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Creativity: Concept and Techniques

14.0 INTRODUCTION

Creativity is the cognitive activity that results in a new or novel way of viewing or solving a problem. Creativity is desirable as it is from creativity that major inventions, scientific discoveries and great works of music, literature and art derive. Creativity springs suddenly from flashes of inspiration or other heroic sources. Modern art and literature, philosophy and religion, science and technology, industry and commerce, transportation and communication, agriculture and social institutions owe their origin due to creativity. Individuals gifted with creativeness in the field of human endeavour are held in high esteem and enjoy higher status and prestige.

Creativity is most significant concept for human development. Creative children are asset to the society. Development and progress in various fields of national life depend on creative children. We should identify creative children and should provide them adequate educational facilities for the development of their creativity or talent. We must try to develop creativity in all children; so that they may excel in their field of interest and thus lead the nation ahead. Our schools should aim at the development of creativity among school children to prepare leaders in different walks of national life. The school should identify creative children and provide them all possible facilities for the development of their talent. One of the important functions of education is the development of creative ability. Hence, it is essential for the teacher to understand the meaning of creativity, stages involved in creativity and measures to foster creativity.

14.1 MEANING OF CREATIVITY

Creativity means seeing or expressing new relationship among things or ideas. According to Guilford, "Creativity involves divergent thinking with respect to the traits of fluency, flexibility and originality of thought processes." A creative action is novel, exploratory and venturesome spirit on the part of the individual. *Guilford* says, "Creative thought means divergent thinking and uncreative means convergent

thinking. Convergent thinking is measured by means of intelligence tests which include items like remembering, recognition and manipulation of some concrete material. But these tests do not measure the creative ability among children.

Torrance who has attempted to identify creativity in children has done a lot of practical work on creativity. He has defined creativity "as a process of becoming sensitive to problems, deficiencies, gaps of knowledge, missing elements, disharmonies and so on, identifying the difficulties, searching for solutions, making guesses or formulating hypotheses about the deficiencies, testing and retesting hypothesis and possibly modifying and retesting them and finally communicating results."

What cognitive processes does creativity involve? Creativity emerges from divergent thinking. This is the thinking that moves outward from conventional solution or knowledge or wisdom into unexplored path and unconventional solution in an effort to develop novel solution to a problem. It is from such thinking that creative breakthrough seems to emerge. "Creativity is an activity resulting in new products of a deficit social values." All the new inventions and practices in any field are given or developed by creative persons. Creativity is basically concerned with the new product or contribution in any discipline or field of study.

On the other hand, convergent thinking applies existing knowledge and rules of logic to the task of narrowing the range of potential solutions and zeroing in on a single correct answer or a single correct solution to a problem. While such thinking is productive in many situations, it does not appear to foster true creativity.

In the divergent production test, people are asked to list the number of uses they can generate for common objects. The more uses a person can list and the more unusual these are, the higher the score. The very strangeness of the unusual answers reflects thinking that breaks out of the ordinary cognitive channels, most of us follow most of the time.

14.1.1 DEFINITIONS OF CREATIVITY

— According to *Skinner*, "Creative thinking means that the prediction and/or inferences for the individual are new, original, ingenious, unusual. The creative thinker is one who explores new areas and makes new observations, new predictions, new inferences."

— *Ruch* says that those who show originality and ability to integrate the elements of a situation into a harmonious whole whether as a parent, a doctor or a football player - are leading creative lives.

In the light of the above, it can be said that every idea or expression that is original for the creator is an example of creativity. Thus creativity is possible in thinking, in mode of social interaction or in studying, working or playing.

Some of the well-established definitions of creativity are given as below:

— *Stagner and Karwoski (1973)*, "Creativity implies the production of a totality or partially novel identity."

— *Dreverdahl, (1956)*, "Creativity is the capacity of a person to produce

compositions, products or ideas which are essentially new or novel and previously unknown to the producer."

— *Wilson, Guilford and Christensen*, "The creative process is any process by which something new is produced — an idea or an object including a new form or arrangement of old elements. The new creation must contribute to the solution of some problems."

— *Papalia and Olds (1993)*, "Creativity is the ability to see things in a new way, to see problems that no one else may even realize exist, and then come up with new, unique and effective solution to these problems."

— *Rogers (1959)*, "Creative thinking involves imagining familiar things in a new light, digging below the surface to find previously undetected patterns and finding connections among unrelated phenomena."

— *Robert Frost* defines creativity as "free associations, coupling (of poetic ideas) that moves you, stirs you, is the association of two things that you did not expect to see associated."

— According to *Stein (1974)*, "Creativity is a process which results in novel work that is accepted as tenable to be useful or satisfying to a group of people at some point in time."

— *Spearman (1931)* opined that "creativity is the power of human mind to create new contents by transforming relations and thereby generating new correlates."

— *Wallach and Kogan (1965)*, "creativity lies in producing more associations, and in producing more that are unique.

It can be said that creativity can best be defined as original thinking, new types of associations, divergent thinking and behaviour, new solution of old problems, seeing or expressing new relationships, flexibility and a new approach in different fields of life. Every idea or expression that is original for the creator is an example of creativity.

14.1.2 CHARACTERISTICS OF CREATIVITY

From the above definitions, it can be said that:

1. **Creativity is a unique broad generic term:** Creativity is not about doing something else; but it is about thinking, exploring, discovering and imagining.
2. **Creativity is universal:** Creativity to some or other extent is always present in all human beings at all stages of his life. It is an ability which is universally distributed in individuals of all groups, castes, creeds and cultures.
3. **Creativity is a function of one's environment:** Of course, creativity is a gift from the nature; yet the environmental forces in the form of education, training and experiences try to develop it. Some researchers believe that creativity has genetic basis; but it is also influenced by cultural background, family environment, and training. So creativity is the outcome of natural endowment as well as some environmental influences.
4. **The emphasis on novelty has a quite broader meaning in creativity:** Through creative expression, the production of something new or novel is generally

expected. But novelty or newness does not necessarily imply to produce totally a new idea or an object which has never been experienced or produced earlier. Novelty is an important characteristics of creativity. The presented production can be a novel combination of elements of the existing this, or the reshaping or rearrangement of the already known facts or principles.

5. **Creativity is carried out through intrinsic motivation:** Creativity in its true sense is characterized with the presence of a high degree of intrinsic motivation better called as passion for doing or creating something new or noble.

6. **Creative process makes use of creative thinking:** It helps a creative individual to imagine a diverse range of possibilities, being persistent in tackling a problem and having higher standards for work.

7. **Any creative expression is the source of joy and satisfaction for the creator:** The creator says what he sees or feels in his own way. There is perfect individuality in one's creative expression. Creative individuals have inward flow of their psychic energy and are not well adapted to social relationships. They are interested in the achievement of their goal which gives them pleasure, happiness and satisfaction.

8. **Creative expression is very wide:** Creativity has many dimensions. It can be inferred from the thinking or behavioural aspects of individual's personality. Creativity covers all the aspects of human accomplishments like scientific invention and discovery, composition of poems, writing of story, drama and good performance in the field of dance, music, painting, sculpture, political and social leadership, business, teaching and other professions.

9. **Creativity is always purposeful:** The creator aims to do some different, novel and new from what has been done before. The creative efforts result in some form of appropriateness. Creativity entails hormic urge; which means that it is purposive in its real meaning; as it has some goal and an inherent desire to achieve the goal.

10. **Creativity is associated with cognitive domain:** It is an admitted fact that creativity is functional mainly through cognitive domain of one's behaviour. As a result, fluency of ideas, originality, ingenuity, flexibility, divergent thinking, persistence, self-confidence, sensitiveness, ability to see relationships and make associations, unusualness, usefulness and appropriateness in reaction to the creative product and intellectual leadership on the part of creative agent have been discovered as some of the factors that are associated with creativity.

11. **Creativity involves divergent thinking:** Divergent thinking is one of the important characteristics of highly creative individuals. Creative persons indulge in divergent thinking which involves numerous and unique ideas or combination of altogether different facts or elements. Unrestricted and uninhibited flow of ideas and thoughts is one of the important characteristics of creativity.

12. **Creativity is both a process and a product:** Creativity is both a process and product of creative thinking. When creativity produces something in terms of some invention, discovery, some new element or a thing, it is called a creative product; i.e., the purpose of creativity is the production or creation of something novel and different. Creative thinking as a process creates relationships with both conscious

and unconscious process in mind and creative product involves originality, uniqueness and adaptiveness.

14.2 DEVELOPMENTAL STAGES OF CREATIVITY

In the development of creative thinking, the following stages are followed:

1. **Stage of Preparation:** Preparation is the first step in creative thinking. It means orientation to the problem. It is a period of conscious labour and anxious search. In this stage, all the facts relating to the problem are collected and all superfluous facts are eliminated. This stage focuses attention on the problem, organizing the data, defining the problem and producing relevant ideas or parts towards that end. It is a period of study, of learning and of attempting to relate facts in various ways. There is an inner urge to create in the individual. So creativity involves considerable preparation. A person who develops a creative solution to important problems generally spends long periods of time in the problem, gathering knowledge relevant to it and working on it.

2. **Stage of Incubation:** In the second stage, a person tries to organize and reorganize and then tests his ideas. This period involves vicarious experiences of the problem. Flashes of insight and trial judgment occur. This is a period of no obvious activity and progress. The problem is being solved unconsciously. After facts have been collected they are incubated which means that the individual does not make further effort. No new knowledge or experience is added to the existing, but he patiently waits for the inspiration. Although no work is consciously done, yet unconsciously work goes on, which is responsible for the illumination and inspiration. Creative solutions often emerge after a period of incubation, an interval during which the person involved stops working actively on the problem and turns to other matters. Incubation periods may provide people with an opportunity to recover from the fatigue generated by the intense preparation phase.

3. **Stage of Illumination:** This stage assimilates new ideas that we have gained to our previous knowledge and experience. Illumination comes suddenly after incubation, probably from the depths of the sub-conscious mind. It is quite direct and effortless when it comes. Many poets and artists have told us that their most creative ideas have come to them during this period. This is the stage when the individual suddenly perceives the theme and relationship among the various components of the problem. Most of the creative thinkers claim that their creative ideas emerged all of a sudden. Creativity often involves a sudden illumination or insight. Individuals suddenly see the first glimmer of a solution they have been seeking for months. Illumination is not the end of the process. Considerable refinement must often follow. The idea must be worked out, translated into testable form, then actually tested. Then, the creative solution is carried to its final conclusion.

4. **Elaboration:** At this stage, the individual reflects, evaluates and submits to critical appraisal. There is a strong will to persist in order to see the job through. In fact, this is the stage of verification. Verification tests the validity of illuminated thoughts. It is a process of rethinking so that the new idea is revised and clarified. It may have to be critically examined. Elaboration is an important aspect of creative

process. Elaboration provides an outline or skeleton of a problem and by use of his imagination the creator completes the problem. The process of elaboration gives an opportunity to the person to develop his reasoning, thinking and problem solving abilities which are important aspect of creativity. The use of analogy, imagination, expression, divergent thinking are the processes of creativity.

14.2.1 STEPS TO DEVELOP CREATIVITY

The following steps are involved in the development of creativity among children:

1. **Develop a broad and rich knowledge base:** Creative solutions stem from the integration and combination of knowledge that is at the disposal of problem solvers.
2. **Foster independence:** Creative people are willing to take risks and strike out on their own. If we wish to encourage creativity, it is important that society tolerates such independence and even seeks to encourage its development.
3. **Encourage the use of analogies:** Many creative breakthroughs seem to involve the use of analogies i.e. recognition of similarities between a new problem and an old one or between a new potential solution and one that has worked before.
4. **Encourage curiosity:** Creative people often have a high level of curiosity. They are interested in different topics, they read widely and they actively seek new experiences. These characteristics help them to expand and enrich their knowledge base.
5. **Enhance positive effect:** It has been found that when people are in a positive mood, they are often more creative than when they are in a neutral or negative mood. People in a good mood think more expressively and tend to see relations between diverse stimuli more readily than those in a neutral or negative mood. A good mood can enhance creativity.

There are four conditions of creative thinking according to Henry Poincare:

1. **Period of conscious work:** There is a period of conscious work which consists in the accumulation of data posing problems and conscious efforts to solve such problems.
2. **Period of unconscious work:** The unconscious mind starts work after preliminary work has been done by the conscious mind and selects useful material for the solution of a problem.
3. **Formulation of hypothesis:** He forms a hypothesis or a number of hypotheses which may lead to the solution of a problem.
4. **Reflectivity and adventure:** The last stage is reflectivity and adventure in the realm of thought. Adventure in the realm of thought may lead to new innovations.

14.3 RELATIONSHIP BETWEEN INTELLIGENCE AND CREATIVITY

Intelligence is the general mental ability of an individual to make adjustment with the environment, to learn from past experiences and to think at abstract level. On the other hand, creativity deals with the potentials of an individual to do something novel or creating something new in solving some problem. It involves divergent thinking. Intelligence and creativity should not be considered as one and the same process. The differences between the two can be enumerated as below:

1. **Intelligence involves convergent thinking;** whereas creativity is concerned with divergent thinking. In convergent thinking, an individual has the tendency to find out the one most appropriate idea or response; whereas divergent thinking allows as many responses as possible.

2. **Creativity is a part of intelligence:** All creative persons must have possessed a high degree of intelligence; but it is not essential that the high intelligence person will be creative. One may possess high intelligence without having creative abilities. But, a high level of intelligence is a necessary requisite for being creative.

3. In intelligence, the speed and accuracy of the cognitive behaviour is emphasized; whereas in creativity, novelty, flexibility and originality are counted much.

4. Creativity and intelligence do not always go hand in hand. Creativity and intelligence are not related much. Of course, some relationship between the two does exist. It is true that a highly intelligent person may or may not be creative. But a creative individual must have high level of intelligence.

5. Creative and scholastic achievement are not necessarily correlated. Academic performance which is dependent upon scholarship achievement is much more related to intelligence. It encourages convergent thinking, to learn and memorize verbal material and to reproduce that in the same form with utmost accuracy. On the other hand, the key element of creativity is divergent thinking which is a higher mental process. The other prerequisite of creativity are not there in intelligence. Sometimes, a highly creative person may be a poor school performer and a topper in school may not be creative pupil.

But, both intelligence and creativity are cognitive activities and have higher mental abilities.

14.4 CHARACTERISTICS OF CREATIVE CHILDREN

Torrance with the help of his research studies found the following characteristics of a creative child:

1. **Courageous in convictions:** The creative child shows strong conviction in his beliefs and values. He can go beyond socially conformist behaviour.
2. **Curious:** The creative child is curious to know more and more about his environment.
3. **Independent in judgment:** The creative child can hold independent judgment in crucial matters.
4. **Independent in thinking:** He is independent in thinking about the problems of various types.
5. **Becomes pre-occupied with tasks:** When he starts a task, he completely absorbs himself in that task. He concentrates all his mental energies on the task in hand.
6. **Intuitive:** He makes use of intuition to solve his problems.
7. **Unwilling to accept routine solution:** He does not easily accept the routine type of solutions of the problem. He is not a conformist.

8. **Willing to take a risk:** He has risk taking capacity.
9. **Visionary:** The creative child has vision of future problem. He can anticipate the problems which may emerge in future.

Barrow in his book "Introduction to Psychology" has given the following characteristics of creative children:

1. Ability to keep many ideas in focus at a time.
2. Independence of judgment.
3. Preference for complex phenomena.
4. Self-assertiveness.
5. Ability to integrate diverse elements.
6. High energy level.
7. Lack of inhibition and freedom of fantasy.

14.5 IDENTIFICATION OF CREATIVITY

Identification of creativity in children is very essential for the overall development of their personality. It is a part of the school programme to identify, recognize, develop, guide and adopt measures to foster this aspect of children. The creative children are the assets of the society and so this potential among children should not remain unexplored. Hence, it is essential that the children with such talent should be properly identified by the school.

There are several methods and techniques which can be used for identifying creativity among children. The most commonly used methods are as follows:

1. Observation method.
2. Tests of creativity.
3. Other testing techniques.
4. Participation in various activities.

1. **Observation method:** It is a simple and easy method for identifying creativity among children. It is a widely used method for this purpose.

2. **Creativity Tests:** The most scientific and objective method is the use of creativity tests. Through these tests, the specific areas of creativity; i.e. originality, fluency, flexibility and elaboration are also identified; because general score of creativity has no practical utility.

3. **By Using other Testing Techniques:** The creative aspect in the child can be assessed through other testing techniques like; (i) situational tests; (ii) Rating scales; (iii) Check list; (iv) Aptitude tests; (v) Attitude scales; (vi) Interest inventories; (vii) Personality tests; (viii) Value schedules; (ix) Interview and (x) Projective techniques. These techniques are useful in understanding and identifying behavioural and personality characteristics of creative children.

4. The Children can also be identified by their participation in other areas like, academic, art, mechanical and scientific areas.

14.5.1 SOME STANDARDIZED CREATIVITY TESTS

There are many standardized creativity tests in India and abroad. Some of the

important tests are given below:

1. Minnesota test of creative thinking.
2. Guilford's divergent thinking test.
3. Torrance tests of creative thinking.
4. Wallach and Kogan creativity test.
5. A.C test of creative ability.
6. Remote association tests by Mednick.
7. Creativity test by Flangen.
8. Baquer Mehdi's test of creative thinking (1973).
9. A Battery of Creativity Tests by B.K. Passi (1972).
10. Creativity Test by Chauhan and Tiwari (1977).
11. Saxena Test of Creativity.
12. ISPT Creative Performance Scale.

Psychological State Underlying Creative Process

Gordon and his associates have identified the psychological states of creative process. They have found the following four psychological states for developing creativity.

1. **Detachment involvement:** This state refers to the mental state of a person to think beyond the general problem and then to show involvement and insight into it.
2. **Deferment:** This state refers to avoidance of the first solution of the problem and try to think another solution. It shows the mental state of deferment.
3. **Speculation:** This state refers to the tentative solution of the problem or formulation of hypotheses.
4. **Autonomy of the Object:** It refers to the clarity for the formulated hypothesis and ability to develop his own point of view related to the problem.

14.6 STEPS TO DEVELOP CREATIVITY AMONG CHILDREN

School can play an important role in developing and fostering the creativity among children. In the school, environment may be created which is conducive to the kind of behaviour which creativity requires. School environment which may provide ample opportunity for freedom of thought and other creative activities may be a great factor. The teacher in the class and outside the class may encourage the spirit of scientific enquiry in students. Teacher can help to kindle the spark of creativity among children; as one of the major responsibility of education is the promotion of creativity among students. The following measures may be adopted.

1. **Freedom to the students:** Full freedom should be provided to students to experiment with new ideas. The teacher should not emphasize the confirmatory behaviour but new ideas, novel plans and approach of tackling problems should be encouraged and fostered.
2. **High order intellectual activities:** Creativity and higher order intellectual activities of thinking and reasoning are highly correlated. Thinking and reasoning can be developed by scientific training from the very beginning of life.

3. **Creating an encouraging climate:** For developing creativity, the school should provide opportunities for exploration in an accepting manner where the child can feel free. Teacher should make the child feel that he is accepted and appreciated and he can ask questions or suggest even wild ideas without being judged.

4. **Encouraging creativity in many media:** Teacher should encourage pupils to express their thoughts and feelings spontaneously in as many media as possible. Creativity is not restricted to writing poems, short stories, novels or biographies; but to other media like art, craft, painting, music or dramatics in which children should be encouraged to express themselves in new ways. They should be encouraged to participate in social festivals, religious and social get-together in which children should be asked to express themselves in a new way. They should be motivated to pursue their interests through various activities such as collection, hobbies and development of specialized knowledge through active experimentation.

5. **Encouraging Originality:** Teacher should encourage variety and originality. Any sign of change or variety in children's work and effort should be welcomed and encouraged.

6. **Encouraging elaboration:** One important aspect of creative thinking is elaboration. It gives an opportunity to the individual to develop his reasoning, thinking and problem solving abilities. The teacher can use this technique within the framework of his regular teaching.

7. **Imagination:** Students should be given full freedom for the development of their imagination because imagination helps in the development of creativity.

8. **Creative expression and arts:** Schools can develop creativity through artistic expression by providing material. Artistic expression gives an opportunity to originate new ideas.

9. **Developing thinking:** Children should be encouraged to think on the consequences of an action. The mental exercise will be helpful in the development of creative thinking. Children should be encouraged to think different approaches to a problem. Divergent thinking develops creativity.

10. **Encouraging activeness and flexibility:** The creative person is both active and flexible. Teacher should encourage and foster both the amount of the activity and its flexibility. Many brilliant students devise more effective and efficient methods of study.

11. **Encouraging self-trust:** Teacher should encourage students' confidence and respect for their own ideas. He should reward their creative thinking, showing respect for imaginative ideas and encouraging the value of self-initiated learning.

12. **Encouraging to study master pieces:** Teacher should encourage the students to study master-pieces and work for original production and to produce new and better forms of expressing experiences.

13. **Rewarding creative achievement:** Creative achievement of a student should be rewarded.

14. **Being a creative person oneself:** The teacher who is himself wondering and learning and still trying his best to know the unknown in his subject gives pupil a creative model to follow.

15. **Organisation of the curriculum:** Curriculum should reflect what it desires from the creative children in terms of originality, novelty, fluency, flexibility, divergent thinking, elaboration and inventiveness etc. Learning experiences in the form of curriculum should be so designed so as to foster creativity among children.

16. **Creative resources of the community:** Creative resources of the community should be effectively used. Creative artists, scientists, and creative persons from other fields may be invited to the school.

2. **Brain storming technique:** This technique was developed by Osborn. It is a technique which emphasizes the importance of divergent thinking. It involves generating ideas in respect to some problem in a group. Students are encouraged to volunteer whatever ideas occur to them. These ideas are recorded for later evaluation. It has been found that the technique increases divergent thinking. The function of creative mind is to invent ideas, to find out novel solutions to problems. The technique of brain storming can be conveniently used in small groups of children. For example, a problem is proposed for discussion. The students are asked to express their views with full freedom of expression. Then with the help of the teacher, some consensus of opinion is reached. /

The purpose of this technique is to create or describe a problem and individuals in a group situation and to invent ideas or find out solution to that problem. A specific problem is put before a small group of students that can be e.g.; "students indiscipline", "unemployment in country", "Drug abuse" or "Examination system" etc. The students are then asked to suggest as many ideas as they like. No restrictions on their expressions are imposed. The students are free to tackle the problem from different angles. The ideas should be put forward spontaneously, freely and as rapidly as possible.

This technique involves storming of a creative problem. It has two types of mental activities; (a) Creative and (b) Judicial. The function of creative mind is to invent ideas to find out new solutions to problems. The function of judicial mind is to critically examine the ideas which emerge from creative mind. After the session, all the ideas received should be discussed in a free, frank and congenial environment and suitable idea should be accepted for solution of the problem.

It is completely permissive style of teaching strategy and based upon the assumption that a student can learn better in a group rather than in individual study. It is problem – oriented strategy of teaching. Moreover, the higher order of cognitive and affective objectives may be achieved by employing the strategy of teaching.

This technique consists of a problem solving situation in which learners are assigned a problem and they are asked to discuss any ideas which come to their mind. The group is encouraged to provide and evaluate the workability of their own suggestions of the problem.