CHAPTER - I
INTRODUCTION

Research literature in the area of creative thinking made it clear that although sporadic reports can be found on the topic as early as 1898, yet sustained efforts by research workers are of recent origin (Torrance, 1962). From the first quarter of this century our understanding about the creative thinking started increasing. Educationists took great interest in creative thinking around 1950. It has become a coveted topic of research interest now-a-days.

Creative thinking became an object of scientific study primarily because of the general interest in individual difference. In the era of disenchantment with IQ tests, measures of creativity have quickly become fashionable substitutes. Great efforts have been made now-a-days to study creative thinking, its measurement and its possible development. As a result of these studies many important aspects of creativity have come out. Significant contributions to this field are of Guilford and his associates at the university of California, Getzel and Jackson at Chicago, Torrance at Minnesota and Taylor at Utah. Still many more research are carried on.
Like many other concepts, educationists and psychologists do not have a consensus about the definition and meaning of creative thinking. But the recent trend is to accept creativity as a multi-dimensional ability which is complex, universal human attribute manifested by the cognitive process and is differentially distributed among different people. The ability to see novel relationships, to produce unusual ideas and solutions to given problems is generally accepted as creative thinking.

Torrance (1962, 1966) defined creative thinking as the process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies and so forth, identifying the difficulty, searching for solutions, making guesses or formulating hypotheses about the deficiencies, testing and retesting these hypotheses and finally communicating the results. Guilford (1957) while discussing structure of intellect defined creativity as divergent production ability and worked out factor of fluency, flexibility, originality, elaboration and redefinition constituting the concept of creative thinking. Creative performance is more critically dependent upon the operation of divergent production and product of transformation. All investigators recognized that creative thought was rather unique expression and utilization of acquired facts and knowledge. The classic study of Getzels and Jackson (1962) concluded that creative thought develops from the elaboration of various fantasies that are closely related to day dreaming and
child like play with ideas, the creative person tends to be one who is open to and accepting of freely rising ideas, whereas the noncreative individuals tends to supress them. It is also important to note that although divergent thought processes such as fantasy may result in originality of ideas, the essential criterion for creative thinking is one that demands both original and relevant problem solving responses that eventually result in the development of new or unique products and ideas.

Considerable research has shown that the unique aspects of creative thinking do involve cognitive processes and operations but are also dependent on the concomitant development and utilization of related personality function such as feeling and affect. In other words, creativity can be looked upon as one aspects of cognitive functioning (divergent) thinking or as an interaction of both cognitive and affective (e.g. open mindedness, self confidence etc) functioning. A summarization of major creative thinking process would include imagination, fantasy, originality, reverie, playfulness creative language. It is expressed through original discoveries, new innovations, unconventional approaches to problems, in systematic and organised ways. Guilford and Hoepfner (1971) have discussed eight major hypothesis to describe creative thinking viz. sensitivity to problems, fluency, flexibility, originality, analysis, synthesis, redefinition and penetration. Isaksen & Treffinger (1985) define creative thinking as making and communicating meaningful new
connections, thinking of many possibilities, thinking and experiencing in various ways and using different points of view, thinking of new and unusual possibilities and generating and selecting alternatives. Roger (1970) described creative thinking as the emergence in action of a novel relational product, growing out of the uniqueness of the individual on the one hand and the materials, events, people or circumstances of his life on the other. Parnes (1972) put emphasis on uniqueness of creativity. He described creativity in behaviouristic term as discriminative, manipulative and evaluative. In other words, creativity is a function of knowledge, imagination and evaluation. Parnes elaborates this point further. He maintains that we have to manipulate knowledge by combining and rearranging the facts into new patterns, i.e. new ideas. He thinks that the essence of the concept of creativity is new and relevant associations of thoughts, facts, ideas etc. Parnes believes that the person's creativity depends on one's ability to interrelate not only what one already has accumulated, but also the new data which are constantly drawing in through the different senses. The effectiveness of creative productivity also depends on the evaluation and development of embryonic ideas into usable ideas. Without the ability to synthesize, evaluate and develop our ideas, we achieve no effective creativity (Parnes, 1976).

Ausubel (1963a) believed that we should use creative thinking to refer to "rare and unique talent in a particular field of endeavour". He further states creative achievement reflect a
rare capacity for developing insights, sensitivities, and appreciation in a circumscribed content area of intellectual or artistic activity. According to him the creative individual who embodies this capacity is by definition, an uncommon individual much rarer than the intelligent person. Creativity is the obtaining of new combination of processes of attributes that are novel to the creator.

The mental processes involved in creative thinking are becoming more clearly understood. Mental processes and thinking vary according to brain hemispheric function, development and use. Bogen (1969) has summarized the research showing that the left side of the brain is largely concerned with propositional-logical thought processes such as language and mathematics, while the other side of the brain is given to appositional, imaginative, visual-spatial perceptual processes. Related studies by Deikman (1971) also conclude that there are two major modes of human consciousness: the active muscular-manipulative mode and another "receptive" mode of equal importance. Whereas the left brain functions and the active muscle systems are usually concerned with comparing, relating, and manipulating the environment, "the receptive" system is a far more open one, with diffuse attention, decreased boundary perception sensory impressionism, and paralogical thought processes in operation.

It appears that creative thinking demands the development and fullest integration of both sides of our brain. Many
psychologists have also pointed out that creative thinking is uniquely human function to be treasured and developed to the fullest possible extent. William James (1890) recognised creative constructiveness as a human instinct-rooted in our biological nature. More recently, Maslow (1962) argued that the essential inner nature of human beings is instinctoid and shows itself in creative inclinations, propensities, tendencies, and potentialities that are shaped by life and education. Maslow described a different form of human cognitive functioning, which he named B-cognition. In this form of cognition, experience and objects tend to be perceived as a whole and complete units, some of creative processes involved include spontaneity, courage perspicuity, integration and self acceptance.

A summary of the major creative thinking processes would include the following operations. (1) Imagination means the ability to form new mental images and concepts (2) Fantasy is the ability to creat wishful ingenious, visionary thoughts and images, (3) originality is the ability to think in novel, independent, divergent, flexible, or transformational ways, (4) Reverie means the ability to enter a state of dreamy, intutive, inspirational reflection or meditation, (5) Playfulness is the ability to move and act in an open, frolicking, delightful, or humorous way (6) creative language means the ability to use language forms to express associative, symbolic, or allegorical- metaphorical ideas and relationships.
It can be readily seen that these kinds of mental abilities are ones that are generally found in young children before they are unduly conditioned by their culture.

Many educators and psychologists such as Maslow (1971) have reminded us that we should become more interested in the creative process itself than in the product alone. Therefore it has been suggested that the schools give more attention to the inspirational phase of creativity, helping children to look within themselves to develop their unconscious processes such as fantasy and imagination.

One of the fundamental facts about creative process is that it is concerned with thinking process. Guilford (1973) have therefore sought to isolate the special abilities conducive to the creative products. In their model of intellect these abilities fall within the domain of divergent products. In other words, he described thinking as the divergent thinking which includes expressive word, ideational and associational fluency spontaneous and adaptive flexibility, originality, sensitivity to problems and redefinition. Convergent thinking produces the similar correct answer whereas the divergent thinking produces a variety of responses. According to him fluency, flexibility, elaboration originality are four factors of personality which constitute creative or divergent thinking. Divergent thinking call into play the ability to think up a number of solutions or ideas (Fluency), the ability to
think up different directions and approaches (flexibility), the ability to think up unusual solutions (originality) and the ability to think up complete details of an item (elaboration). Divergent thinking enhances ones sensitivity to problems, enables one to think beyond the life space, making the strange familiar and the familiar strange. The ability to restructure one's psychological 'set' in thinking and the creation of conducive climate are prerequisites for creative and productive thinking.

Guilford (1962) is of the opinion that creativity involves mainly the use of divergent production abilities which enable a person to think in different directions and find out new solutions to the problems.

Extensive studies of the creative process indicate that there are several sources or determinants involved (Kretch and Crutchfield, 1958). The first of these is the nature of the stimulus pattern, with its unique spatial and organizational qualities. The second determining factor is the specific fund of acquired knowledge that the perceiver brings to the situation. The third and most important factor appears to be the personality structure of the person involved, the open-minded and flexible person will more readily play with and combine the various possible components and therefore be more likely to come up with a new and unique production than a person who is closed minded or narrow in perceptual approach.
Of course facts, knowledge and technical skills are important in creative thinking and no amount of flexibility or open-mindedness can substitute for these basic requisites. But too many fact can actually constrict and narrow one's creative approach to thinking and problem solving. Most person's have a substantial fund of factual information on which to build but lack the flexible personality attributes and receptive attitude necessary to allow their creative processes to be exercised. Bloomfield et al (1975) conclude that creative thought actually arises spontaneously from a centre deep within us and the closer a person comes to opening and experiencing the most quiet aspects of the thinking.

Creative thinking is a multiphasic mental ability which is amenable to change through the manipulation of environmental conditions and by systematic efforts.

On the basis of discussion on the nature of creativity, the question of its nurturance becomes an issue of paramount importance. Extensive research work on creative thinking has been done only during past 15 years. Fostering creative thinking abilities in children has also been a subject of educational concern for more than 20 years. The major educational question concerns the possibility of developing whatever creative abilities the students may have. One of the approaches to the enhancement of creative thinking stemmed from the view that it is a cognitive variable. Creative talent in children need be identified and nourished as
early as possible. Creative thinking is necessary to level up the standard of living of the people and to solve the emerging problems due to industrialization, urbanization and pollution of the environment.

Torrance (1961) reports that the most promising area if we are interested in what can be done to encourage creative talent to unfold is that of experimentation with teaching procedures, which can stimulate students to think independently to test their ideas to communicate them to others.

Earlier studies in the field of creativity focussed mainly on the identification of creative talent and the interest in deliberate efforts to develop creativity is comparatively a recent trend. Originally concerned with the development of creative abilities of personnel in business, engineering and industrial firms, the attempts to train and develop creative thinking have now become very popular in the field of Education. In other words, much early works on creativity, in gifted education dealt with the issue of nurturing creativity, and whether or not it was possible to do so. It seems very clear by now, however that improving students creative thinking and problem solving abilities are viable educational goals (Torrence, 1972, Treffinger 1980b, Feldhusen & Treffinger, 1985, Isaksen & Treffinger 1985). Learning which promotes the development of creative thinking and problem solving skill is important for a society with an emphasis on democracy and innovation.
Smith (1966) examined the conditions of creative teaching and learning and summarized his view by stating that creativity was considered as garnish or frill to the basic curriculum. Guilford (1970) also provided support for the view that the schools are the important environments to foster the deliberate development of creative learning.

A great deal of research supports the view that creative learning can be enhanced directly. Regarding children, much research has been reviewed by Torrance (1972). There is also evidence to the effectiveness of this type of learning for older students (Reese, Parnes, Treffinger & Kaltsounis, 1976). There is even some research regarding the pervasiveness and effectiveness of this type of learning in business and industry (Johanson, 1975, Basadur, 1982). Mansfied, Busse & Krepelka (1978) concluded that most evaluation studies of creativity training program seem to support the view that creativity can be trained.

Covington (1967) researched the effectiveness of creative learning and provide support for it being a central concern for education. He concluded that "The nurturing of the cognitive skills of productive thinking should assume a central place in the curriculum, not a secondary or incidental one." Training of these skills should not be subordinated to the overriding demands of subject matter acquisition as at present, but should be dealt with directly.
What we need, in short is a curriculum which nurturer the process of productive thinking in its own right and yet in such a manner as to be fully co-ordinated with the other more traditional content centered curricula.

A recent meta-analysis was conducted to examine the impact of instructional programmes across a wide range of studies. Rose and Lin (1984) reported that their results suggested that training does affect creativity. They acknowledge that creative thinking is both a skill and an innate ability. The skills can be developed and the innate abilities can be stimulated and nourished through education and training. Teaching, practice and encouragement can improve creative thinking skills. In current report on research and development in training creative thinking Davis, (1976) states that creative thinking can be promoted by the schools striving to develop a creative awareness in children.

Isaksen (1983b), Wittmer and Myrick (1974) and Torrance (1962), put emphasis on the curriculum planning and conducive environment to impart instruction. The planners noted that the supportive environment was crucial to their ability to provide these programmes. They identified a need for a frame work which would improve the school's creativity. Nisbet (1974) defined the creativity of the school as its capacity to adopt, adapt, generate or reject innovations. Thus, the term creativity is being used to indicate something more than just innovation and initiative in
reform of the educational system. It implies a flexibility of approach which has three elements: confronting problems, responding to the problems and evaluating the response to the problems. Schools should take steps to develop these capacities.

Researchers in the areas of creativity have been investigating training programmes for a number of years. A relatively large body of information has been generated and several reviews of these studies have been made. These reviews generally tend to substantiate the idea that creative thinking can be improved with training. Most planners develop their own programs. Some weave theirs into existing subject matter courses and others combine a few elements of one program with aspects of another.

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To consider the problem of nurturing creativity in greater detail however, and to illustrate new research opportunities in this field, a model of creative learning (Treffinger, 1980b, 1981, Treffinger, Osaken & Firestien, 1982, 1983) may be helpful. The model consists of three levels: Learning basic thinking tools, learning and practicing problem solving models, and dealing with real problems and challenges.
In level I, we recognize the importance of teaching students a number of fundamental 'tools' for generating and analyzing ideas, these include both divergent or creative thinking tools (such as brainstorming, attribute listing, forced relationship, etc.) and convergent or critical thinking tools (such as making inferences and deducing, deciding what information is relevant, thinking through analogies, using evidence, categorizing, etc.). In level II, students learn and practice methods in which the basic thinking tools are applied in a more complex and systematic structure. Examples of Level II activities would include practicing creative problem solving in a small group, or participating in creativity and problem solving programs. In level III, students are challenged to use the basic tools and the problems solving methods they have learned as they deal with real problems. The basic tools of critical and creative thinking should be taught and used in regular class room for many children.

Level I tools can be taught and learned and that students who learn those tools can improve their performance on measures of divergent thinking and creativity-related attitudes. Isaken (1983) and Isaksen and Parnes (1985) demonstrated that many educators and curriculum specialists are aware of level I techniques and make deliberate efforts to use them in teaching and in developing materials. The research evidence also suggests, however that the effects of 'creativity training programmes' are not uniform across
age or sex groups or over all criterion measures. Some studies report significant influence on students' fluency scores at certain grade levels, while others show influence on flexibility or originality, or significant outcomes at different grade levels. Very seldom does a general instructional programme lead to significant effects for all variables or at every grade level studied.

In the past two decades a great many education programmes aimed at modifying the development of economically deprived children have been initiated. In other words, now the focus of discussion is no longer upon the influence of social and cultural factors on creative development but on the effects of environmental disadvantage on the creative development of children.

Recently, Dash (1989) has presented a comprehensive definition of the disadvantage child as "A disadvantage child is one (a) who has been deprived of the "Rights of the child" proclaimed by the UNO's declaration of 1959 (b) who suffers from a prolonged deprivation and or a continuing inadequacy of the minimum necessary provisions for the satisfaction of biological psychological and social needs (c) who is subject to developmentally detrimental external stresses of any kind natural or manmade (d) who fails to attain optimal growth and development in physical, mental and spiritual domains and or educational and social spheres, and finally (e) who thus fails to achieve and realise his/her innate potentialities if any. In India, the term disadvantage is used to
refer to the children of the SC/ST, the urban slums, the coastal fisherman communities and a large segment of rural population.

Further the disadvantage children has been categorised into specific sub groups although categorising the disadvantage into different subgroups is not easy and sometimes becomes arbitrary and artificial.

(a) Socially disadvantaged are those who have been discriminated and denied opportunities because of their social, racial, religious and or ethnic origin, (b) economically disadvantaged are those particularly below the poverty line (c) educationally disadvantaged are those who have been denied educational opportunities, equalities and privileges (d) linguistically disadvantaged are those whose mother tongue are denied the status of medium of communication and or of instruction in the school and cultural disadvantaged are those who comes from deprived or disorganised cultural background and or those who belong to a different culture compared to the dominant and majority culture of the state or the country.

Children coming from disadvantaged background are less prepared to meet, the demands of school. So the question arises can anything be done to help them in improving their creative and academic performance? This can be done by introducing intervention programmes. The aim of intervention is to provide enriched
compensatory training to the under-achiever. Intervention, therefore means providing training through compensatory education in early years.

Children coming from impoverished background should be intervened as early as possible. Since the process of learning is a continuous one from early childhood period, it would be useful to take up children belonging to earlier age groups. Moreover, studies have shown that earlier the age for enriched stimulations, the better for children to develop. The investigators were able to boost the rate of development by providing supplementary training.

More than thirty years of research and development creativity has continued to be a topic of considerable interest and concern to educators as well as to social and behavioural scientist. In recent years, we have increasingly recognized the importance of creative productivity in talented performances in any field of endeavour. Creativity can and should continue to be developed in giftedness in any area. While substantial progress has been made in our understanding of the nature, assessment and nurture of creativity, it is still a field which offers many and varied opportunities for research and development.