Chapter 18

Creativity

INTRODUCTION

The Almighty God, the creator of the universe, is the supreme-mind who possesses the finest creative abilities. He has created all of us and all that is revealed in nature. We are elevated to be called His creation. According to Indian philosophy, we are constituents of the Supreme Power as the rays of the sun are the constituents parts of their creator, the sun. Therefore, every one of us ought to possess creative abilities—and has these abilities. Every one of us is a unique creation, but does not possess the same creative ability as his pears. Some of us are endowed with high creative talents and contribute to advancement in the fields of art, literature, science, business, teaching and other spheres of human activity, and are responsible for propounding new ideas and bringing about social and cultural changes. Mahatma Gandhi, Abraham Lincoln, Homi Bhabha, Newton, Shakespeare, Leonardo da Vinci were some of the creative individuals who left their mark in their chosen fields. Though they were undoubtedly gifted with creative abilities, the role of environment in terms of education, training and opportunities in their development cannot be ignored.

Good education, proper care and provision of opportunities for creative expression inspire, stimulate and sharpen the creative mind, and it is in this sphere, that parents, society and teachers make a significant contribution. They are required to help the children in nourishing and utilizing their creative abilities to the utmost. The educational process, therefore, should be aimed at developing creative abilities among children. This can be achieved by acquainting the teachers and parents with the real meaning of the creative process and the ways and means of developing and nurturing creativity.

DEFINING CREATIVITY

The terms 'creativity' or 'creative process' have been defined in many ways. Some of these definitions are as follows:

Stagner and Karwoski (1973):

Creativity implies the production of a 'totally or partially' novel identity.

Drevdahl (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.

Bartlett (1958):

Creativity is an adventurous thinking or a getting away from the main track, breaking out of the mould, being open to experience and permitting one thing to lead to another.

Spearman (1931):

Creativity is the power of the 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.

David Ausubel (1963):

Creativity is a generalized constellation of intellectual abilities, personality variables and problem-solving traits.

M.J. Levin (1978):

Creativity is the ability to discover new solutions to problems or to produce new ideas, inventions or works of art. It is a special form of thinking, a way of viewing the world and interacting with it in a manner different from that of the general population.

Paplia and Olds (1987):

Creativity is the ability to see things in a new and unusual light, to see problems that no one else may even realize exist, and then to come up with new, unusual, and effective solutions.

Wilson, Guilford and Christensen (1974):

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.

Stein (1974):

Creativity is a process which results in novel work that is accepted as tenable to useful or satisfying to a group of people at some point in time.

There seems, however, to be considerable lack of agreement among these scholars regarding the true nature and concept of creativity—its process as well as its product. Some of them consider it to be purely a function of the mind, a component of the congnitive behaviour while Ausuble and others maintain it to be an attribute of the person as a whole involving his total behaviour and functioning of his whole personality. Some like Stein use a cultural frame of reference and opine that besides being novel, a creative product must be useful from the cultural and social angles while yet others view it in a personal frame and hold that:

> a product may be a creative one if it is new or novel to the individual involved, if it is his creation, if it is expressive of himself rather than dictated by someone else. It need to neither useful nor unique. Its social recognition and cultural impact may be zero, but if it is a unique personal experience, it is creative (Maslow, 1970 quoted by Telford & Sawrey, 1977).

By assigning the characteristic of "a unique personal experience" to the creative product, the scope has been so widened as to include any novel idea or thing including the rearrangement or reshaping of already existing and known ones. The definitions given above have considered creativity both as a process and a product, the thought as well as its result, but the central, essential condition of novelty or newness in the creation has not been overlooked by any one. By incorporating all these viewpoints, we may describe *creativity as the capacity or ability of an individual to create, discover, or produce a new or novel idea or object, including the rearrangement or reshaping of what is already known to him which proves to be a unique personal experience.*

Nature and Characteristics of Creativity

Creativity as a unique and novel personal experience, and on the basis of the experiences and findings of the various scholars, may be said to possess the following characteristics:

Creativity is universal. Creativity is not confined to any individual, groups of individuals, caste, colour or creed. It is universal and is not bound by the barriers of age, location or culture. Everyone of us possesses and is capable of demonstrating creativity to some degree.

Creativity is innate as well as acquired. Although many research findings and incidents favour the suggestion that creativity is a God-given gift and natural endowment, the influence of cultural background, experiences, education and training in the nurturing of creativity cannot be ruled out. Therefore, one's creativity may be correctly said to be a function of natural endowment as well as its nurturing.

Creativity produces something new or novel. Creativity denotes the ability of a person to produce something new or novel, but this novelty or newness does not necessarily imply the production of a totally new idea or object which has never been experienced or has never existed before. To make a fresh and novel combination of existing separate elements or to reshape or rearrange the already known facts and principles or to reform or modify previously known techniques, are as much acts of creative expression as the discovery of a new element in chemistry or a new formula in mathematics. The only precondition for naming an expression as creative is that it should not be repetition or reproduction of what has already been experienced or learned by an individual.

Creativity is adventurous and open thinking. Creativity is a departure from the stereotyped, rigid and closed thinking. It encourages and demands complete freedom to accept and express the multiplicity of responses, choices and lines of action. It is a kind of adventurous thinking, calling a person to come out in the open to express himself according to his will and to function unrestricted by routine or previous practice.

Creativity is a means as well as end in itself. Creativity as an urge inspires and persuades the individual to create something unique and thus acts as an impetus

for expression. This creative expression proves to be a source of joy and satisfaction to the creator. No one other than the creator can experience the warmth, happiness and satisfaction which he receives through his creation. Creation is a source of happiness and a reward in itself. The creator expresses himself as fully as possible through his creation and has his own perceptions about his creation. It is, therefore, not essential that a creative work would arouse the same feelings or give the same joy and satisfaction in others as is experienced by the creator himself.

Creativity carries ego involvement. There is complete involvement of one's ego in the creative expression. One's individuality and identity are totally merged in one's creation. One's style of functioning, philosophy of life and personality may be clearly reflected in his creation be it a work of art, or a piece of writing, etc. The creator takes pride in his creation and hence makes ego involved statements like, "it is my creation", "I have solved this problem", "it is my idea", etc.

Creativity has a wide scope. Creative expression is not restricted by any limits or boundaries. It covers all fields and activities of human life, in any of which one is able to demonstrate creativity by expressing or producing a new idea or object. It is not restricted to scientific inventions and discoveries or the production of works of art but covers multifarious human accomplishments like the composition of poems; writing of stories and plays, performance in the fields of dance, music, painting, sculpture, political and social leadership, business, teaching and other professions as also the mundane activities of daily life.

Creativity and intelligence do not necessarily go hand-in-hand. Research findings and observations have demonstrated that there is no positive correlation between creativity and intelligence. One is not the essential or necessary prerequisite of the other. Those found scoring high on intelligence tests may demonstrate little or no signs of creativity whereas individuals performing poorly in intelligence tests may sometimes create something very original.

Taking a consolidated view of the researches conducted on this issue, we may conclude that although intelligence and the creativity component of one's personality can function independently, a certain minimum level of intelligence is a necessary precondition for successful creative expression. Were it not so, a person of below average mental ability like a moron or an idiot could also be creative; but in actual-life situations we hardly come across any such instances. Conversely, although creative people generally tend to be relatively intelligent, beyond a certain level, a higher I.Q. does not necessarily predict creativity. In other words, as Kitano and Kirby (1986) state: "*an individual can be extremely bright but uncreative, or highly creative but not necessarily intellectually gifted*". Therefore, no clear relationship has been seen to exist between intelligence and creativity.

Creativity rests more on divergent thinking than on covergent thinking. Divergent thinking involves a broad scanning operation, enabling a person to evolve a general multiple possible solution and hence it is put into use when one is confronted with a problem which has many possible solutions. (Convergent

thinking, on the other hand, requires a narrowing process leading the individual to pin point the one most appropriate solution or response.) It is involved with situations, which require the production of only one correct solution or answer as for example, a multiple-choice test.

Divergent thinking has been considered to be more characteristic of highly creative individuals rather than of those not rated as being highly creative. That is why, in the tests designed to test creativity one is required to list as many uses as possible for some common article such as a knife or a brick, provide as many solutions of a problem as possible, give as many innovative combinations as possible, etc. Tests of this kind, requiring divergent thinking are, therefore, scored for divergence, i.e. the number, diversity and uniqueness of the responses and not for the convergent outcomes in the form of one single correct answer as is usually done in tests of intelligence.

Creativity cannot be separated from intelligence. In spite of the fact that intelligence or creativity may function independently and creativity involves more of divergent thinking as opposed to the convergent thinking employed in the demonstration of intelligence, it is not possible to entirely separate creativity from intelligence. This is because thinking is neither purely divergent nor purely convergent and always has elements of both which are simultaneously involved in the creative and the intellectual process. It, therefore, follows that when a person is considered to be creative, he has to have a minimum level of intelligence certainly above the average.

Creativity and school achievement are not correlated. No significant correlation has been observed between an individual's creative talent and his school performance. One may be creative but score quite low on achievement tests and, similarly, a topper in school or in the Board examination may show little or no creative output. The reason for this is that in the usual achievement testing, assessment is done in terms of the quality of reproduction of the informational input while the creativity testing requires greater output than the input in terms of formal as well informal teaching.

Sociability and creativity are negatively correlated. Creativity requires creative individual to be more sensitive to the demands of a problem than the evaluation of his social environment. The creative individual is more inner—than outer-orientated. He likes to utilize his energy and potential more for the satisfaction of his creative urge than to care for the pleasant security of positive peer approval. It is for this reason that the creative individuals are usually not very sociable.

Creativity and anxiety often go together. It has been noted that creative people demonstrate an above average state of anxiety. However, the anxiety of the creative individual is quite different from that of the neurotic individual with a disturbed personality. The high anxiety of the creative individual may be the result of his craving for the satisfaction of his creative urge and discontent with his status or rate of progress in attaining his creative motive. But creative individuals are quite capable of keeping their anxiety within manageable limits and directing it into productive channels.

The Creative Person

The creativity aspect can also be discussed on the basis of those personality characteristics of the creatives which distinguish them from the non-creatives. A number of researches have been done in this area and consequently different researchers have presented different lists of personality traits attributed to the creative persons. Reference in this connection may be made to the studies conducted by Cattell (1968), Torrance (1962), MacKinnon (1962) and Foster (1971), etc. These studies alongwith other personality studies have brought out the following behaviour characteristics or personality traits of a potentially creative individual:

1. Originality of ideas and expression.
2. Adaptability and a sense of adventure.
3. Good memory and general knowledge.
4. A high degree of awareness, enthusiasm and concentration.
5. An investigative and curious nature.
6. Lack of tolerance for boredom, ambiguity and discomfort.
7. Foresight.
8. The ability to take independent decisions.
9. An ambitious nature and interest in vague, even silly ideas.
10. An open mind with preference for complexity, asymmetry and incompleteness.
11. A high degree of sensitivity towards problems.
12. Fluency of expression.
13. Flexibility in thought, perception and action.
14. Ability to transfer learning or training from one situation to another.
15. A creative imagination.
16. Diversity and divergence of thought even in convergent and stereotype situations.
17. Ability to elaborate, to work out the details of an idea or a plan.
18. Absence of the fear of and even attraction to the unknown, the mysterious and the unexplained.
19. Enthusiasm for novelty of design and even of solution of problems.
20. Pride in creation.
21. Peace with his own self so that he has more time for creative pursuits.
22. High aesthetic values and a good aesthetic judgement.

23. Self-respect, self-discipline and a keen sense of justice.
24. Ebullient and easy nature with a relaxed attitude.
25. Awareness of obligations and responsibilities.
26. Ability to accept tentativeness and to tolerate and integrate the opposites.
27. Patterns of thought different from those of the less creative, particularly during creative activity.
28. Respect for the opinions of others and acceptance of disagreement and opinions different from one's own.
29. Spontaneity and ease of expression.
30. The capacity to fantasize and daydream.

Identification of Creative Potential

Although every one of us is endowed with some aspects of creativity, its distribution is neither equal nor universal and some individuals have greater creative potential than others. How can such high creative talent be recognized? Researches in this regard have established that creativity is not necessarily accompanied by a high level of intelligence. Guilford (1959) has clearly made the distinction by proposing the concept of convergent and divergent thinking, the latter being closely associated with creative thinking. Similarly, Getzels and Jackson (1962) have successfully argued that creativity was far more independent of I.Q., especially at the upper levels. Therefore, a genius or a gifted person may not have a very high I.Q. as creativity in its many shapes and forms is an expression of giftedness, and not of a high degree of intelligence. How then, can the creative individuals be identified.

Behaviour as we know is expressed through its cognitive, conative and effective components and creative behaviour is no exception. Consequently, an individual is creative to the extent to which he can demonstrate creative potential in his thinking, actions and feelings. For a total assessment of creative behaviour, we have to apply a multi-dimensional approach involving the use of the available creative tests and the multiple non-testing devices like observation, interview, rating scale, personality, inventory, situational tests, interest inventories, attitude scales, aptitude tests, value schedules and projective techniques etc. The characteristics and personality traists of the creatives mentioned earlier may also serve the purpose by providing reliable indications for the identification of creative potential which may be further verified by comparing the performance with standardized creativity tests.

Creativity Tests

Creativity tests may be used in the identification of the creatives in the same way as intelligence tests are used for the assessment of intelligence. There are many standardized tests available for this purpose in India and abroad. Some of these are now enumerated.

- *The tests standardized abroad*

1. Minnesota tests of creative thinking.

2. Guilford's divergent thinking instruments.
3. Remote association tests.
4. Wallach and Kogan creativity instruments.
5. A.C. test of creative ability.
6. Torrance tests of creative thinking.

- *The tests standardized in India*

1. Baqer Mehdi's tests of creative thinking (Hindi/English).
2. Passi's tests of creativity.
3. Sharma's divergent production abilities test.
4. Saxena's tests of creativity.

Creativity is a complex blend of a number of abilities and traits, and hence all the creative tests mentioned above attempt to measure several dimensions of one's creative behaviour through their test items—verbal and non-verbal. The factors or dimensions of creativity commonly measured through these tests are: (a) fluency, (b) flexibility, (c) originality, (d) unusual responses, (e) resistance to premature closure and (f) elaboration, etc.

Let us now try to illustrate components and functioning of the creative tests with the help of two creative tests, one developed abroad and the other in India.

Torrance Tests of Creative Thinking

Creativity tests developed by E. Paul Torrance, the eminent American psychologist, cover both verbal and non-verbal activities performed by the subjects and are claimed to be successfully used from kindergarten to graduate school. For testing the non-verbal performance, Torrance has developed Torrance test of creative thinking (figural forms A and B) and for the verbal performance, the Torrance test of creative thinking (verbal forms A and B).

Forms B are the equivalent alternatives of the forms A of these tests.

The figural forms (employed as a non-verbal testing device) make use of tasks that require drawing and picturization. The activities required in the non-verbal sub-tests are of the following nature:

- *Figure or picture completion test.* In this sub-test there are some incomplete figures (as shown in Figure 18.1). The subject is asked to complete these figures by adding new dimensions or lines for providing new ideas. He is also asked to give suitable titles for the completed figures or pictures.
- *Picture or figural construction test.* In this sub-test, the subject is provided with a piece of coloured paper cut in a curved shape and asked to think of a figure or picture of which this piece of paper may be a part. He is allowed to add new ideas to make this figure as interesting and meaningful as possible. He is also asked to provide a suitable title for this figure or picture.
- *Parallel lines test.* In this sub-test there are several pairs of straight lines. The subject is required to draw as many objects or pictures by

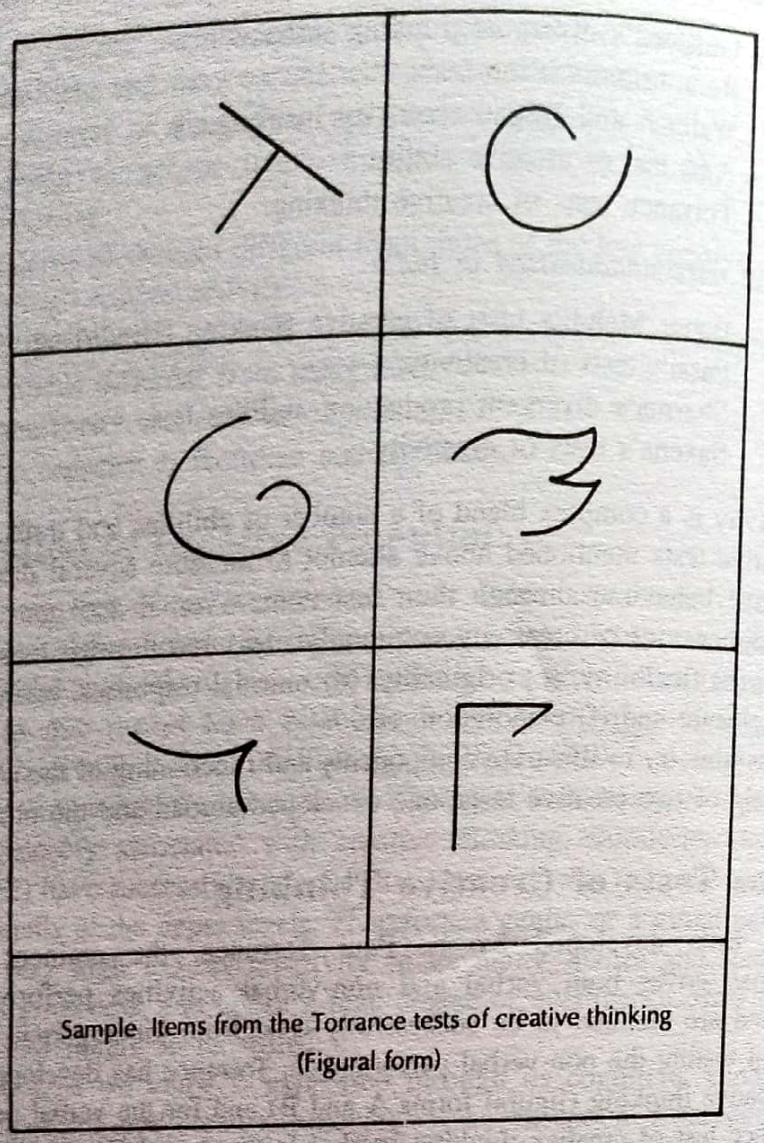


Figure 18.1 Creativity picture completion test.

using each pair. He is also asked to provide a title for each of his drawings.

The verbal forms (employed as a verbal testing device) incorporate tasks which require the use of language. The subject is required to provide written responses to the questions put to him. The verbal activities asked to be performed are of the following nature:

- *Asking type.* In asking type of activities, the subject is encouraged to reveal his ability to perceive all things which are not normally perceived by others. The help of some pictures may be taken for this purpose. In these activities the subject may also be asked questions that would enable him to fill in the gaps in his knowledge.
- *Guess causes and guess consequences type.* Both these guessing type activities are aimed at revealing the subject's ability to formulate hypotheses concerning cause and effect. While being presented with a picture, the subject may be asked to guess what lies behind the situation in the picture and what its consequences may be.

- *Product-improvement type.* In these activities, the subject is asked to suggest ways and means of improving a toy, a machine or some other such product to make it as interesting and useful as possible.
- *Unusual uses type.* These devices are meant to test the subject's divergent thinking about the number of ways in which a product may be used. Here the subject has to enumerate as many unusual uses as he can think of, for instance, in how many unusual ways can a knife or brick be used?
- *Unusual questions type.* In these activities, the subject is required to ask as many unusual questions as he can about a picture, scene or verbal description.
- *Just suppose type.* In these activities, the subject is required to predict the outcomes of unusual situations, e.g., what would have happened had you been provided with another set of eyes at the back of your head?

All the activities mentioned above, both on figural and verbal forms, are evaluated in terms of the creative abilities such as originality, fluency, flexibility and elaboration, etc. An overall high score on the various sub-tests of the Torrance creative test gives the tester an idea of the overall creative potential of his subject. However, for a more reliable and valid appraisal of creative potential, one has to take recourse to other non-testing devices and personality assessment measures.

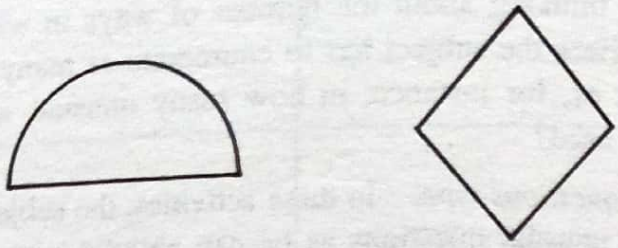
Baqer Mehdi's Verbal and Non-verbal Tests of Creativity

This test, developed by Dr. Baqer Mehdi has been published by the National Psychological Corporation, Agra. It consists of four verbal and three non-verbal sub-tests. The verbal and non-verbal forms are also available separately.

- *Consequence test* (Time allowed 12 minutes). Think for the following situations as many consequences as possible:
  1. What would happen if man could fly like the birds?
  2. What would happen if our schools had wheels?
  3. What would happen if man did not have any need for food?
- *Unusual uses test* (Time allowed 15 minutes). Write as many novel, interesting and unusual uses for the objects as you can think of, viz., a piece of stone, a wooden stick, water.
- *New relationship test* (Time allowed 15 minutes). Think of as many relationships between the following pairs of words, as possible:
  1. Tree, house.
  2. Chair, ladder.
  3. Air, water.
- *Product improvement test* (Time allowed 6 minutes). Suppose you start with a toy horse. Think of as many new things or features to make it more useful and interesting.

The non-verbal sub-tests

- *Picture construction test* (Time allowed 20 minutes). In Figure 18.2, there are two simple geometrical figures, viz., a semicircle and a rhombus.



(a) A semi-cricle (b) A rhombus

Figure 18.2 Creativity picture construction test: (a) A semicircle, and (b) A rhombus.

You have to construct and elaborate pictures using each figure as an integral part. For each picture, you have to give a separate title.

- *Line figures completion test* (Time allowed 15 minutes). Ten incomplete line drawings are shown in Figure 18.3. You are required to draw meaningful and interesting pictures using each of them and also give appropriate titles.

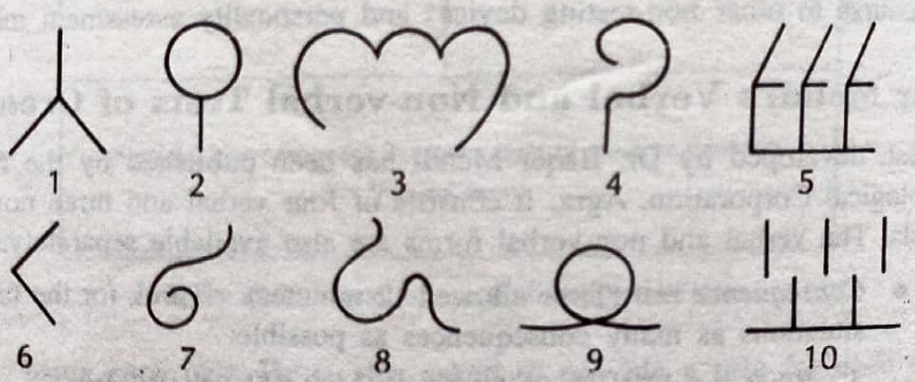


Figure 18.3 Creativity line figures completion test.

- *Picture construction test* (Time allowed 10 minutes). Seven triangles and seven ellipses are shown. You are required to construct different meaningful and interesting pictures by using these figures in multiple associations.

Nurturing and Stimulation of Creativity

Creativity, as a natural endowment, needs stimulation and nourishment. Most creative talent, unless it is given proper training, education and opportunities for expression, is wasted. Moreover, creativity as we have emphasized earlier, though not equal, is universal. It is not the monopoly of a few geniuses only. Every one of us possesses some creative abilities and it is not only the geniuses who are needed to create, manifest and produce.

It becomes essential, therefore, for teachers as well as parents to realize the need of creating an environment conducive to full growth and development of the

creative abilities of children. Proper stimulation and nurturing of the traits which help to develop creativity, namely, originality, flexibility, ideational fluency, divergent thinking, self-confidence, persistence, sensitiveness, ability to see relationship and make associations etc. are essential for this and may be achieved through the following practices.

1. ***Freedom to respond.*** Most often teachers and parents expect routine, fixed responses from children and thus kill the creative spark by breeding conformity and passivity. We should allow adequate freedom to our children in responding to a situation. They should be encouraged to think out as many ideas as they can for the solution of a problem. We must also let them have their own way when they need a particular kind of novel expression strongly enough.

2. ***Opportunity for ego involvement.*** Feeling like 'this is my creation', 'I have solved it', give much satisfaction to children. Actually, a child can be expected to put in determined efforts into creative activities only when his ego is involved, i.e. when he feels that a particular creative work is the outcome of his efforts. We should, therefore, provide opportunities to children to derive satisfaction from identifying themselves as the cause of a product.

3. ***Encouraging originality and flexibility.*** Originality on the part of children in any form should be encouraged. Passive submission to the facts, unquestioning mimicry, and memorization by rote discourage creative expression and should, therefore, be checked as far as possible. If children seek to change their methods of learning a task or solving a problem, they should be encouraged to do so. Adequate training can also be given by making them answer problems like: how would you dig the earth if you don't have a spade or, how would you draw an angle if you do not have a proper instrument for drawing it or, how would you cross a river if there is no bridge over it?

4. ***Removal of hesitation and fear.*** In countries like India, there seems to be a great hesitation mixed with a sense of inferiority and fear in taking the initiative for creative expression. We, generally come across comments like "I know what I mean, but I cannot write (or speak) before others". The causes of such diffidence and fear should be discovered and removed as far as possible. The teachers and parents should encourage and persuade such children to express themselves by saying or writing something, anything, no matter how crude it may be.

5. ***Providing appropriate opportunities and atmosphere for creative expression.*** A healthy atmosphere, favourable for creative thinking and expression is essential for the stimulation and nourishment of creativity among children. The rate of learning must be balanced with its application, passive receptivity with challenging productivity, stable certainty with daring and adventure. The child should never be snubbed for his curiosity and creativity. There is need of a sympathetic atmosphere in school and at home. Cocurricular activities in school can be used for providing opportunities for creative expression. Religious festivals, and social get-togethers, exhibitions etc., can also provide the opportunity for creative expression. Even regular class-work can be arranged in such a way as to stimulate and develop creative thinking among children.

6. *Developing healthy habits among children.* Industriousness persistence, self-reliance and self-confidence are some of the qualities that are helpful in creative output. Children should, therefore, be helped to imbibe these qualities. Moreover, they should be encouraged to stand up against criticism of their creative expression. They should be made to feel that whatever they create is unique and expresses what they desire to express.

7. *Using the creative resources of the community.* Children should be made to visit the centre of art, scientific, and industrial creative work. This may stimulate and inspire them for creative work. Creative artists, scientists and creative persons from different fields may also be occasionally invited to the school to interact with the children in an effort to enhance the scope of knowledge of our children and kindle the spark of creativity in them.

8. *Avoidance of blocks to creative thinking.* Factors like conservation, faulty methods of teaching, unsympathetic treatment, fixed and rigid habits of work, anxiety and frustration, excessively high standards of achievement for low levels of work, over-emphasis on school marks, authoritarian attitude of teachers and parents etc., are known to be detrimental to the growth of creativity among children. As far as possible, parents and teachers should, therefore, try to avoid such factors in upbringing and educating the children.

9. *Proper organisation of the curriculum.* Learning experiences in the form of curricula should be so designed as to foster creativity among children. For this purpose, the school curriculum should be organized primarily on the basis of concepts rather than facts. It should also cater to the individual needs of each student rather than to the generalized needs of all students. It should also follow the general philosophy that truth is something to be sought after rather than something to be revealed. It should be quite flexible and make provision for studying and working without the threat of evaluation. In a nutshell, the curriculum should reflect what is expected from the creative children in terms of fluency, flexibility, originality, divergent thinking, inventiveness and elaboration etc.

10. *Reform in the evaluation system.* Our education system is totally examination oriented and appropriate reform must, therefore, be made in our evaluation system if creativity is to be nurtured. The emphasis on memorization by rote, fixed and rigid single responses, and convergent thinking etc. which kills creativity of the children should be abandoned and a proper evaluation system adopted for encouraging complete and balanced experiences in developing their creative behaviour.

11. *Use of special techniques for fostering creativity.* Researchers in the field of creativity have suggested special techniques and methods for fostering creativity among children. A few of these are:

(a) *Brainstorming.* Brainstorming is a strategy or technique for allowing a group to explore ideas without judgment or censure. In practice, the children may be asked to sit in a group for solving a problem and attacking it without any inhibition from many angles: in fact, literally

storming it with a number of possible ideas and solutions. To start with, the students may be provided with a focus e.g., a particular problem like 'student unrest', or the growing unemployment in India, or how to check truancy in our school, etc. The students are then asked to suggest ideas as rapidly as possible and the following norms are observed:

(i) All ideas are encouraged and appreciated, therefore, no criticism is allowed during the brainstorming session.

(ii) Students are encouraged to come out with as many ideas as possible, even unusual and unorthodox ones.

(iii) They are not restricted to new ideas only but are also encouraged to enlarge upon ideas put forward by fellow students.

(iv) No evaluation or comment of any sort is to be made until the session is over. At the end of the session, all the ideas received (preferably written on the blackboard) should be discussed in a free, frank and open environment and the most viable ideas accepted for solution of the problem in hand.

(b) *Use of teaching models.* Some of the teaching models developed by educationists may prove quite beneficial in developing creativity among children. For example, Bruner's concept attainment model helps in developing creativity in children for the attainment of various concepts. Similarly, Suchman's inquiry training model is very helpful in developing creativity among children in addition to imparting training in the acquisition of scientific inquiry skills.

(c) *Use of gaming technique.* Gaming techniques, in a playful spirit, help the children in the development of creative traits. These techniques provide valuable learning experiences in a relaxed, spontaneous and evaluative situation. Both verbal and non-verbal stimulus material is used in such techniques. For instance, in verbal transaction of ideas, children may be asked to name all the round things they can think of, tell all the different ways a knife may be used, or all the ways in which a cat and a dog are alike.

In non-verbal transactions the children may be asked to build a cube, construct or complete a picture, draw and build patterns, interpret the patterns of drawings and sketches, and build or construct something or anything out of the raw material given to them.

12. ***Teaching by example.*** There is truth in the saying that example is better than precept. Children are very imitative. The teachers and parents, who themselves follow the beaten track and do not show any originality for fear of being wrong or never experience the excitement of creating or doing something new, fail to stimulate creativity among the children in their charge. The teachers and parents must, therefore, themselves develop the habit of creative thinking. They should learn to believe in change, novelty and originality, and themselves experience the creative process. Their behaviour and style of teaching must reflect their love of creativity. Then, and only then, they can inspire the children to be creative.