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References
2.1 Introduction.

In the popular mind creativity is confined with the arts, whereas some artists are creative, many are not. Barbers, cooks, housewives, engineers, craftsmen, managers, politicians and educationalists 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 the outcome of which depends upon forces, inside and outside the individual. But these forces can be harnessed to increase vastly the range and depth of the creativity of individual as well as organizations and societies.

Creativity is a term derived from the word 'to 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 person 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.
2.2 The Concept of Creativity

The psychologists are attracted towards the investigation of that wonderful ability which enables 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 labelled 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 considered here:

Simpson defines "Creative Thinking Ability" as the initiative which manifests by the power to break away from the usual sequence of thought to an altogether different pattern of thought concerning the problem of identification. He says "We must look for a searching, combining, synthetic type of mind. Such concepts as curiosity, imagination, discovery, innovation and invention are prominent in discussion of the meaning of creativity."

The working definition of creativity used by Stein is that "A process is creative when it results in a novel work that is accepted as tenable or useful or satisfying by a group at sometime."

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

Sir Fredric Bartlett 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 of mental operations which he discussed were recognition, 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, concludes, "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 (by the individual or by the culture) is included in almost all these definitions.

Mednick 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 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 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 sticks his neck out and tries something new perhaps even wild or crazy."\(^10\)

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

1. Creativity is mode of thinking.
2. This type of thinking involves breaking a way from the usual sequence of thoughts 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. This type of thinking involves becoming sensitive to the problems, deficiencies, gaps in knowledge, missing elements, disharmonies etc.
6. It is the tendancy to experiment with novel ideas.
7) The net result of this type of thinking is a novel work.

(R) A novel work implies a new association or combination of existing elements.

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

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

2.3 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 multidimensional aspect of creativity which can be factor analysed on the basis of a project given by Guilford and his associates.

Each of the component is explained below in detail:

2.3.1 Fluency:

It refers to 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. Ideational fluent persons tend to come with a greater variety of solutions as well as with a larger number of unusual solutions than those of the persons who 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 of 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.

2.3.2 **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.
2.3.3 **Originality**:

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

2.3.4 **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.

2.3.5 **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.

2.3.6 **Ingenious Solution to problem**: (ISP)

*ISP* is an inventory. It is the right answer choice among many alternatives.
2.3.7 Sensitivity of problems:

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

2.3.8 Redefinition:

Redefinition 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 objects 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 components 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 ingenious solutions to problem process is convergent.

2.4 Creativity and 4P's of Psychological Traits

Psychologists view creativity from different dimensions hence it would be better to discuss the term
2.4.1 Creativity and Person

One major approach to the study of creativity is through the explanation of "cognitive verbal". Simpson's (1922) definition clearly emphasized cognitive structure in creative ability as the initiative which one manifests by this power of thought, concerning the problems of identification.

The psychologists, the clinicians and the factor analysts have shown much interest in defining creativity in terms of traits. According to J.P. Guilford, psychometric methods have identified 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's (1950) approach in defining creativity has been a staunch exponent of cognitive functioning.

2.4.2 Creativity and Process:

There are various definitions of creativity which emphasize creativity as a process.
Spearman supported Wallas and thought of creation as purely a process. Creative thinking is the process of seeing or creating relationships with conscious or sub-conscious process operating. But in 1931 Rossman opposed their view. He suggested that the word incubation is not proper because it shows the condition or state of mind rather than a psychological operation. Hence he defined the process of creativity having several steps as follows:

1. Need
2. Problem formulation
3. Information entered
4. Solution examined
5. New Ideas formulation
6. New idea tested

Burchillon’s definition also included that process of creation. He said that thinking processes involved in creation are of two kinds: cognito, to shake and throw things together, and intelligo to choose and discriminate from many alternative possibilities and then synthesize and bind together elements in new and original ways.

2.4.3 Creativity and Products

In the 1930’s, it was thought that the product which the creative individual makes is the real measure, that products represent creativity. Alder defined creativity as “a outcome product of the inferiority...
drive." In the 1940's 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 as to take into consideration the defining of creativity through product. There is always an overlap of other stands. Rogers, who is supposed to prefer to define and consider creativity from the point of product, has also taken a basis of 'Press' in his definition of creativity. One may conclude that no attention has been paid to press in India as well as in foreign countries. Press means the interaction between human beings and their environment.

2.4.4 Creativity and Press

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

Maslow (1962) distinguished, "special talents", "Creativeness" and "self-actualizing creativeness". The former is the result of high abilities in special fields and later due to independent mental health springing directly from personality appearing as creative flexibility.
Vanack© (1960) has aptly defined creativity "as an integrated harmony between external world of reality and individual's internalised needs." Thus definitions emphasizing press clearly identify "openness of experience" as the main basis.

2.5 Theories of Creativity

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

2.5.1 Psycho-Analytical Theory

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

Bush (1969) pointed out that the Freudian concept of 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 levels 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 oedipal response. The psychoanalytical theories provided much ground to the theory of creativity, but almost restricted the creative performance 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 processes have been stressed more in relation to incubation and inspiration. Weissman (1967) 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.

### 2.5.2 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.

Bulvani 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. This theory also believes that it may not be new production but reinterpretation or new
interpretation to already existing things can also be produced serendipitously. This theory does not provide a scientific basis of explanation.

2.5.3 Theory of Giftedness

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

Spearman 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) believed that the individuals who have great contact with the preconscious phase of the act are creative.

2.5.4 Mental Health Theory

This theory is representative of Psychoanalytical ideas about creativity. Maslow (1968) the great exponent of this theory took motivation as the basis of creation. Creation is removing barriers between conscious mind and preconscious areas.

2.5.5 Motivational Theory

A creative man is motivated to solve problems. Merrifield and others (1961) correlated the motivational 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.

2.5.6 Transfer Theory

Many psychologists believe that creative production is a 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.

2.5.7 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 from Work Association tests.

The main 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 believed that to become a
good theory it must extend itself beyond the association principle and all the psychological products must be used. He suggested that the test measures extent rather than slope of hierarchy, or the slope of the individual's hierarchy is not a general trait but depends upon a particular stimulus context. It is also felt that there is not direct control of intelligence which is related to RAT as found by Medic (1983) in the association.

2.5.8 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 of aspects" rather than stages. Hillar and others (1960) suggested ToTE sequence. (ToTE = Test, operate, Test, Evaluate).

2.5.9 Independent Theory

This theory has an anti-authoritarian notion of developing creativity. The complete mentalization, 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, questioning, experimenting, risking, testing and modifying ideas and others.

2.5.10 Intellect Theory

This theory has statistical and empirical bases. 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:

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<th>Content and Product</th>
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<tr>
<td>Divergent</td>
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<tr>
<td>Product</td>
<td>Symbol (S) Class (C)</td>
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<td></td>
<td>Semantics (S) Relation (R)</td>
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<td></td>
<td>Behavioural (B) System (S)</td>
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<td>Transformation (T) Implications (I)</td>
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The other four processes are cognition (C), Memory (M), Convergent Production (CP) and Evaluation (E).
In creativity, cognitive ability of figural and symbolic units (verbal comprehension) may be low, whereas that of evaluation of semantic implications (problem sensitivity) may be high.

2.5.11 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 intelligence and not to creativity. This theory restricts only a limited view of creativity.

2.5.12 Personality Theory

This theory takes into consideration a range of human personality traits that are found mainly in creative individuals.

Trait theory, though very important, is not by itself, a complete picture of a sound model. Its diverse attempts with diverse findings accumulate numerous traits, causing us to think as to what traits are necessary and what refers only to coincidence. From the trait theory literature, it appears that specific creativity is more related
to specific traits, secondly, the studies using different approaches of measurement concluded diversely.

2.6 **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 and proper nourishment. 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 to identify the characteristics of one's sphere, one cannot find solutions to one's problems.

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

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

Sentiments like love, spirit of service and patriotism also prove conducive to the development of an individual's creativity.

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

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

Many things were learned about the creative individual in a 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.

Following 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. Lowenfeld's studies showed 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 problem-solving situations are often used to advantage by the creative person.

(4) **Originality**: It was measured in Lowenfeld's study by uncommonness of the individual's responses to problematic situations and the number of diversity of solutions 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. The imaginative use of old things or ideas might be used for new purposes.

(6) **Ability to Abstract**: 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.
(7) **Ability to synthesize**  
This is the complement of the ability to abstract. It means ability to combine several components to arrive at a creative whole.

(8) **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, involving 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 open, 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
The creative individual tends to have considerable independence of judgement. Rich, often bizarre imagination is 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 some of the creative abilities may be substantially determined genetically, others may be influenced strongly by the individual's environment and his motivation. Situations in which the person feels relaxed yet alert may be conducive to creativity. There is little doubt that creativity can be greatly enhanced, if the individual wishes to be creative and 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 on 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.

2.7 Teacher’s Role in Developing Creativity in School

Educationists 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 relationships, the methods and materials of teaching are important factors to help in developing creativity of the child. The teacher should arrange Passi Test of Creativity in the classroom.

The teacher’s role in the school is very important. It influences 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 affect 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, as Behler quotes.

(1) Be 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.
(5) Develop tolerance for new ideas.
(6) Beware of forcing a set pattern.
(7) Develop 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 whatever 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-mates the wrong way, help him to become more aware of the 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 neuristis.
(11) Dispel the sense of awe of master places by indicating some of the methods and difficulties experienced by famous creative people to clarify the notion that only a gifted few experience bright and perfect insights at the first try.
(12) Encourage and evaluate self-learning. Avoid over structuring the curriculum.
Create "thorn in flesh" situations. Ask controversial questions and call attention to disturbing data.

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

Provide for active and quiet periods, remember the impact of habitual set and function.

Make available resources for working out ideas.

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

Develop constructive criticism, not just criticism.

Encourage the acquisition of knowledge in a variety of fields.

Develop the adventurous spirit in teachers.

2.8 Correlates of Creativity

From the findings of the various studies, it can be concluded that creativity is correlated with personality, age, sex, caste, socio-economic status, birth order, academic achievement, intelligence and climate. Here are some variables which are more correlated with creativity. They are as below: (1) creativity and personality, (2) creativity and socio-economic status, (3) creativity and intelligence and (4) creativity and environment.

2.8.1 Creativity and Personality

Knowledge or creativity is useful to develop a personality in various fields. The first investigation on the problem of creativity personality
relationship was 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 scientists. Raina M.K. (1968) compared high creative and low 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 studied 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 in 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's study (1959) three personality characteristics of creative children were prominent, for example openness to experience and independence have been found to be important factors for developing creativity in children.

Torrance (1961) and others found adults of creative attitude having the urge to search for
answers to puzzling questions, to explore and to experiment, and inclined to search for defects and criticism.

2.8.2 Creativity and Socio-Economic Status (SES)

The effect of socio-economic status on the creative thinking abilities of subjects is indicated through their family background, education of parents, position or fame, 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. 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 that the subjects belonging to parents having high SES are significantly more creative than the subjects belonging to the parents having low SES.

2.8.3 Creativity and Intelligence

Creativity and intelligence are both mental abilities of a person, and there are differences in them. Creativity is the measure of divergent thinking, whereas intelligence is the measure of convergent thinking.
The two psychologists Getzels and Jackson studied two contrasting groups of children in a "Highbrow" Chicago School. One group was high on I.Q. but relatively low on creativity and other group was high on creativity but relatively low on I.Q. The following was observed:

(1) The high I.Q. group was more conformist in nature and in their responses to the problem. They were found to be more stimulated by the constraint in the problem situation, whereas the high creative group did not find the problem as a challenge.

(2) When asked for their careers the children with high I.Q. opted for the middle class high status careers like law, medicine, professor, which were on the tips of their tongues, whereas those with high creativity opted for the large varieties of distinguishing careers like adventure, inventor, writer, etc.

(3) The high I.Q. group was found to be less risk takers, and gave very safe answers to test questions, whereas, the high creativity group was adventurous and gave more freely, imaginary, humorous and new solution answers to test questions.
Thus creativity and intelligence are two mental abilities which are proved to be of contrasting nature. High intelligence is not necessarily creative.

2.8.4 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 affects 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. One’s reference group shapes one’s personality and thereby creativity. The harsh environment blocks creativity due to fearfulness, while the good-cultured family environment boosts the experimentation and habit of risk taking which stimulates the innovative effort.

Climate influences the person having or not having various creativity related abilities. A free school climate helps to develop mental flexibility. Also original thinking is stimulated if the home or academic or work environment encourages 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 depends upon 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.

The environment may block or facilitate creative activity themselves. Bureaucratic atmosphere blocks creativity. The creative test among female and male college students shows resemblance in variability of their sex. However in most fields males are more creative than females, except in the area of home management, suggesting the inhabiting effects of the environment on female creativity.

From the research it is found that nurture of genius, learning environment, low tension environment, rewarding environment, home environment, work environment are some of the environmental factors which stimulates the individual creativity. Some of the important among them are discussed in the following paras:

(1) **Nurturance of genius**

The social scientists have seen that during certain periods among history have a large number of individual creations than other periods. And as genetics cannot explain the reasons so the reasons for that
are assumed to be sociological and sociopsychological. 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 an 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 as under:

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

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

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

(D) **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**: Creativity for the people at the tests is higher if they are relaxed but alert. 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 a toy showed greater creativity than children who were not rewarded. Students who were given an incentive to increase their creativity scores on a retest showed higher scores than a group that was not given incentive. Thus, rewards stimulate the creativity.

(5) **Home environment**

Creativity depends on the type of the environment existing in one's home. If the home environment is harsh disciplined and conformist then they induce in the child rigidity, conventionality and authoritarianism resulting in non-creativity. A child of low-socio-economic status shows less creativity because it can generate less ideas due to less opportunities and facilities. However, studies by Getzels and Jackson showed that "Parents 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.
Work environment:

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

2.8.5 Design of the Creative Environment

Having reviewed of the researches on how a various environments affects a person's creativity, the following points summarise the main environment factors that foster or inhibit creativity.

(1) A stimulating environment is 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,
to stimulate 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 hampers 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, where there is laissez-faire creativity is hampered or made 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 logic are rather mediocre hamper creativity.
(6) An environment with rich diversity and intellectual ferment encourages creativity. One which emphasises uniformity and conformity hampens creativity.

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

(8) An environment in which innovators, pioneers, and creators are looked on 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 workers 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 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.

2.9 Institutional Climate

In the present study, the term "Institutional Climate" is used in the same sense in which it is used by Halpin and Croft (1963) who refer to climate as "the personality of the school." The meaning of the institutional climate, as conceived by Halpin and Croft, is the product of interplay among the institutional principles, individual needs and informal group variables, measured through some dimensions and represented on a continuum. The dimensions are according to teachers' perceived behaviour [Disengagement, Hindrance, Esprit and Intimacy] and principals' perceived behaviour [Aloofness, Production Emphasis, Thrust and Consideration]. The climate on a continuum are open, autonomous, controlled, familiar, paternal and closed.

A general observation of the educational institutions shows that schools differ not only in their plant or the composition of the staff and the student population but also in the 'feel' of an institution. Sometimes this 'feel' or 'individuality' is called the 'atmosphere' or a 'tone' of
the college, or its 'personality'. It is this aspect of the relatively intangible, the 'feel' or the 'climate', which lets one know that one school is different from another.

In some schools, the principal appears to emphasize his authority and status, often stressing formality and rules in dealing with others. And still in others, the principal gives the impression of being too busy to be able to give much personal attention to any individual staff member or an item of the school programme. Yet in many schools, the principal seems to accommodate in an appropriate proportion formality and informality without undercutting his important role in the scheme of things. These differences which sometimes are not so subtle, characterize the psychological environment. Argyris (1957) calls it 'living systems' of institutions. These psychological environments are the domain of institutional climate.

Conceptually, 'institutional climate' is the state of institution which results from the interaction that takes place between institutional members as they fulfill their prescribed roles while satisfying their individual needs. (Gube) (1960) Lonsdale (1964) viewed it as the global assessment of the interaction between the task achievement dimension and the need satisfaction dimension within the organization. Feidvebel (1964), defined institutional climate as a pattern of social interaction that characterizes an institution. The main units of interaction in the concept being individuals, the group as a group, and the leader. Andrew (1965) defined institutional climate as "merely a somewhat blurred esprit d'core."
2.10 Theoretical Perspective Review

In the popular sense of the term creativity is confined to the art such as drawing, painting, embroidery, models making, music etc. Some artists are more creative in their art, such as barbers, cooks, teachers, engineers, housewives, craftsmen, managers, politicians and educationalists. Creativity has concern with the human beings of the society. Climate affects the human beings in many ways.

Home is the first school of the child and school is the second home of the child. Children pass most of the their time in the school. When the destiny of India is being shaped in her class-rooms hence it is necessary to know the creativity of the students in relation to their institutional climate.

Therefore, the researcher has selected the following research problem for the study.

"A comparative study of the creativity of the B.C. and Non B.C. students of secondary schools of Kaira District in relation to their institutional climate."

Researcher has formulated some hypotheses keeping in mind some objectives. For the present study, caste, area, sex and climate are envisaged which are independent variables. A stratified random sampling procedure has been adopted for the study. Passi Test of Creativity and Institutional Climate Description statements tools are employed for collecting the data. There are three factorial designs each for Stds.VII, IX
and X. The statistical technique applied is classified as a "Fixed-effect" model of ANOVA.

The second chapter describes components of creativity, creativity and 4 P's of psychological traits, theories of creativity, importance of creativity, teacher's role in developing creativity in school, institutional climate and the conceptual understanding of the creativity. The specific focus is on the dependent variable creativity and its relation with other variables.
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