digits.

(v) Temperament
Temperament refers to the structure of the personality. When we come to define temperament more specifically in terms of traits we seek to discover the manner in which behaviour occurs.

It appears that temperament has both various dimensions and several manifestations. Temperament may be understood in terms of being-

1. positive versus negative
2. responsive versus unresponsive
3. active versus inactive
4. controlled versus uncontrolled, and
5. objective versus egocentric or self-centred

(vi) The hierarchical model of personality
The hierarchical model involves the "dispositional" explanation of general traits. Factor-analytic studies of personality traits reveal that there are different degrees of generality which apply to a given trait.
2.12.5 Personality as Extraversion and Introversion: The Jungian view

Carl Gustav Jung (1875-1961) was much of a pioneer in personality psychology. He was led to a recognition of the presence of complexes in human behaviour. The notion that a system of emotionally toned ideas have been repressed into the unconscious and give rise to morbid, abnormal behaviour. He led to recognize the same fundamental concept of repression.

The distinctive features of Jung's views on personality are numerous and complex. Let us examine his principal ideas, some of which have been well received.

(i) The Ego

The ego, this term so familiar in Freudian Theory and now the basis for a general personality theory was redefined by Jung as the conscious mind. Freud spoke of the ego as being assigned the task of self-preservation. In the Freudian view the ego is often referred to as the executive branch of the personality, with the idea representing the libidinal urges and the super ego the moralist. Jung's view is that the ego is made up of all conscious perceptions, memories, thoughts and feelings. It is the centre of the personality.

(ii) The personal unconscious

The personal unconscious is a region adgoing the
ego, according to Jung. It consists of repressed suppressed forgotten or ignored experiences. In this sense, then, a complex is a group of feelings, thoughts, perceptions and memories that reside in personal unconscious.

(iii) The Collective Unconscious

The collective unconscious is one of Jung's most original and controversial formulations. He thought of this structure in the personality as a store-house containing memories of man's racial history, including his pre-human and animal ancestry. Jung thought that all human beings have about the same collective unconscious.

The collective unconscious is the fountainhead from which all other systems emerge: The ego, the personal unconscious and other structures.

(iv) Archetypes

The collective unconscious is made up of universal ideas (thought forms) which create images or visions. The rising sun, the setting moon, hurricanes, earthquakes—all manner of natural phenomena—furnish the collective unconscious. Some of universal ideas but other are much more specific.

(v) The Persona

The persona is a mask which we were to meet the demands of social convention and tradition. The persona
is one's public personality in contrast to one's private personality.

(vi) **The anima and the animus**

The anima and the animus concept recognizes the bisexuality of the human species. Male and female characteristics are found in both sexes. Jung held that the feminine side of the man's personality and the masculine side of a woman's personality may be ascribed to archetypes.

The female archetype in a man is the anima.

While the masculine archetype in a woman is the animus.

These archetypes are believed to be the product of the racial experiences of the sexes one with the other. What this means is that man, by living with woman, has become somewhat feminine and woman living with man, somewhat masculine.

(vii) **The Shadow**

The shadow archetype is made up of the animal instincts man inherited from lower forms of life. Jung equates it with "Original sin", the devil or the enemy.

(vii) **The self**

Although originally Jung construed the self as the total personality- the psyche- he later modified his view to conceive of the self as the centre of the personality around which all other systems flow. The self gives
unity, equilibrium and stability to the personality. Thus the concept of the self is probably Jung's most important contribution to the psychology of personality.

(ix) **Extraversion-Introversion**

Jung held that we can distinguish two typical behaviour patterns which arise out of the attitudes of people.

*Extraversion type personality*

The extraversion type as described it, is outgoing and concerned with the external, objective world. It meant that one thinks, feels, senses, and acts in a direct manner. The extravert is outgoing whether it be in intellectual activities, in physical activities or in feelings. If the state of extraversion becomes habitual with an individual, he is an extraverted type.

*Introversion type personality*

Introversion type personality means a turning inward toward one's self. A negative relation is implied, even expressed. Interest recedes toward the self, when introversion is habitual, the individual is described as an introverted type. Both attitudes are present in every one but one dominates and the other is subordinated.

2.13 **CREATIVITY AND PRESENT STUDY**

The discussion in the forgoing sections, several generalizations for classroom teaching can be suggested.
The central purpose of education in a democratic society is the development of mental abilities and thinking power of the students.

Creativity has been perceived as multiphasic, normally distributed mental ability. All the students are capable of creative expression. The teaching-learning process is so complex and the number of interacting variables so great that a precise list of definition effecting teaching—especially creative teaching— is wishful thinking. It is therefore necessary to relate specific teaching behaviours to specific goals and to explore outcomes in items of creativity.

The knowledge of creativity development technique and the creativity learning and enrichmental model throws full light in understanding this study. Here creative learning is referred to what happen when the pupil's become involved in the creativity learning process is understood as one of becoming sensitive to or aware of problems, deficiencies gaps in knowledge, missing elements, disharmonies, and so on; bringing together available informations, defining the difficulties or identifying the missing elements searching for solutions, making guesses or formulating hypotheses about the deficiencies. This definition may be taken as a natural human process with strong motivations at each stage.