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Chapter - II
CREATIVITY : ITS THEORETICAL PERSPECTIVES

2.0 INTRODUCTION:

Upto the beginning of this century, modern scientists even were under the impression that creativity is a unique gift of God, which is rarely found; they also believed that any change of degree in creativity was not possible. Persons having natural gift are known as geniuses. For example Albert Einstein, Madan Montessory, Shakespeare and Rabindranath Tagore and all such persons are geniuses. Their contribution is unique in the fields of science, education and literature respectively. Their work inspired psychologists to analyse and understand the way of thinking adopted by them. As a result of this deep and analytical study, psychologists arrived at the conclusion that the concept of creativity should be considered scientifically rather than religiously. Moreover, it has been proved now that creativity is a mental ability which can be fluctuated by environment.

In the popular mind creativity is confined to the arts, where some artists are creative, many are not barbers, cook, housewives, engineers, craftsman, managers, politicians
and cooks can be no less creative than artists. Thus, creativity is not an occupation, it is a vision, an approach, a way of dealing with small and big issues of life. Another point is that creativity is not just giftedness or "genius" or "lateral", thinking or permissiveness or intelligence. Creativity is a complex process whose outcome depends upon forces, inside and outside the individual. But these forces can be harnessed to increase vastly that range and depth of the creativity of individuals as well as organizations and societies.

Creativity is a term derived from the word 'create' which means to find out and set something strange and at once useful to bring about a change in the society. Creativity is one type of energy of a man to contribute artistically or scientifically to the society. From this meaning it is obvious that the process of creativity is substantially identical in art or science. This is the fundamental hypothesis for the process of creativity accepted by the psychologists. H.A. Simon says that the process of creativity is identical. 1

2.1 THE CONCEPT OF CREATIVITY:

The psychologists are attracted towards the investigation of that wonderful ability which enables the human-beings to make new inventions and help them in finding .

solutions of challenging problems and makes the life worth­
living. This wonderful and amazing ability has been label­
led as 'creativity'. Creativity provides a novel and 
attractive turn to the history of a nation, a community and 
whole humanity. This contention gets convincing support 
from the history of evolution of civilization.

To know the meaning of creativity, some definitions 
of creativity given by different psychologists are consi­
dered here:

Simpson (1922) defined: "Creative Thinking Ability 
as the initiative which one manifests by his power to break 
away from the usual sequence of thought into an altogether 
different pattern of thought concerning the problem of iden­
tification, he says that we must look for a searching, com­
bining, synthetic type of mind. Such concepts as curiosity, 
imagination, discovery, innovation and invention are promi­
nent in discussion of the meaning of creativity."²

The working definition of creativity used by Stein 
(1964) is that "A process is creative when it results in a 
novel work that is accepted as tenable or useful or satisf­
ifying by a group at some time."³ This definition of crea­
tivity is generally criticised on the ground that to impose

² R.M. Simpsons: "Creative Imagination", American 
³ Morris I. Stein: "Creative and the individual", Univer­
sity of Chicago, The Free Press of Glencoe, Illinois, 
1960.
any restriction of usefulness and value upon our definition of creation is to render it meaningless. This definition regrets the creativity of the person inventing and perfecting unclear weapons.

Summing up the essence of creativity, Frange E.K. Von (1954) observes that "Each creative involves a new association of existing elements, as far as the creator himself is concerned." 4

Sir Fredrick Bartlett (1959) employs the term adventurous thinking which he characterizes as "getting off the main track, breaking out of the mould, being open to experience and permitting one thing to lead to another." 5

The first major experimental attempt which showed that creativity is a function of the intellect was that of Guilford. In his monumental work on the structure of the intellect, Guilford was able to demonstrate, 'divergent thinking' as one of the most important intellectual operations by which the product or end result in the thinking process is reached. The other general areas is mental operations which he discussed were cognition, memory evaluation and convergent thinking. Guilford defined, 'divergent thinking as a kind of mental operation in which we think in

different directions, sometimes searching, sometimes seeking variety.6

After examining the definitions of creativity given by different writers, Torrance (1962) concluded, 'Some definitions of creativity were formulated in terms of product (invention and discovery, for example): others in terms of a process, a kind of person or a set of conditions.'7 The production of something new (to the individual or to the culture) is included in almost all of these definitions.

Mednick (1962) 'studied and analysed introspection of highly creative persons and came to the conclusion that creative thinking implies forming of associative elements into new combinations which either meet specified requirements or are in some way useful.'8

Wallach and K. Kogan (1966) agreed with Mednick and observed that 'creativity most appropriately refers to the ability to generate produce, within some criterion of relevance, many cognitive associates that are unique.'9


Anderson (1958) has proposed that creative ability is most frequently the opposite of good judgement. Creative ability includes the tendency to experiment with novel ideas that might be unsound. It includes a good deal of the gambler's spirit where the individual strikes his neck out and tries something new perhaps even wild or crazy.  

A critical survey of various definitions of creativity stated above brings the following points about creativity:

1. Creativity is a mode of thinking.
2. This type of thinking involves breaking away from the usual sequence of thought or getting away from the main track or breaking out of the mould.
3. This type of thinking involves entering into an altogether different pattern of thought.
4. This type of thinking permeates from one thing to another.
5. The process of this type of thinking involves becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies etc.
6. It is the tendency to experiment with novel ideas.
7. The net result of this type of thinking is a novel work.
8. A novel work implies a new association or combination of existing elements.

The creative thinking ability aims at avoiding the common place and obvious solutions.

For enhancing the creativity, some necessary requirements are to be kept in mind so that the hurdles in the way could be removed from the path of creativity.

2.2 COMPONENTS OF CREATIVITY:

Some psychologists regard the phenomenon of creativity as a single dimension of personality. Guilford thinks that the creative disposition is made up of many components. Being a multi dimensional aspect creativity can be measured by factor analysis on the basis of an aptitude project of Guilford and his associates.

Each of components is explained below in detail:

1. Fluency:

It refers to a rapid flow of ideas and tendencies to change directions and modify information. It is the quantitative representation of the units of products. It emphasizes the rate of production of all the units within all classes. Fluency is of four types:

(A) Ideational Fluency: It measures a person's ability to come up with a number of solutions to a given problem. Ideationally fluent persons tend to come up with a

greater variety of solutions as well as with a larger number of unusual solutions than persons that are ideationally not fluent.

(B) **Expressional Fluency:** It refers to the production of new ideas to fit a system or logical theories. This facilitates construction of sentences.

(C) **Associational Fluency:** It indicates production of ideas or words from a restricted area with equal relationship.

(D) **Word Fluency:** It is the generation words of specifically required epithets. It is concerned only with words. It has been drawn by divergent production process. Using semantic contents to give a product of units in a table various tests to measure word fluency use prefix - suffix or first or last letters of word.

(2) **Flexibility:**

Flexibility is the ability to provide a large variety of solutions to respond to a problem from a variety of viewpoints and to use a variety of approaches in problem solving. Flexibility is of two types:

(A) **Spontaneous:** It is that production of diversity of ideas in a relatively under-restricted situation.

(B) **Adaptive Flexibility:** It is some divergent transformation quality which involves changes.
(3) **Originality**:

It refers to the unusual ideas and suggestions for unusual applications of particular objects. It indicates uncommonness or newness in the product. Originality is the ability to come up with unusual but appropriate responses.

(4) **Elaboration**:

The ability to elaborate on a theme has also been recognised as a significant creative ability. The ability to elaborate is indispensable in putting a creative idea to work. It refers to the expanding and combining activities of higher thought. It shows production of detailed attempts, variety of implications and consequences which can be quantitatively measured.

(5) **Creative Production**:

It refers to processing both literary and constructive creativeness. The semantic contents through divergent thinking give units and figural contents resulting in transformations.

(6) **Ingenious solution to problem**: (ISP)

It is inventive. It is the right answer choice among many alternative ones.

(7) **Sensitivity to Problem**:

It indicates the creativity for problems when the creator sees defects, needs deficiencies, oddities unusualities
and sees what must be done, whether the problem is simple or complex, he attacks it from various angles.

(8) Redefinition:

It is closely related to flexibility and originality that arises from transformation specially of convergent productions. It is ability to re-arrange ideas, concepts people and things to shift the function of object and use them in new ways. It can be applied to different types of contents in the same way to figural symbolic, semantic etc., and they can be named with their names as figural redefinition, symbolic redefinition etc. Thus, it is evident that the concept of creativity component emerged from Guilford's divergent thinking technology. The components of creativity remain unique in their content-production. Their predominant mental operation is of the divergent type. Only the 'ISP' processes convergent.

2.3. CREATIVITY AND 4 Ps:

Psychologists view creativity from different dimensions. Hence it would be better to discuss the term creativity from different angles i.e. from Psychological traits of a person, process, press and product.

2.3.1. Creativity and Process:

There are various definitions of creativity which emphasize creation as a process.
As the time Spearman supported Wallas and thought of creation as purely a process (1930) for him creative thinking is the process of seeing or creating relationships with conscious or sub-conscious process operating but in 1931 Rossman\textsuperscript{12} opposed their view. He suggested that the word 'incubation' is not proper, because it shows that condition or a state of mind rather than a psychological operation. Hence he defined the process of creativity having several steps as follows:

![Rossman Model](image)

**Figure: Rossman Model**

Barchillon's (1961) definition also included the process of creation. He said that thinking process involved in creation are of two kinds; cognito, to shake and throw things to-gather, and intelligo to choose and discriminate from many alternative possibilities and then synthesize and bind together elements in new and original ways.

### 2.3.2. Creativity and Products:

During the third decade of century, it was thought that the product which the creative individual makes is the

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real measure, Greater the Product novel the products. They represent creativity. Adler (1927) defined creativity as "a compensatory product of the inferiority drive." In the fourth decade creativity was defined as a product of distinctive drives and unconscious wishes that aspire to become immortal.

It seems that no definition is so pure to take in to consideration of defining creativity only through product. There is always an overlap of other stands. Roger (1961)\textsuperscript{13} who is supposed to prefer to define and consider creativity from the point of view of product has also taken a basis of 'Press' in his definition of creativity one cannot deny in saying that no attention has been paid to this aspect in India as well as in foreign countries.

2.3.3. \textbf{Creativity and Person}:

One major approach to the study of creativity is the explanation of cognitive verbal. Simpson's (1922) definition clearly emphasized to cognitives structure in creative ability as the initiative which one manifests by this power of thought into an altogether different pattern of thought, concerning the problems of identifications.

The psychologist, the clinician and the factor analyst have shown much interest in defining creativity in

terms of traits. J.P. Guilford\textsuperscript{14} Psychometric method has intensified in the creative personality, such traits as sensitivity to problems, fluency, flexibility, originality, ability to transform meaning and ability to elaborate.

In creative thinking Guilford (1950) approach in defining creativity had been as a staunch exponent of cognitive functioning.

2.3.4. Creativity and Press:

Press means the instruction between human beings and their environment. It is the effect of environment that initiates the individual for certain creative activities.

Maslow (1962)\textsuperscript{15} distinguished, "special talents", "creativity and self-actualizing" creativeness. The former is that result of high abilities in special fields and the later due to independent mental health springing directly from personality appearing as creative flexibility.

Vinacke (1960)\textsuperscript{16} has aptly defined creativity "as an integrated a harmony between external world of reality and individual's internalized needs." Thus definitions emphasizing Press clearly identify "openness to experience" as the main basis.

\textsuperscript{14} J.P. Guilford: A Psychometric approach to creativity, Mimeographed, University of Southern California, March, 1962.

\textsuperscript{15} A.H. Maslow: Creativity in self, Actualizing People in creativity and its cultivations, pp. 83-95.

\textsuperscript{16} Vinacke (1960): As cited by G. Tiwari & R. Pal. Satu of Indian Researches in creativity. (Agra Psychological
2.4 THEORIES OF CREATIVITY:

After studying the meaning and concept of creative thinking, knowledge of the theories of creativity would throw more light on creativity. Brief view of the theories are explained below:

2.4.1. Psycho-Analytical Theory:

The Freudian ideas of mind and personality structure had been followed and practiced in all empirical validations in the structure of personality determinations by later workers of this theory, but it had been for Freud to give his basic ideology behind creation.

Bush (1969) pointed out that this regression in the service of ego has three different meanings:

(i) the removal of defensive barriers between the ego and ideas.

(ii) A regression of ego functions of perception and thinking to more primitive leaves and

(iii) Emergence of preconscious or unconscious material into consciousness in the phase of illumination creative production.

Some psycho-analysts also believe creativity as a function of odipal response.
The Psycho-analytical theories provided much ground to the theory of creativity, but almost restricted the creative performances to visual artists and writers, such as poets. It considered mostly the motivational and emotional aspects and neglected intellectual ones to explain the phenomenon of creativity. Thus, only primary process have been stressed more in incubation and inspiration. Weissman (1967) therefore indicated that the ego function is not only limited to inspiration but has a synthetic function working also during elaboration. However, the proper functions of primary and secondary process need more explanation empirically.

2.4.2. Serendipity Theory:

This theory is old but the idea is modern, in thought on creative production. They attribute creativity to accidentality in most of the creations, whether they be scientific or artistic.

Galvani discovering electric effects in living tissue, Orested discovering the relation between electricity and magnetism, Claude Bernard discovering the nervous control of blood circulation and Pavlov discovering the conditioned response, made all accidental creation. This theory also believes that it may not be new production,
but reinterpretation or new interpretation to already existing thing can also be produced serendipitily. This theory does not provide some scientific basis of explanation.

2.4.3. **Theory of Giftedness:**

Some psychologists who studied genius attributed creativity due to high intelligence. Of course intelligence was determined by the traditional tests of intelligence.

Spearman\(^1\) was the first exponent of this theory. He proposed an intellectual theory of creative performance. According to him every creative act is a matter of "educating correlates" which are "fundaments" or "units" of information needed to complete a relationship.

Thurstone (1952)\(^2\) believed that the individuals who have great contact with perfocal unconscious phase of the act are creative.

2.4.4. **Mental Health Theory:**

It is reinterpretation of Psycho-analytical ideas about creativity. Maslow (1968)\(^3\) the great exponent of

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this theory took motivation as the basis of creation. Creation is removing barrier between conscious mind and preconscious area.

2.4.5. **Motivational Theory:**

A creative man is motivated to solve problems. Kerrifield and others (1961) correlated the motivational factors with factors of creativity and found significantly positive correlations. They concluded that motivation for intellectual activity including creative thinking appears to be quite complex.

Krop (1969) showed that both intrinsic and extrinsic motivation were associated to higher levels of creativity and higher proportions of creative responses.

2.4.6. **Transfer Theory:**

Many psychologists believe that creative production is problem solving factor analytic studies of Guilford (1960) and Merrifield and others (1962) show that different kinds of problems called upon different weighted combinations of intellectual factor abilities depending upon the nature of problem and the strategy applied by the problem solver.

2.4.7. Associative Theory:

This theory of creativity is based on S.R. Associations, and is purely of an American origin because of the influence of behaviourism in America. Thus, its origin came from empirical validations form Work Association tests.

The great exponent of this theory is Mednic. He suggested that creative solutions are achieved in three ways. Mednic developed the Remote Associate Test. The Association theory has its value in considering creativity, but its scientific value is yet questionable. Guilford (1960-61) believed that to become a good theory it must extend itself beyond the association principle and all the psychological products must be used. They suggested that the test measure extent rather than slope of hierarchy or the slope of the individual's hierarchy is not a general trait but depends upon particular stimulus context. It is also felt that there is no direct control of intelligence which is related to RAT as found by Mednic (1983) in the association.

2.4.8. Process Theory:

Walls (1926) gave a model of creative process and analysed the process into four stages: (a) Preparation (b) incubation, (c) illumination (d) verification.

Guilford (1964) has suggested a word "phrases or aspects" rather than stages. Millar and others (1960) suggested tone sequence (ToTE = Test, operate, Test, Evaluate). Rossman gives seven steps.

2.4.9. **Independent Theory**:

This theory has an anti-authoritarian notion of developing creativity. The compartmentalization, stereotyping and anti-interception of authoritarian personality prevents creative functioning. The children should be saved from authoritarian parents and teachers to make them creative.

Foster (1968) explained that home environment parental, permissiveness versus domination, mother domination degree of independence from parents degree of divergence permitted risk acceptance etc., may create problems for creative individuals.

Torrance (1953) pointed out that man fundamentally prefers to learn in creative way by exploring manipulating questionnaire, experimenting risking, testing and modifying ideas and others.

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2.4.10. **Intellect Theory:**

This theory has statistical and empirical basis. Guilford (1956) believed that creativity is a group of mental abilities that are covered by divergent thinking slabs of the SI Model. In this model three main aspects are given:

<table>
<thead>
<tr>
<th>Process</th>
<th>Content and Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Divergent Product (P)</td>
<td>Figural (F) Units (U)</td>
</tr>
<tr>
<td></td>
<td>Symbol (S) Class (C)</td>
</tr>
<tr>
<td></td>
<td>Semantics (S) Relation (R)</td>
</tr>
<tr>
<td></td>
<td>Behavioural (B) System (S)</td>
</tr>
<tr>
<td></td>
<td>Transformation (F) Implications (I)</td>
</tr>
</tbody>
</table>

**Figure:** Divergent thinking

*Intellectual Model of Guilford*

The other four processes are cognition (C), Memory (M), Convergent Production (N) and Evaluation (E).

In creativity, cognitive ability of semantic units (verbal comprehension) may be low whereas that of evaluation of semantic implications (problem sensitivity) may be high.

2.4.11. **Cognitive Theory:**

How do creative people perceive and think about things and events? This theory answers this question from the point of view of cognitive styles.

Haromian and Suzeman (1967) maintain that field dependence characterizes the person in rigidity and prevents change in one's attitude in response. Bloomberg (1971) said that flexibility is related to creativity. Bloomberg (1971) said that Flexibility is related to intelligence and not to creativity like other theories of creativity. This theory also reports only a limited view of creativity.

2.4.12. **Personality Theory:**

This theory takes into consideration a great pile of human personality traits that are specifically found most in creative individuals.

Trait theory, though very important, is not by itself, a complete picturesque of a sound model. Its diverse attempts with diverse finding accumulating a great pile of traits completes us to think as to what traits are necessary and what refers to only a coincidence from the literature, it appears the specific creativity is more related to specific

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traits, secondly, the studies using different approaches of measurements concluded diversely. Therefore, one should also take into consideration the type of measurement and requirement to explain this theory.

2.5. REQUIREMENT/IMPORTANCE OF CREATIVITY:

An appropriate sphere is an essential requirement for creative functioning. We cannot expect a good crop from a good seed without suitable soil. Likewise, creativity of a person cannot flourish in the absence of an appropriate sphere.

(1) New ideas come to light and flourish as a reaction to older concepts. Prudent criticism of older concepts and acceptance of their valuable parts are two ingredients of creativity.

(2) Without making adequate and serious efforts in one's sphere, one cannot find solution to one's problems all of a sudden.

(3) Concentration and tolerance is required to be successful. The individual has to put in hard efforts continuously despite initial reversals. Thus, possession of remarkable tolerance is an essential pre-requisite for some important creative achievements.

(4) Emotions, feelings, mental states and temperaments are also important for creative functioning.
(5) A person develops creative potential because of his desire for social prestige.

(6) Sentiments like love, spirit of service and patriotism also prove conductive for the development of an individual's creativity.

(7) Freedom from economic worries is also essential for the optimum functioning of creativity.

The appropriate sphere or climate for creativity develops the certain characteristics of the person-born or becoming creative one.

Many things were learned about the creative individual in a recent research project at the University of California's Institute of Personality Assessment and Research. Some 600 persons were studied, representing the fields of writing, architecture, physical science, research, engineering and mathematics. Reasons studied were recommended by experts in their respective fields on the basis of proven capacity for creative innovation.

In a similar study at Pennsylvania State University by Professor Viktor Lowenfield, eight key characteristics of the creative person were determined. These were later

confirmed by Professor Guilford at the University of Southern California. These are the eight characteristics:

(1) Sensitivity: The creative individual is sensitive to problems, needs, attitudes and feeling of others. He has an acute awareness of anything old, unusual or promising in the person, material or situation with which he is dealing (The studies showed no differences between perceptual and social sensitivity).

(2) Fluency: This refers to the ability to take continuous advantage of a growing situation to use each completed step as a new vantage point from which to assess the problem and move on.

(3) Flexibility: People with high creative ability adjust quickly to new developments and changed situations, unforeseen obstacles in a problem-solving situation are often used to advantage by the creative person.

(4) Originality: This is self-explanatory. It was measured in this study by uncommonness of the individual's responses to problematic situation and the number of diversity of solution given.

(5) Redefinition skill: Creative people have unusual ability to rearrange ideas, concepts people and things to shift the function of objects and use them in new ways. Inventiveness is not always a factor here rather. The imaginative use of old things or ideas for new purposes.
Ability to Anstract: This might be referred to as skill-analysis. It involves proficiency in analysing a project's components and comprehending the relationship between components, i.e. 'getting details from the whole.'

Ability to synthesize: This is the opposite of the ability to abstract. It means ability to combine several components to arrive at a 'creative whole'.

Coherence of organization: The ability to organize a project, express an idea, or create a design in such a way that nothing is superfluous. In other words 'getting the most out of what you have to work with.'

A vital educational aim requires boosting up creativity in individuals right from the early period of life. This objective can be realised only if education can produce lively, dynamic, original and productive thinkers who through their creation are able to make their lives more comfortable, meaningful and of healthy understanding.

Creativity, as a field of knowledge, seeks to explain how humans, either individually or collectively, reach solutions that are both novel and useful, the kinds of personality traits that help humans to reach creative solutions, and the techniques through which creative solutions may be found relatively quickly or inexpensively. Creative
thinking is particularly useful for problems that are openended, that is, problems that have no one right answer.

Human creativity is a whole cluster of abilities the major ones so far identified are the ability to idealize copiously (fluency) the ability to come up with a variety of perspectives, approaches, and solutions (Flexibility), the ability to hit upon novel. Uncommon solutions or relationships that are useful (originality, the ability to sense problems and incongruities (problem sensitivity) the ability to grasp the causes and consequences of a situation the ability to elaborate upon a creative insight, the ability to redefine problems so that they become amenable to creative solutions.

The creative individual tends to have considerable independence of judgement, rich, often bizarre imagination combined with a good deal of practicality; openness to strange and complex situations, sensations, and ideas; and a need to do something distinctive, be a pioneer, and to actuate one's potential while same of the creative abilities may be substantially determined genetically, others may be influenced strongly by the individual's environment and his motivation. Situation in which the person feels relaxed and yet alert may be conducive to creativity. There is little doubt that creativity can be greatly enhanced,
if the individual wishes to be creative, sheds various fears that block creativity. Seeks a challenging environment in which innovation is at a premium, and trains himself in the techniques and abilities of creativity. Creativity training aims to help trainees develop motivation and abilities congenial to creativity.

Modern civilization rests not only on individual creativity but one the creativity of collectivities like groups and organizations. To be creative, collectivities need to operate in a challenging, demanding environment; they need to have a culture of meritocracy, so that innovative individuals who can meet environment challenges come to occupy positions of power, not by accident but by dint of their demonstrated capabilities, and the societies must collectively provide for appropriate structures and management systems to execute innovations effectively.

2.6 TEACHER'S ROLE IN DEVELOPING CREATIVITY IN SCHOOL:

Educationalists are interested in understanding different school environment and conditions which effect 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, open mindedness, authoritarianism and other teacher characteristics effect the children. The teacher's level of creativity directly influences students creativity, incentive and behaviour.

Sparnes and Harding have listed twenty principles through school experiences which are worth to be noted for this study. Behler\textsuperscript{27} 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, shows pupils how to define a problem and keep testing each idea. The neuristic described by polymight 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 related and unburried one.

(8) Teach the child to value his creative thinking. Encourage students to note their ideas in concrete form wherever possible, perhaps in special notebook 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 feeling 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) Dispaly the sense of awe of master places indicate some of the methods and difficulties experienced by famous creative people to dispaly the nation that only a gifted few experience bright 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 cell 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 a guide.

(15) Provide for active and quite periods, remembers 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.

2.7 CORRELATES OF CREATIVITY:

From the findings of the various studies, it is proved that creativity is co-related with personality, age, sex, socio-economic status, birth order, academic achievement and intelligence. Here the investigator has focussed on: (1) creativity and personality, (2) Creativity and socio-economic status, (3) creativity and intelligence and (4) creativity and environment.

2.7.1. Creativity and Personality:

Knowledge of creativity is useful to develop a personality in various fields. The first investigation on the problem of creativity-personality relationship is made by Cotton (1969). In the year (1959) Drevodahl conducted a study in this field and concluded that creative artists are more radical and self sufficient than creative scientist. Raina M.K. (1968) compared high creative and low

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creative studies on the measure of cognition, personality and socio-economic status and found significant differences. Souksmith (1970) found that creativity and personality traits have definite relationship.

* Those who sought to study creativity in infants sought to find it through the medium of art. Grippens (1933) worked on 3 to 7 years old children and made it clear that experimental imagery is important, and infants' these images are revised to organise and recognize the structures. But these studies do not throw proper light on the issue.

* The creative power in school going children have been abundant. In Torrance study (1959) three personality characteristics of creative children were prominent. Openness to experience and independence have been found important factors for developing creativity in children.

* Torrance (1961) and others found adults of creative attitude having urged to search for answers, to puzzling questions, to explore and to experiment. They are also inclined to search for defects and criticism. They are confined of their perceptions.

2.7.2. Creativity and Socio-economic Status (SES):

The effect of socio-economic status of subjects which is indicated through their family background, education
of parents, position or fame and honour half by the parents or others at home, in community and neighbourhood, the social and intellectual bases in the family, professional background, the number of siblings and size of the family and the level of vocational independence of the parents etc. on their creative thinking abilities has been investigated in a number of studies. A majority of these studies have observed that there exists a positive and significant relationship between SES of the subjects and their creative thinking abilities and the subjects belonging to the parents having high SES are significantly more creative than the subjects belonging to the parents having low SES.

2.7.3. **Creativity and Intelligence:**

Creativity and intelligence are both mental ability of a person and there is difference in them. The creativity is the measure of divergent thinking whereas the intelligence is the measure of the convergent thinking.

The two psychologists Gazzel and Jackson studied two contrasting groups of children in a Highbrow Chicago School. One group was high I.Q. but relatively low on creativity and other school was high on creativity but relatively low on I.Q. and the following was observed:

1. The high I.Q. were more conformist nature and in their responses to the problem. They were more found to be
stimulant by the constraint in the problem situation, whereas high creativities did not find the problem as a finding and resulted they behaved playful and explorative in their response.

(2) When asked for their careers, the I.Q. opted for the middle class high status careers like low, medicine, professor, which were on the tips of the tongue whereas the high creative opted for the large varities of distinguishing careers like advantures, inverter, writer etc.

(3) The high I.Q. were found less risk takers and to test questions they gave a very safe answer whereas the high creativity were adventurous and to the test questions gave much freely, imaginatory quite humorous and new solution.

Thus the creativity and the intelligence are two mental abilities which are proved to be of contrast nature. However, the high intelligence is not creative and does not hold good always.

2.7.4. Creativity and Environment:

The creativity of an individual depends on the environment as the person living in the more favourable creative environment shows greater creativeness. The environment profoundly effects on the attitudes, traits, abilities and behaviour which are termed as the principle factors of creativity.
The environmental factors are family members, friends, professors and norms. Our reference group which shapes our personality and thereby creativity. The harsh environment blocks the creativity due to fearfulness while the good cultured family environment boosts the experimentation and habit of risk taking which stimulates the innovative effort.

The environment influences the person having or not having various creativity related abilities. A free home helps to develop the mental flexibility. Also the original thinking is stimulated. If the home or academic or work environment has a encouraging charactership of the experimentation without consideration of the status of the person. Some of the occupations increase the capacity of the elaboration and some increase the problem. Sensitivity depending upon their work and field of environment. Thus one's childhood, social, and work environment may rather importantly shape the personality traits and abilities related to creativity.

Also the environment may block or facilitate creative activity themselves. Bureaucratic atmosphere blocks the creativity. The creative test among the female and male collegians shows resembleness invariably of their sex, however in most of the fields the members of male creative is larger than the female except in the field of home management suggests the inhabiting effects of the environment on female creativity.
From the researches it is found that nurturance of genius, learning environment, low tension environment, rewarding environment, home environment work environment, expectations of the powerful, emphasis on self discovery environment stimulation are some of the environmental factors which stimulates the individual creativity. Some of the important among them is discussed in the following paras:

(1) Nurturance of genius:

The social scientists have seen that during certain periods among the history have a large number of individual creatives then the other period. And as genetics cannot explain the reasons, so the reasons for that are assumed to be sociological and socio-psychological researches by "Gowan and Olson found that some of the golden ages of history may have given the young genius the necessary rote-modes, the cultural diversity and the philosophical commitment for the development of the creative potential. This potential was then merely actualised in adulthood without much hindrance or help from the external events. In other words the bright childhood environment is necessary to be a adult creative.

(2) Learning environment:

The learning environment and creativity are related by Alica Pagano and he writes - the development of creativity appears to be enhanced by certain components, in the life of the child.
They are:

(A) An open environment ... the environment where the children are encouraged to express their ideas and emotions freely and one where they feel psychologically secured.

(B) The active use of creative skill.

(C) A result of previous knowledge: Creativity requires a prior knowledge of content or subjects matter and technique. As Braner put it, paraphrasing Pasteur "discovery favours the well-prepared mind" means without prior knowledge one does not have ability of a developing an idea.

(D) A disciplined use of technique: One should not be a technique bound as carelessness or incompetence in the application of technique darkens the quality of work.

(E) An association with artist: This provides the atmosphere of creative ideas and guidance.

Thus, the learning environment is the environment consisting of the above components which stimulates creativity.

(3) Low Tension Environment:

The creativity for the people at the tests is higher if they are relaxed but alert. The creativity is also greater
if their feeling is defensive. Thus low tension environment increases creativity.

(4) Rewarding environment:

The experiment conducted by Savoca with the four year children found that the children who were rewarded with toy for creative showed the greater creativity than children that were not rewarded. Students who were given an incentive to increase their creativity scores on a re-test showed higher scores than a group that was not given incentive. Thus, rewards stimulates the creativity.

(5) Home environment:

The creativity depends on the type of the environment existing in ones home. If the home environment is a harsh disciplined and conformist than they induce in the child rigidity, conventionality and authoritarianism resulting non-creativity. A child of low-socio-economical status shows less creativity because it can generate less ideas due to less opportunities and facilities. However, studies by Getzels and Jackson showed that "Bareuts who neglects the academics and who encourages the off beaten hobbies, interest and carvers tends to stimulate the creativity in children." Also study of geniuses by Cox, Simonton found that up to a point increase in education is proportional to eminence but beyond increase in education after that point is inversely related to eminence.
(6) Work environment:

The work environment plays an important role to inhibit or facilitate creativity. In a study by Otte - The factors that foster the creativity in teaching the factors that inhibites creativity by the teachers and principles. He found that a pro-creativity leadership at school level, correlativity of creative role, models proper planning without slavish adherences to procedures and adequate facilities be a formula for creative teaching where as a rigid, authoritarian and restrictive school environment may effectively block teachers creativity. In the experiment at the factory it is found that encouragement to creativity and in creativity at work can increase creativity in the work situation.

2.7.5. Design of the Creative Environment:

Having reviewed some of the research on the way a person's various environments effects his creativity. Let us summarise the main environment factors that foster or inhibit creativity.

(1) A stimulating environment, one in which there is always something new to do, experience or know, and where one is called upon to respond to new tasks and challenges, stimulates creativity. A monotonous environment or a monotonous task dampens creativity.
(2) An environment that encourages and rewards creativity, innovation and experimentation, stimulates creativity and one that ignores creative efforts or penalises them dampens it.

(3) An environment, that does not induce defensiveness and fearfulness by premature criticism or evaluation encourages creativity whereas the environment in which any new idea is quickly dismissed as half-baked stupid, impractical or wrong discourages creativity.

(4) An environment in which there are opportunities for feedback and critical but constructive evaluation of ways of approaching complex problems and outputs of creative efforts, encourages creativity. One where there is laissezfaire dampens creativity or makes it trivial.

(5) An environment that provides opportunities for vigorous technical training preferably at hands of creative masters, stimulates creativity. One where training is sloppily provided or where the errs are rather mediocre dampens creativity.

(6) An environment with rich diversity and intellectual ferment encourage creativity. One which emphasises uniformity and conformity dampens creativity.

(7) An environment that provides freedom of thought and action but equally demands responsibility, accountability, and effective performance, encourages creativity.
A laissezfaire environment is as destructive of creativity as an authoritarian environment.

(8) An environment in which innovators, pioneers, and creators are looked up to as role models stimulates creativity. One which extols duty-bound conformists (such as Rama) may nurture morality but it discourages creativity.

(9) An environment that provides reasonable physical facilities for experimentation, practice etc., encourages creativity. Too great a physical deprivation and possibly too little as well inhibits creativity.

(10) An environment in which admired or loved high status individuals (parents, teachers, boys, social leaders etc.) hold norms favouring creativity and communicate expectations about creative effort to the individual, stimulates one's creativity. An environment in which admired high status individual either hold anti-innovation norms or are indifferent to creativity or fail to communicate their expectation of creative effort to the individual or communicate the expectation of a conformist response, discourage creativity.
2.8 CREATIVITY AND PRESENT STUDY:

Without doubt it can be stated that specific environment should be conductive for development of creative potentials. The individual after birth throughout his age receives all experiences of the environments and from the environments; his curiosity helps him to gain knowledge; his memory helps him to retain that knowledge and his potentials help him to utilize the gained knowledge. The various environments through which the infant child or adult passes have indelible impression upon developing his abilities and knowledge. The environment influences direct or indirect have a great role in developing creative abilities too.

As home is starting point in the life of an individual, various factors of home influences development of creativity in infants and in children. The various factors of in home behavioural environment, child rearing, the socio-economic condition of home, size of family etc., determine the congeniality or non-congeniality for creative growth. Another environment imparting great influence upon the child is school where he spends considerable time of his life. In school he enters into a competitive environments from protective environment of home. The type of school in which the individual receives the training is said to influence creativity. The degree of intellectual environment of the school directly effect the level of growth of child's creativity.
The present study had been undertaken to study the level of creativity of the primary school children and to observe the trends of creativity in relation to the factors regarding the home and school environment.

This review chapter throws some light on the conceptual understanding of creativity and on the review work to be made for the study.