Chapter 1

INTRODUCTION TO THE PROBLEM
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>General point of view</td>
<td>1</td>
</tr>
<tr>
<td>1.2</td>
<td>Need and Significance of concept of creativity</td>
<td>4</td>
</tr>
<tr>
<td>1.2.1</td>
<td>Scientific Humanism</td>
<td>4</td>
</tr>
<tr>
<td>1.2.2</td>
<td>Nature of Creativity</td>
<td>5</td>
</tr>
<tr>
<td>1.3</td>
<td>Definitions of Creativity</td>
<td>7</td>
</tr>
<tr>
<td>1.3.1</td>
<td>Real Definitions</td>
<td>8</td>
</tr>
<tr>
<td>1.3.2</td>
<td>Nominal Definitions</td>
<td>9</td>
</tr>
<tr>
<td>1.3.3</td>
<td>Operational Definitions</td>
<td>9</td>
</tr>
<tr>
<td>1.3.4</td>
<td>Ostensive Definitions</td>
<td>10</td>
</tr>
<tr>
<td>1.4</td>
<td>Assumptions for defining Creativity</td>
<td>12</td>
</tr>
<tr>
<td>1.5</td>
<td>Creativity - An American perspective in the Modern Era</td>
<td>14</td>
</tr>
<tr>
<td>1.6</td>
<td>Theories regarding the nature of Creativity</td>
<td>17</td>
</tr>
<tr>
<td>1.7</td>
<td>Components of Creativity</td>
<td>24</td>
</tr>
<tr>
<td>1.7.1</td>
<td>Levels of Psychological Functions</td>
<td>26</td>
</tr>
<tr>
<td>1.7.2</td>
<td>Types of Mental Processes</td>
<td>26</td>
</tr>
<tr>
<td>1.8</td>
<td>Stages of Creative Process</td>
<td>27</td>
</tr>
<tr>
<td>1.9</td>
<td>The Creative Product</td>
<td>35</td>
</tr>
<tr>
<td>1.9.1</td>
<td>The Qualities of a Creative Product</td>
<td>36</td>
</tr>
<tr>
<td>1.9.2</td>
<td>Classification of Products</td>
<td>38</td>
</tr>
<tr>
<td>1.10</td>
<td>Process versus Product</td>
<td>41</td>
</tr>
<tr>
<td>1.11</td>
<td>Measurement of Creativity</td>
<td>42</td>
</tr>
<tr>
<td>1.12</td>
<td>The Creative Press</td>
<td>44</td>
</tr>
<tr>
<td>1.13</td>
<td>Creativity and Education</td>
<td>46</td>
</tr>
<tr>
<td>1.14</td>
<td>The Current National Policy of Education</td>
<td>48</td>
</tr>
<tr>
<td>1.15</td>
<td>Need and Significance of the research problem</td>
<td>56</td>
</tr>
<tr>
<td>1.15.1</td>
<td>Statement of the Problem</td>
<td>56</td>
</tr>
<tr>
<td>1.15.2</td>
<td>Research Hypothesis and Null Hypothesis</td>
<td>57</td>
</tr>
<tr>
<td>1.15.3</td>
<td>Objectives of the Problem</td>
<td>58</td>
</tr>
<tr>
<td>1.15.4</td>
<td>Sample</td>
<td>58</td>
</tr>
<tr>
<td>1.15.5</td>
<td>Tools</td>
<td>58</td>
</tr>
<tr>
<td>1.15.6</td>
<td>Statistical Techniques</td>
<td>58</td>
</tr>
<tr>
<td>1.15.7</td>
<td>Definitions of the Terms used</td>
<td>58</td>
</tr>
<tr>
<td>1.16</td>
<td>Operational Definition of Creativity, accepted in the Present Study</td>
<td>61</td>
</tr>
<tr>
<td>1.17</td>
<td>Scope and the Limitations of the present Study</td>
<td>62</td>
</tr>
</tbody>
</table>
CHAPTER 1

INTRODUCTION TO THE PROBLEM

1.1 General Point Of View

“If one advances confidently in the direction of his dreams and endeavours to live the life which he has imagined he will meet with a success unexpected in common hours”. (Henery David Thoreu).

Imagination is that magnetic doorway within Man’s subtler being to vast creative realms, to which if we are sensitive and receptive through listening in, we can speak and lead us unerringly to seek and fulfill our higher purposes. It is truly awesome when one thinks of the myriad, fascinating, sensing faculties that God has built within each of us awaiting discovery, development and focus towards higher calling.

Our entire thought process and feelings are in fact, a series of photographic images which flow through the mind. All that we do, say, read, write, dream or feel evolve as thoughts in the mind. The ability to choose, control and discipline one’s imagination positively is our greatest creative power.

Creativity and imagination are those boundaries within our inner space where one can fashion forge mould and bring alive our grander dreams.
Through time, inventors, scientists, captains of the Industry, explorers, artists, philosophers poets and the common man have, at some point in their lives, become inspired with an ideal and have functioned it into a higher plane of consciousness by holding steadfast to their vision and acting creatively.

For individuals to achieve outstanding success in the echelous in any field of human endeavour, it is imperative to first tap the incredible dormant creative energy - forces within the subconscious. Today, a thorough understanding of the creative powers and operations will enable individuals to blaze trail of an altogether new awareness.

When creativity is trained with belief, desire and heightened expectancy, one can visualize and feel and achieve one’s objective.

With the advent of the new Century, sweeping changes are witnessed in almost every field, related to human endeavour. Education, which is a very vital link between Man and the outside world too, has been undergoing change and is being re-vitalised. The aim being the same, bringing forth and developing individual’s all potentialities. Thus it is placing a lot of responsibility on the teacher, who not only is an architect of the child’s destiny but is also a visionary. Some may label him as a dreamer who sees the bright rainbow of pupil’s future and helps the pupil to achieve and acquire it or at least, help him to reach the periphery of that territory. It is a very delicate task. To achieve this goal, the teacher has to take into consideration the interest, needs and motivation of each individual, which may be termed as “mental
"structures". The teacher not only has to reshape these “mental structures” but also “the physical structures” i.e. his surroundings.

This is the era of intellectual and technological revolution and to cope with the changes that will be taking place now, and in the near future, innovative thinking patterns, skills will be required. Hence a new way in the direction of thinking is sought after.

If one takes the bird’s eye-view of the educational scene in our country, it is observed that it is too rigid and stifling. The young minds are being burdened with knowledge. But the question arises “Have they really benefitted by it?” or merely they have become store houses of knowledge? Are their capabilities being put to use too? Is there enhancement in their talent? Are they the beneficiaries of the rich reservoir of knowledge and emitted cultural heritage which was the great strength of our country and which gave inspiration to the whole world.

When one has to face these questions, in the heart of our heart it is observed that the answer is certainly not positive. The young minds are not being shaped in a wrong way but not in the right direction either.

Theoretically the stress is on the education which is related to life, the education which helps the person to blossom, education which helps the person to be original and not rigid in thinking. But in reality all these minds are taken away from such a divine approach. Many kinds of excuses are given - some may be true and some lame. The educational behaviour is being rationalised
by saying that the approach lacks practicability. Whatever is
preached is not practiced. While imparting moral, ethical, spiritual
values to the students, the teachers may just become the mouth
pieces and may totally lack in giving the ideal model. But in utter
darkness a small flicker of light can be seen and which can give
hope to the country. There are various experiments which are
being conducted in the educational field. The goals and ideals
of all these experiments are the total development of the child.

1.2 Need And Significance Of Concept Of Creativity

It is a well proven fact that environment moulds the individual to
a great extent. When the child has various experiences, its
personality undergoes a great change within the framework of its
heridity. Here the teacher becomes a crucial instrument in shaping
up its personality. The school can become a window through
which a child can have a look at the world.

1.2.1 Scientific Humanism

The search for the new educational order is based on
Scientific and technical training. The term "Scientific
Humanism" is being heard often. The notion rejects any
pre-conceived subjective, abstract idea of Man. But to
inculcate the "scientific Humanism" many qualities are to
be developed. Qualities like sensitivity, creativity hold a
very important place of honour in the whole scheme of
things. One's mind has to be sensitive and should be aware
of the problems around one's surroundings. The mind not
only has to locate the problems but it has to think of the solution too. The solutions may be varied. The main objective is to displace the rigidity and instead make the young minds creative from the cradle itself. Creativity is a divine and noble attribute but mortals too, experience the existence of this noble feeling and feel exhilarated.

1.2.2 **Nature Of Creativity** -

The blossoming of Creative potentiality is directly proportional to the nature of medium and if conditions are adverse creativity may be stunted stifled or stupified. In schoolgoing children creativity can be discouraged easily. They are everready to accept role-models and expected behavioural norms at school. They are always ready to buy peace neglecting their natural talents and creative urges. But such a frustrated child is likely to grow up with a conscious and unconscious resentment against the society that has done him irreparable injustice and his repressed ability may be diverted from creation to retaliation. Thus the school or society will have to share the entire blame for destructing the divine scheme of work.

Thus it becomes essential that people who are at the helm of affairs called education, should take interest and develop the creative abilities so that a huge personal and social wastage may be reduced, with maximum benefits to the individual and the society. For obtaining the best results the talent has to grow in the best of atmosphere and under the best teachers.
Another observation is that we do not know what talent our children will need in the next thirty years of time, to come to terms with their environments. It is certain that it will be different from that which is being imparted to them to-day. Hence it is imperative that teachers, educationists, parents condition children towards flexibility. They should be taught to find new solutions to the problems. The Children should be able to find and develop a divergent way of thinking so that they can change the environment to suit their needs.

There is therefore need to re-examine and re-model the existing system of education. The talent and creative energy of children and adolescents cannot be wasted. Also it should be pointed out that the development of these young minds can not be left to the chance factor.

All these years a belief was shared among the intellectuals that the talent would find its own course. Hence the nurturing of creativity was always neglected. There are autobiographical references to the great masters in music, painting or sculpture, training their disciples the hard way but such examples are exceptions and they do not prove the rule. However in recent times American business management specialists, educationists, and psychologists took a keen interest in the area of training and creativity. The net outcome is that lots of efforts are concentrated towards enhancing creativity. Accurate identification, appropriate education and effective use of the different kinds of creative talent is the need of time.
1.3 Definitions Of Creativity

If a dictionary is more than a few years old, the chances are that it will not contain the word ‘Creativity’ at all. It will define ‘Creative’ and ‘Creativeness’ but not ‘Creativity’. Apart from the general English dictionaries the Dictionary of Psychology published by Penguin Books also does not list ‘Creativity’ but only Creative. Creativity is a neologism which has rapidly gained popularity. There is no apt definition which conveys what creativity exactly means. In fact there are as many definitions as the investigations in the subject.

According to Repucci there are about twenty six definitions of creativity and Gowan has compiled some of the definitions of creativity.²

‘All forms of creativity,’ Bruner says, ‘grow out of combined activity, a placing of things in new perspective.’

Arnold while describing engineering creativity, refers to this criterion as the combining of past experiences into new patterns into new configurations which in some manner satisfy the Creator and perhaps the society.

According to Taylor,³ it is the moulding of experiences into organizational patterns which are new and different.

For Poincare,⁴ it is the production of combinations of ordered wholes. While for Rogers, it is the emergence of novel relational products.
Ghiselin concludes from his studies of the creative work of artists, scientists musicians and writers that the most necessary requirement of creativity is that it presents a new configuration, a new constellation of meanings which have no specific precedent.

These investigations may locate connections, either in the act of perception, in intellect, in personality development or in the object, but all of them agree that it is necessary. The above statement can be refined as, creativity is both a combination of elements into new relations, and re-combining of these. This means that creativity is not merely the capacity to connect elements in a new way but to transplant these new combinations onto previously unrelated materials. It requires discovering structure inexperience instead of imposing structure upon experience or fusion of elements into new structures, rather than a mechanical arranging of them.

Miles makes the following broad distinctions, among the various definitions.³

1.3.1 **Real Definitions** -

These attempt to capture the essential meaning concerned with things for which words appear to stand. Miles takes the view that real definitions are very elusive. It is extremely difficult, if not impossible, even to explain a word in such a way that a perfect definition results. Indeed for some concepts, Miles observes, there may be no essential entity to which the concept relates. Thus to ask
what is creativity it may imply that the questioner believes that there is some attribute which corresponds to the real nature or real meaning of the word such an assumption would be at least misleading, if not mistaken.

1.3.2 Nominal Definitions -

These are concerned with the way words are typically used with particular specified uses such as -

i) Lexical that is concerned with meanings in ordinary uses.

ii) Stipulative that is concerned with how the speaker intends to use the word.

A nominal definition merely involves being aware of how creativity is used in a particular context and so avoids some of the metaphysical problems, inherent in attempting a direct answer to the question what is creativity.

1.3.3 Operational Definitions

These are concerned with meanings in terms of observable, measurable happenings.

The operational definition of creativity is frequently encountered in research studies. Normally a concept is defined by means of the operations, which are used to measure it. Similarly creativity may be defined
operationally as a score on creativity test. This sort of definition is implicit in the research reported by Getsels and Jackson, Walloch and Kogen, Hardden and Sytton and Ogilvie.

1.3.4 **Ostensive Definitions**

One more category is added to the above mentioned categories by Victor Lee et al, namely the ‘Ostensive’. This type of definition involves specifying particular instances of the general principle in question. Thus instead of defining creativity per se one could draw up list of individuals according to some consensus. Each individual in the list would be a particular instance of creativity in general. An analysis of what these individuals have in common is then presumed to indicate some of the major elements which constitute creativity.

This method is used in research reported by Anne Roe (1952) and Donald Mackinson (1962). They further add that rather than attempting to define the abstract noun ‘Creativity’ and thereby to risk making the assumption that it is an entity to which the term refers, it is better to limit oneself to a consideration of the adjective ‘Creative’.

There is a particular distinction between operational and ostensive definitions since both of these have a place in empirical research. Operational and Ostensive definitions have their own respective virtues and limitations and tend
to be relevant to different contents. Thus, an operational definition is most relevant when the definition needs to be precise and predictive. There are frequent occasions when one can identify an individual possessing a particular attribute but is not sure how the attribute itself may be measured or described. Possibly for the same reason Roe and Mackinnon identified creative individuals via a panel of experts administered tests and then hypothesised about the creative person in general.

Underlying both types of definitions, namely operational and ostensive, is the problem of the criterion or yardstick by which one can decide whether a phenomenon is to be labelled creative or not. In the field of creativity such a yardstick is a complicated issue. The subjects of Roe and Mackinnon for example were identified by a panel of experts some years ago. Would the same experts agree or uphold their precious judgements today? Possibly not. The criterion of creativity may vary not merely with the culture concerned but also with the passage of time. Obviously for such reasons many workers have restricted themselves to operational definitions of creativity to be measured by formal tests.

While definition of Creativity is an elusive subject it may further be confused by giving emphasis on the other aspect of the phenomenon concerned. In the works of Guilford and that of Mackinnon in addition to the differences that are operational and ostensive, further differences are
envisioned due to giving emphasis on one or the other aspect. Guilford is concerned with creativity as a factor of intellect whereas Mechinnon and Roe are more interested in the intuitive characteristics of creativity. The researcher has proposed the operational definition of creativity in the present research.

1.4 Assumptions For Defining Creativity

Though definition of creativity is having unlimited scope, it can be narrowed down by making some assumptions. Following are the fundamental assumptions which are implicit in all empirical enquiries into creativity.

i) Creative impulse exist in all beings

Creative capacity is not restricted only to geniuses but it also exists in lesser mortals too, albeit in attenuated form. The difference between the work of Sir Alexander Flemming who synthesised penicillin and that of Darwin who revolutionised theory of biology is one of degree and not of kind. Guilford makes it quite clear. It is a probably only a layman's idea that the Creative person is peculiarly gifted with a certain quality that ordinary individuals do not have. This conception can be dismissed by psychologists, very likely by common consent. The general conviction seems to be that all normal individuals possesses, to some degree, all mental abilities. Creative acts can therefore be expected, no matter how feeble or infrequent of almost all individuals.
The important consideration here, is the existence of requisite mental abilities. Whatever the nature of creative talent may be of those persons who are recognised as creative, merely have more of what all have.

If this assumption is accepted it has a number of consequences. The standard by which creative acts are judged must be revised and adjusted according to the age and background. This gives rise to a particular problem for teachers and parents. If qualities of creativity are not limited to exceptional adults then they must be observable at least in a rudimentary form in childhood also. What aspects of children's behaviour should be scrutinised for signs of potential creativity?

Two aspects of early child development which are remarkable for their spontaneous inventiveness are play and speech. One would decide that 'imaginative' is a more appropriate description of the creative behaviour of children. This brief consideration of the development of creative tendencies in childhood leads to a second important assumption mentioned in the next paragraph.

ii) The process of Creativity is capable of education

Researchers have clearly sought to show that creativity can be enhanced. The word 'enhanced' is in this respect a good deal better than 'taught', since it implies improvement of
what already exists. One of the underlying issue is that of the relative contributions of heredity and environment and whether or not one is prepared to accept that current findings on either side as conducive. At extreme end of the distribution curve of ability, genetic influences do appear evident but within the broad central area of the ability range where most teaching is done as the interplay between the genotype and the phenotype, becomes far more subtle. It would be ideal to deny that particular arrangement of a family environment, the particular organisation within schools and educational institutions, the application of appropriate diagnostic teachings and the certain teaching principles and methods would not have encouraging effect for greater incidence of creativity.

If this assumption is accepted then reformation of text-book adoption of such teaching methods which help in fostering creativity and re-setting of present examination system will be a matter of study.

1.5 **Creativity - An American perspective in the Modern Era**

The year 1950 should be written in golden letters in the history of creativity. This was the year when the illustrious psychologist, J.P. Guilford\(^1\) delivered his landmark inaugural address to the American Psychological Association. In his address Guilford highlighted the following facts.
"The neglect of this subject by psychologists is appalling. I examined abstracts for each year since its origin of approximately 121,000 titles listed in the past 23 years only 186 were indexed as definitely bearing on the subject of creativity."

Guilford's address gave a momentum to the movement of creativity. Interestingly Space Research in Russia also was in a way responsible for the momentum in the creative research.

Harold F. Harding⁶ (1962) stated, "We are in a brain's race with soviet Russia and the need is urgent." He has mentioned three reasons why they need a more creative trend in American Education.

a. We are not giving creativity the attention it deserves in our curricula.

b. We are now faced as never before with a world of vastly more problems and there are not nearly enough able, ready and willing solvers. Ever since the Soviets put the first Sputnik into orbit last October 4th we have been painfully aware of this fact.

c. I earnestly believe that creativity, originality and inventiveness are the prime requisites for the crucial task of training the mind which is the main business of American Education."
Victor Lowenfeld (1962) was also astonished by the progress made by Russians when he observed the Creative drawings and paintings of Russian children. He comments, “It is quite possible that the Russians intuitively know something which our own Research just now is tending to show, that a creative child is the one who has been encouraged to develop his imagination and ability, freely will bring these qualities to any work that he does. Whatever field they enter, however, they will bring to their work an open-mindedness, a free imagination, an individual approach developed not only by hard work in Russian schools, but by a teaching methodology that unfolds the creative instinct before changing it. creativity I think is a vital element which American teaching methods so far, largely overlooked.”

These references indicate how Americans became alert about developments in creativity by Russians.

General J. Puccio (1989) provided the rationale for studying creativity. After making a survey of the vast research in creativity he sights twelve commonly identified reasons for the study of creativity. They are :

- Develop human potential beyond IQ
- Rapid growth of competition in business and Industry.
- Effective use of human resources .
- Discover new and better ways to solve problems.
- Development of Society
- Builds on all disciplines
- Builds on the nature of knowledge
- Natural human phenomenon
- Important aspects of mutual health
- Growing body of interest
- Contributes to effective leadership
- Enhances learning process.

1.6 Theories Regarding The Nature Of Creativity

i) Psychoanalytic Theory: Psychoanalysts have almost restricted creativity to motivational and emotional aspects with practically nothing on intellectual aspects. They do not associate creative thinking with the unconscious, for the later is regarded as stereotyped and restrictive. Creative thinking is a function of what they call the 'pre-conscious.' Creative production is often referred to as regression to childish or a primitive modes of thinking. Sublimation is often mentioned by psychoanalysts as playing a role in creative production but there is disagreement as to the importance of this aspect and as to the exact role that it plays. Psycholoanalysts naturally have much to say regarding relations between creative thinking and methodology. For example Kubie states that neuroses, corrupts, mars, distorts and blocks creativeness.
ii) **Problem Solving Approach**

Although a comprehensive explanation of the creative process had been offered in psychoanalytic theory quite early this century, it was not until Guilford in 1950 drew the attention of psychologists to the appalling neglect of the topic that systematic investigations were renewed.

In Guilford's approach, creativity is regarded as a thinking skill which is composed of a constellation of specific sub-abilities. While Guilford's theory emphasizes the controlled use of particular thinking skills, the psychoanalytic approach emphasizes a relaxation of ego control so that ideas and impulses can rise freely into consciousness.

A similar approach to the conceptualisation of creativity and its encouragement is proposed by De Bono. Control to his theory is the premise that thought occurs as a series of patterns which gradually grow more inflexible as they are used. This theory concentrates on suggesting techniques for generating many different patterns of thought. An essential pre-requisite for such thought patterns to occur, according to De Bono, is to reduce the pre-mature judgement of unusual ideas. De Bono's approach clearly overlaps with Guilford's theory. Particularly the skills of divergent thinking since there is a common emphasis on the production of many ideas and more flexible ways of producing ideas. In both De Bono's and Guilford's theory, creativity is regarded as a thinking
skill that can be practised and improved through direct teaching.

iii) **Combinatory Processes** -

These processes have been proposed by other theorists as central in the creativity. For example, Osborn selects two processes as the essential functions of the creative imagination; one is to search for ideas and alternatives in abundance, the second is to combine together the ideas and alternatives, not new in themselves, but capable of being cooked up into that which is new. This sort of thought is explored in more depth in theories proposed by Koestler and Gordon.

Kostler maintains that thinking normally occurs in frames of reference which are the habitual methods, used to code and interpret the world around us. ‘Frame of reference’ is at the heart of the process of creativity for Koestler. The key to Gordon’s approach is the use of thinking techniques such as similes, metaphors and analogies in considering a problem.

The creative process has been considered primarily as innovative problem solving by the theorists, considered above. Although Koestler’s theory claims wider relevance to artistic, literary and even humanistic endeavours. From the perspective of a problem solving approach to the creative process Guilford’s model provides the most
comprehensive grouping of the skills involved. De Bono Koestler and Gordon suggest an additional skill for creativity to prosper namely combinatorial thought. This additional skill provides the link between the problem solving approach to creativity and the approach based on psychoanalytic theory since a psychoanalytic viewpoint of creativity highlights the interplay between conscious and unconscious or pre-conscious processes.

iv) **Transfer Theory** -

Wallas and Rossman's stages of Creative production are the marked similarity between steps in creative production and problem solving in general. A number of writers have made comments to the effect that creative production is in fact problem solving. Identifying creative production with problem solving approach means that there is something at least minimally creative about solutions to all problems. There is evidence from factor analysis by Guilford and Messifield that different kinds of problems called upon different weighted combinations of intellectual factor abilities, depending and the strategy applied by the problem solver.

v) **Association Theory** -

In terms of this theory creative thinking consists of forming new combinations of associative elements, which combinations either meet specified requirements or are in
someway useful. The more creative is the process or solution. This theory was put forward by S.A. Mednick and Martha T., Mednick\textsuperscript{12}. According to them the basic task in the creative process is to bring together, in some useful fashion, ideas which are usually remote from each other. They have quoted three mechanisms which tend to bring about such a state of affairs.

a) **Similarity** - The requisite associative elements may be evoked in continuity as a result of the similarity of the associative elements or the similarity of the stimuli eliciting these associative elements. This may occur in certain kinds of poetry, music and painting where similarities in form, in sound and in colours are very important.

b) **Mediation** - This is the most important mechanism of all the three. The requisite associative elements may be evoked in contiguity through the mediation of common elements. Poincare\textsuperscript{13}, while talking about his development of the Fuchsian functions, says that in discovering their importance he simply combined two different kinds of mathematics which happened to have a similarity in methods of transportation.

c) **Serendipity** - The requisite associative elements are evoked by the accidental, environmental, contingent appearance of appropriate stimuli. Thus two unrelated ideas may be brought together in consciousness because objects evoking these ideas co-occur accidently in the environment.
There is no question here of clinching already half-formed ideas or seeing suggestive analogies because the observed event is itself the discovery, or a strong clue to it. It comes as a surprise and it may be seen with doubt or even incredibility. In serendipity something is found that was not being looked for. It is not an intuition. Two classical examples are Columbus finding the new world while seeking the orient and Von Rontgen's discovery of X-rays which few believed at first. Serendipity is defined in three dictionaries as the gift of finding valuable things in unexpected places by sheer luck, the faculty of making happy and unexpected discoveries by accident and an assumed gift for finding valuable and agreeable things not sought for. The word serendipity was coined by Horace Wapole in 1754 after reading an ancient oriental fairy tale about three princes of Serendip. Wapole wrote 'they were always making discoveries by accidents and sagacity of things which they were not in quest of. You must observe that no discovery of a thing you are looking for' comes under this description.

In all three of these situations chance is only one factor though a vital one. It merely provides the opportunity. The scientist has to possess a fund of information of the subject concerned and an open mind to notice the clue, realize its possible significance and follow it up.

Many scientists for example, Flemming and Jenner were knowledgeable about the subject and so, were able to
recognise that what they saw was unusual inexplicable by current knowledge and therefore probably of significance. Moreover they possessed both the curiosity and the ability to investigate the phenomenon.

Carl Rogers\textsuperscript{14} (1959) and Abraham Maslow\textsuperscript{15} (1966) have developed humanistic theories of creativity. According to Rogers the creative process is the emergence in action of a novel relational product, growing out of uniqueness of the individual, on one hand and the materials events, people or circumstances of his life on the other. Humanistic Psychologists are more concerned about the quality of life, inner and outer than with the inventions or creations of product. They speak of constructive creativity, devoted to human welfare.

David Fledman\textsuperscript{16} (1989) put the cognitive developmental theory of creativity. He observed four similarities between Piagetian stage advance and creative accomplishment of all levels (1) The reaction to the solution is often one of surprise. (2) The solution once achieved, often seems oblivious (3) in working on the problem, there is often a sense of being drawn towards solution (4) The solution is irreversible once achieved. Feldman proposed that creativity may be viewed as a special case of more general intellectual advance.

Irving Taylor\textsuperscript{17} has proposed a transactional approach to creativity according to which creativity involves a variety
of processes and perceptions directed at altering or re-organising significant position of the environment in accordance with one's own personal patterns or structure, needs hypotheses, judgements and perceptions provided the alteration is unique or uncommon and relevant to a problem.

Busse and Mansfield\(^\text{18}\) (1980) have reviewed the above mentioned theories and then proposed five essential processes, identified in the generation of Creative Scientific products after studying the works of highly creative scientists, namely James Watson (Discovery of Structure of DNA) Albert Einsteен (theory of relativity) and Marie Curie (Discovery of Radium and Polonium).

These five processes are (1) Selection of a problem (2) Extended effort to solve a problem (3) Setting constraints on the solution of the problem. These constraints may be empirical, theoretical or methodological. (4) Changing the constraints (5) Verification and elaboration of constraints leading to a solution. This theory appears more significant as far as Scientific creativity is concerned.

1.7 **Components Of Creativity**

The nature of creativity has been studied from a number of viewpoints - psychological environmental, cultural, physical and Intellectual. Hallman\(^\text{19}\) has emphasized four components of creativity - (1) Person (2) Environment (3) Process (4) Product.
The Person - This component of creativity namely the person, has been explained in terms of the condition of self-actualization. Creativity from this point of view, involves a fundamental change in personality structure which occurs in the direction of fulfillment. The criterion of self-actualization in the opinion of Hallman, identifies creativity with self-formation and therefore implies that unless significant transformation occurs in personality during an activity, that activity will fall short of the creativity.

The Environment - (Press) This component of creativity namely the environment has been described by Hallman as the condition of openness which refers to those characteristics of the environment namely, the inner and outer, the personal and the social. Both these characteristics facilitate, the creative persons moving from the actual state of affairs towards solutions which are feasible and yet remained undetermined. The personal characteristic of openness include such traits as self acceptance, sensitivity, spontaneity and tolerance. The social characteristics and include all such conditions in the environment which facilitate openness and are the opposite of authoritarianism.

The process - According to Hallman inspection of the research literature indicates that at least three conceptual schemes have been devised for explaining the creative process.

The first conceives of creativity as a sequential series of stages of activity. The second as vertical levels of psychological functions and the third as types of mental processes. They agree upon one fact that segment or level of the creative process which
is invariably associated with the creation of novelty is nonrational. It lies below the surface of consciousness, it resists rational analysis, it dissolves under logical examination.

1.7.1 **Levels Of Psychological Functions**

This scheme accepts the distinction between the unconscious (or pre) and conscious functions. It asserts that though the actual creative process involves a shift in psychic levels the shift must always occur in such manner that the metaphoric fusion of elements shall transpire in the unconscious levels and be projected upwards into consciousness, each level contributes to the creative process. The unconscious supplies the surge and the power, the imagery and connectedness. The rational level provides the elaboration, the testing the Gestalt and the socially derived approvals.

Leaders of this scheme were writers from Plato to Lu Chi in ancient China to Nietzsche.

1.7.2 **Types Of Mental Processes**

According to this definition creative thinking is only one of several kinds of operations included in the higher mental processes. It is usually distinguished from other kinds of thinking largely in terms of its non rational aspects. Guilford, Mckeller, Rapport, Besitalt and Bruner make this distinction in autistic, metaphoric and the internally oriented
the spontaneous and involuntary, the integrating and unbound energies which are active in producing new connections. These differ from conscious, the inhibitory, the rational, controlled, purposive, reality oriented processes, which to be sure, play their part in creativity, but their function is one of elaboration and testing and not fusing. It is the fantasy dominated form of thought which contains clues to mind's creative capacities. These non rational processes account for the seeming effortlessness and the spontaneity of creative activity. They explain the autonomy, the quality of otherness of being visited by a demon or a voice. They account for connectedness and they account for the direction which creative movement assumes.

1.8 Stages Of Creative Process -

Graham Wallas articulated the traditional view of the creative process as four ordered stages.

A) Preparation - A conflict between the individual and his environment or friction with environmental conditions or with society leads to a problem. Preparation, is often a stage of intensive work in which the person gathers information and investigates the problem in a variety of ways. In this stage an impulse is received. It is the period in which the mind is prepared for the creative act to follow. While there is a romantic notion that creative ideas spring without efforts to the minds of truly creative, the weight
of evidence and opinion suggests that this happens very rarely. Creativity typically requires a lot of hard work - work spent in learning fundamental skills and knowledge and in exploring countless blind alleys.

B) **Incubation** - It is a stage following preparation in which a person is not consciously thinking about the problem but during which there is never the less some progress towards the solution by analysing the problem. It is, as if ideas which were first encountered during preparation are maturing. The data scored in the subconscious is explained as by a computer and a solution is sought which offers itself on the basis of similar experiments. If this is not possible, new solutions are sought by means of free association by organization and combinations of the information. The stage of incubation involves a subconscious process which is eminently important for creativity. It is a playful, right, flexible action provided that no blockages occur through fixation of thought.

C) **Illumination** - It is a stage in which a plan or idea for solving the problem is discovered. What one gets as the result of illumination is not a completely solved problem or a set of calculations completely carried out. It is however a prelude to arriving at the final stage namely verification.

D) **Verification** - It is the final stage of the Creative process in which the plan discovered during illumination is tested and carried out. The solution to the problem is analysed and translated into reality by its efficiency in use.
French Mathematician Poincare had provided some dramatic experiences of his own which illustrate these stages in the Creative process. He insisted upon the following stages.

**Preliminary Labour** - According to him this is something other than that preparatory effort which educates the inventor in the known techniques and materials of the field in which creative work would be done. It is the excitement of the unconscious mind to further work. Second stage is the advance in understanding which may be considered the crucial action of the mind in creation which Poincare denotes the central mystery with which the explanation must grapple.

Third stage as defined by him is inspiration or illumination, that is sudden spontaneous appearance of new insight accompanied by feelings of certainty which are not always valid and of aesthetic gratification.

Fourth stage according to him is verification, a term of obvious importance for a mathematician. To verify, precise and utilise, the results are all included in the last stage.

Poincare and Hadmard have agreed that these four stages adequately account for the process of mathematical creation.

Many scientists, psychologists as well as other thinkers have described this as the principal mental technique
whereby new concepts are invented. The procedure is by no means new, but it is still the most commonly used by an individual working alone. The tremendous volume of research that has been done in creative thinking over the last twenty years has not rendered this technique out of date but rather confirmed it and shown that it is a skill that can be cultivated for convenience of exposition. W.I.B. Beneridge has broken down this technique into four stages i.e. the four ‘C’s of creativity -

a) **Collection of Information** -

Information considered to be relevant or possibly relevant to the problem is collected by searching the scientific literature by observation and experiment. It is especially valuable to collect information and opinions that appear to be in conflict with one another or that challenge prevailing beliefs. Interaction and friction are conducive to creativity. Close personal contact with the problem often leads to observation of details that otherwise would be missed, also it stimulates the imagination. It may give a subconscious feeling of familiarity with the subject, an understanding that can not be recorded in objective terms.

The information is assembled systematically. The problem is clearly defined and perhaps broken down into sub problems. The objectives of the
investigation are set out in general terms. At this stage it is important to identify carefully the scientific questions that one is going to try, to answer. This determines what direction the investigation takes. The problem is sometimes solved during this stage without any radically new ideas being invoked. But if the problem is a difficult one it will have to be carried over to the next stage.

b) Contemplation - The marshalled information is carefully scrutinised from every possible point of view. It is assimilated and digested. Fransis Bacon has said, “One should first prepare the mind by clearing it of all pre conceived notions and prejudices. Each point is examined minutely in relation to the other bits of information, looking for significant associations one needs to have a strong desire for a solution a feeling of being personally involved and optimistic” Bacon said, “there is no land when they can see nothing but sea. Creative thinking requires real application and a positive attitude.”

Solutions or possible solutions to easy problems are soon found but difficult problems have to be puzzled over persistently for days, weeks or even months. The mind becomes saturated with all the relevant information and one reaches the stage when you can not get it off your mind, and whatever one is doing
it keeps hopping back into one's dreams. This is a common experience when a state of near obsession is reached, then one has a prepared mind and is ready for the next stage.

c) **Conception** - The sudden insight, the flash of illumination in which a possible solution appears, may come at any time. Sometimes when one is puzzling over the problem but more often when one has temporarily abandoned it, and is occupied with some undemanding relaxing activity. Sometimes there comes a point when the mind is stale, having been over the same ground, time and time again so that thoughts are in a rut. Then it is best to stop deliberately puzzling over it for a few days, take a holiday or become occupied with some diversion or hobby, but not one that requires mental concentration.

However, the bright idea does not always come in a blinding flash. Sometimes there are preliminary, precensory, hints that lead up to it. Just as, one sometimes dimly glimpses things at the periphery of one's field of vision, one sometimes has a feeling that there is a vague idea lacking at the edge of one's consciousness. The sensation may be similar to the irritation one experiences when having difficulty in recalling someone's name or it may be pleasurable in anticipation of enlightenment.
In problem oriented research approach the new realization may be the practical solution being sought for the particular problem. In pure research it may be a synthesis linking together, many ideas and pieces of information into a new generalization in which the whole is greater than sum of its parts, that is, a new principle may be discerned - the height of creativity in science.

d) Criticism - The new idea must then be examined critically to see if it is consistent with the facts of the situation and current theories. When there is some contrary evidence, the new thought should not be hastily be discarded. Sometimes it can be modified to fit the facts or it may lead on to a further profitable line of thought, a fresh approach to the problem. Occasionally "the facts" may be shown to be wrong. But it is not sensible to become so attached to one's little creation that one sticks to it in the face or irrefutable contrary arguments. If during the last stage the idea is rejected as it is in the majority of cases, one reverts to stage two or even right back to stage one.

E) Relation between the stages - These stages are not mutually separated or they do not lie in the watertight compartments. Rather these are well integrated into the total creative thinking process. Therefore, it would be better to conceive of creative
thinking, in more comprehensive terms, a total pattern of behaviour in which various processes overlap and interweave between the occurrence of the original stimulus and the formation of the final product.

This process of overlapping and interweaving of the various stages of creative thinking has been explained in details by Guilford. Guilford comments that it can be seen from the crude steps of the creative process in which the preparation phase is primarily concerned with information search and information gathering. Here, cognition is the operation mainly involved. The operation of convergent and divergent production may help to derive stored information.

In the stage of incubation, though it is said that nothing much happens, although from the looks of things something is happening because of the sudden emergence of readily built themes or systems. Thus during incubation, and the moment of inspiration, there is a production of systems or of other psychological products that may be involved.

Then later there is said to be evaluation, although evaluation can not be ruled out of earlier stages. In information gathering for example, there is selection between relevant and irrelevant information.
So all along the way occurs much interplay of all kinds of operations, some relatively more prominent than others, at each stage. Incubation may follow illumination as well as precede it, that is, the individual may not think consciously about the problem following an illumination which has actually resulted in setting down an idea, but resume it later. Even when the product is in the final stages of refinement or elaboration or polishing (verification) incubation may occur between two attacks on the problem.

1.9  The Creative Product -

A product may be a physical object or it may be a theoretical system of the design of a mechanical linkage which is independent of its representation in a particular physical diagram, the product may be an equation or a technique, but in any case it has an existence separate from the person who produced it. It can be transmitted and is not uniquely bound up with the life of an individual.

Direct Products and Supplementary Products - Supplementary product of an individual's work involves the concept of serendipity. The distinction between direct products and supplementary products may or may not be important in a given setting where a specific operational problem or need is urgent. No supplementary products can be accepted as substitute for direct products. In practical life, in such a case the immediate goal must
be met first and a product or result that pays off in the distant future may be judged to be of little value.

One useful aspect of products of creativity which Gamble brought out in the 1959 Criterion Committee Report was "breadth of applicability." He suggested that a truly creative product has a characteristic of being itself creative, in the sense that it generates additional creative activity, that is, other creative contribution follows in its wake.

As Gamble has noted, this could provide a basis for measurement of degrees of Scientific Creativity. According to him the lowest creative product simply solves the immediate problem to which it was directed. The highest creative product opens up a wide range of related problems and affects broad areas of thoughts.

1.9.1 The qualities of a Creative Product

The identification of qualities that characterise creative production remains a central and complex problem in clarifying the meaning of creativity. Jackson and Massick provide an apt and insignificant definition. However, they isolate four qualities as characteristics of creative products.22

A) Unusualness - The initial reaction to unusualness is surprise which means that one’s expectations have been challenged by a novel experience.
B) **Appropriateness** - The initial surprise is followed by a recognition of the fittingness or rightness of the formulation. As compared with the creativity in painting or in arts this quality of the product is very important in case of Verbal Creativity.

C) **Transformation** - Transformation can be viewed as an extension of the quality of unusualness since it refers to the degree to which a product creates a new way of perceiving or reacting to the environment. Transformation is involved in children's products when common objects or accepted ideas are put to new uses used in new contexts or are suggestive of new ways of considering experiences. The teacher's sensitivity to the way in which ideas or objects have been transformed in children's products will certainly enhance his appreciation of children's creativity.

D) **Condensation** - Condensation can be viewed as an extension of the quality of appropriateness, since it refers to the succinctness or aptness of the formulation. Condensation is involved when a product fulfills its purpose in a strikingly simple manner. The quality of condensation can be seen also in children's writing when deeply felt emotions are expressed simply in everyday language.

The qualities of a creative product therefore, are useful criteria for teachers to reflect on while considering the products of children. It is suggested that attention is to be directed towards the unusualness of ideas or products how
appropriate they are for the requirements of the task the
degree to which common ideas or objects are transformed
to fulfil new uses or suggests new ways of considering
experiences and finally the succinctness or aptness of the
formulation.

1.9.2 **Classification Of Products** -

Taylor has differentiated the creative products in the
following way -

A) **Expressive Spontaneity** -
Independent expression where skill, originality and
the quality of the product are unimportant as in the
spontaneous drawing of children.

B) **Productive skill** -
An artistic or scientific product where there is a
tendency to restrict and control free play and
develop techniques for producing finished products.

C) **Inventive Ingenuity** - Inventious, explorations and
discoveries where ingenuity is displayed with
materials, methods and techniques.

D) **Innovative Flexibility** - It is the Improvement
through modification involving conceptual skills.
E) **Emerging Originality** - An entirely new principle or assumption around which a new school flourishes.

Ghiselin has distinguished between a creative product of higher degree and one that of lower degree. The creative product of the higher primary sort introduces some new element of meaning or some new order of significance of both. This newness is not in the sense of statistical rarity but in the sense of priority and uniqueness in the constitution of its production to the sphere of human thought. Hence the new produce may augment even the whole or even displace anything fundamental in it, such as the quantum theory or the new insight may supplant all or part of some strongly established area of vision. The creative product of lower secondary sort gives further development to an established gamut of meaning through initiating some purposeful advancement in its uses.

In addition to this one more classification is available which is as following -

i) **Objective Creativity** - The produce of objective creativity must meet certain criteria so that 'effective surprise' is felt by the beholder. The first and the most important is perhaps appropriateness, that is, the product must make sense in the light of the demands of the situation and the specifications of the producer. It should call forth satisfaction because it fits its context - it is not only right but
just right. The second criterion is novelty. The product should be unusual as judged by appropriate norms or should lead to an uncommon way of experiencing the world. Thirdly and this is the highest standard one may judge a creative product by its power to transform the traditional constraints of reality and to yield a radically new perspective. Some original thoughts bring about a radical shift in the approach to a whole field of knowledge.

ii) Subjective Creativity - Subjective creativity is judged by different cannons. It can occur when a person combines things in ways that are individual to him, when he does not simply imitate, but re-groups given data by means of his own thoughts or actions, irrespective of the effect, his creation has on others even if thousands of others have acted similarly.

The principle cited above will be clarified by the following true story. A class was given the problem of adding $1+2+3+4+ \ldots +10$. Everybody was working and labouriously adding the figures but one six year old boy, after only a few seconds thought and announced the answer 55 to the astonished teacher. This boy in later life was to be the great mathematician Gauss and had by himself discovered a property of a series and thus shown considerable creativity as far as his subjective mental processes
were concerned even though the rule was known to many adults before him.

1.10 **Process Versus Product**

In a spontaneous discussion on this subject, the participants of the conference expressed their views which can be concluded as per following -

Sprecher, Barron and Medrick argue how a product achieved is of tremendous importance. Process measures many help to identify people whom one would want to call more truly creative.

Steins, Brogden and Mackinnon unanimously agree upon the fact that ultimate criterion of creativity is bound up primarily with products. According to Steins, to be creative the novel work must be accepted as tenable, useful or satisfying by a group in time. Brogdgen forcefully states that the different aspects from which a product may be viewed are novelty, quality, sheer value in terms of more independence of standard and breadth of application. For Mackinnon the creative product should be characterised by originality, adaptiveness and realization which involves a sustaining of the original insight.

Calvin Taylor, Guilford and Mcpherson are of the opinion that for the measurement of creativity both product and process may be of practical value. Taylor did a considerable work on this problem. He argues, for developing criteria for the evaluation of the degree of creativity, assessment of product is more important
and acceptable. The reason is that product is far more tangible. Guilford’s theory about structure of intellect is also related wholly to the product approach.

The researcher being an educationist also feels that product approach is more important in order to determine if a person is creative or not.

1.11 Measurement Of Creativity -

Need - When creativity is equated with genius and the process of Creation is thought to be wholly mysterious, there is no need to develop the measurement of creativity. But if creativity is taken to be valued potentially of all persons and its development a valued social aim, then measurement becomes important.

If creativity is the type of talent which can make history through re-shaping man’s world or if it is a matter of life and death for a nation, it needs to be assessed.

According to Torrance if deplorable waste of human talent is to be prevented and if creative students are not to choose the paths of delinquency, mental illness or atleast a life of mediocrity and unrealized potentialities, it becomes undoubtedly essential that serious attempts are made towards assessment and measurement of creative potential.

Torrance has following reasons to present for assessment of creative behaviour -
i) Measurement of creative behaviour in children as a means for obtaining a more complete understanding of the human mind and personality and their functioning.

ii) Assessment of creative behaviour in children as a possible basis for individualising instruction.

iii) Assessment of creative behaviour among children as part of the process of guiding mutual growth as an indicator of mental health status and as a source of clues for remedial or psychotherapy programmes.

iv) Measurement of creative behaviour of children as means of assessing the different effects of various kinds of experimental programmes, new curricular arrangements, or materials organizational arrangements teaching procedures and the like.

v) Assessment of creative behaviour in children as indicator of growth potential guidance needs.

Measurement of creativity will lead not only to a greater understanding of a person but would also provide a more adequate basis for accurate forecasting about his future. Above all, the task of educator's is not only to recognise creative talent after it had come to expression but either through the insight or through the use of validated predictors but also to discover that talent when it is still potential, and to provide that kind of educational climate
and environment which will facilitate its development and expression.

1.12 **The Creative Press** -

The term 'press' refers to relationship between individuals and the environments. This facet of creativity includes the study of social climate conducive or inhibitive to the manifestation of creativity differences in perception and sensory inputs from varying environments and the various reactions to certain type of situations.

Hallman\(^6\) (1963) describes environment as the condition of 'press' which refers to those characteristics of the environment, both the inner and the outer, the personal and the social. The personal dimensions of openness include such traits as self acceptance, sensitivity, tolerance of ambiguity and spontaneity. The social ones includes all such conditions in the environment which facilitate openness and are the opposite of authoritarianism.

Torrance\(^7\) (1962) listed the following as necessary conditions for the healthy functioning of the preconscious mental processes which produce creativity.

- The absence of serious threat to the self, the willingness to risk.
- Self awareness — in touch with one's own feelings.
- Self differentiation — sees self as being different from others.
Both openness to the ideas of others and confidence in one's perceptions of reality or ideas and pathological reflections on them.

Mutuality in interpersonal relations, balance between excessive quest for social relations.

Lippshiz stresses the importance of proper environment behind the great inventions. He said that, "an intensive study of the history of inventions make clear that they originate in response to social needs, that there must be a sufficiently advanced stage of culture and a proper technical heritage to foster or allow an invention to be made."

Similar views have been expressed by the eminent British educationist, T. Percy Nunn, while addressing the British Association in 1923. He says, "Among the strains or currents in a National tradition, the highest value belongs to those that are richest in the creative element. These are themselves traditions of activity, practical, intellectual, aesthetic, moral with a high degree of individuality and continuity and they mark out the main lines in the development of the human spirit. Consider what man has made of poetry and what poetry has made of him, what a noble world he has created out of the sounds of vibrating reeds; strings and brass; think of the expansion of the soul he has gained through architecture and the art of which it is the mother and queen of the achievements of his thoughts, disciplined into the methods of mathematics, the sciences and the philosophy. Do we rightly measure the quality of civilization by its activities in such directions as these? And if so must not such activities be typically
represented in every education which offers the means to anything that can properly be called fullness of life?

1.13 **Creativity And Education** -

To achieve the fullness of life various educationists have put forward very conflicting theories. At one extreme Rousseau held that, 'By attempting nothing in the beginning you would have produced an education prodigy. At the other extreme the emphasis is one what is good for the child and not so much on what he is interested in. The crux of the problem is to strike a balance between what the child wants to do and what society thinks he should do, as well as between leading him and moulding him.'

While it is necessary that a child's aptitude and ability should be taken into account it is also necessary to extend, the range of his experience and to develop his power of self direction. The child's imagination should be harnessed to foster his talent sufficient efforts are to be directed to reach the goal.

Before the goal is reached it is also necessary to consider the social and cultural milieu of our country. Because of the unprecedented rapidity of social change, characteristic of the present age, the mankind is living in the first period of human history in which it is not possible for one generation to assume that the conditions under which it lives can be transmitted to substantially unchanged to the next generation. A casual survey of the contemporary scene clearly indicates that change is the major aspect of the present age and the future generations must
face new and baffling problems not contemplated by their predecessors.

In such a culture, education is presented with different challenges. In a democracy the responsibility for the determination of broad policy rests squarely upon the citizens. To discharge this obligation successfully each citizen must be fully aware of the nature of the changing world in which he lives and must be equipped with the understandings and skills necessary to solve intelligently the strange new problems that confront him. It is the task of the education, then, to ensure that every citizen understands as far as possible the nature of the changes taking place in his culture and possess the requisite skills to make effective adjustments to the new situations.

The shift from agrarian society to an industrial society brought out its own challenges. Now the computer era has started bringing its own challenges to the present population. There is a new innovation in thoughts, methods and attitudes almost everyday. The science of informatics has brought the world closer. All the changes will be reflected in the field of education. As it would be unrealistic for the individual to attempt to live in the world of yesterday, it is no less unrealistic for the school not to make whatever adjustments in curriculum and related activities which may be necessary to help boys and girls live successfully in a new and changing environment. Education is education of the pupil, the individual. But in the system of education, importance is given to curriculum, to content of courses in various subjects, to the teacher, to the school and its management, to text books, to
examinations and the rest. These are all important factors in the organization of education; but it is essential not to forget that the individual pupil is the centre of all learning. It is his individual education with which we are primarily concerned. Frost observed that only the free brains can realize and act upon the assumption that all learning is individual. Professor Marcuse states that education in the proper sense should be allowed to play its role viz. to awaken the pupil to an application of his freedom and responsibility in making choices in accordance with his own philosophy of life. The philosophy of life will be chalked out and guided by elevated thoughts, humane values and refined tastes.

The crucial role of education in building a society with democracy, socialism and secularism as its motto and in developing among the people the national spirit and national identity essential for promoting national unity came to be widely recognised during the past few years.

1.14 **The Current National Policy Of Education**

The National Policy on Education 1986 envisages a national system of education characterised by a common educational structure, a national curricular framework, equal opportunity to all, not only in access but also in the conditions for success and minimum levels of learning for different stages of education. The transformation of education system as envisaged in the New National Policy of Education calls for sustained efforts to improve the quality and relevance of school education.
One of the strongest thrust of the National Educational Policy is in the area of curriculum development. The new national curricular framework envisages a common scheme of studies indicating different areas of study and weightages in terms of instructional time. It also envisages minimum level of learning for each stage of school education and for each curricular area indicated in terms of specific learning outcomes common for all learners, irrespective of the modes of learning. This would ensure inter-state and inter-regional comparability of educational standards and also international comparability of the national system of education. The curriculum would allow for flexibility in terms of selection of content and designing of learning experiences, keeping in view the local requirements, ensuing greater initiations on the part of the teachers the social and the local authorities. The curriculum framework besides defining the major educational objectives and common scheme of studies also highlights certain core elements which are essential for nurturing national identity. These elements would cut across different subject areas and disciplines.

A child centered approach to education with the teacher as a facilitator in the learning process is the key to the new strategy in the transaction of the curriculum. The teaching learning process will be directed to the total development of the child’s personality.

Curriculum development and renewal is a continuous process. It is not a linear but cyclic process in which evaluation and impact studies oral feedback and findings of new researches are constantly referred to in order to refine curriculum and curriculum materials. The National Educational Policy has made a special commitment.
concerning identification and nurturing of talent from all sections of our society.

The National Educational Policy is the first step towards the global prospects of education for the 21st century. The education of humanity for the 21st century will evolve in the context of global problems that are already there.

The new education should be imbued with different cultures. The richness and expression of cultural diversity reflected in closely integrated communities can be the basis of quality of life for all which should be the goal of development. The 21st century has been a century of economy and material expansion. The 21st century may herald the primacy of culture and stress upon man's inner life and spirituality.

For the emerging trends to blossom into a new concept and system of education in the 21st century the foundations must be laid now and new directions sought and pursued. Unesco's report entitled 'Learning to be' presented by an International Commission on the development of education suggests three basic tasks and strategies for transformation.

1) Governments should initiate a fundamental reshaping of national educational systems and participate in a global diagnosis of the education and training systems.

In the present state of affairs educators must enquire into the profound meaning of education for the contemporary
world and re-assess its responsibilities towards the present generation which it must prepare for tomorrow’s world. The commission expresses the hope that national authorities will recognise the primordial necessity of placing educational problems in an overall context and seek answers to this all important question - Does the educational apparatus as now conceived really satisfy the needs and aspirations of Man and societies in our time?

2) National authorities should undertake a deeper scrutiny and understanding of the educational life of their societies and prepare far beyond the previous trends of being mainly concerned with quantitative and qualitative aspects of education.

3) National authorities should re-shape their educational system on two parallel lines (a) Internal reforms and continued improvements of existing educational systems and (b) search for innovative forms for alternatives and fresh resources.

The commission also stated that “Combining learning, training information and action, international education should further the appropriate intellectual and emotional development of the Individual.”

The great educator late Jean Piaget said, “The principal goal of education is to create men who are capable of doing new things, not simply of repeating what other generations have
done - men are creative, inventive and discoverers. The second goal of education is to form minds which can be critical, can verify and not accept everything they are offered.

The Indian sage Shree Aurobindo considered the main aim of education to help the growing soul to draw out that in itself which is best and make it perfect for a noble use.” The union of science and spirituality in a new awareness of man’s psyche and his emerging cosmos will be the achievement of education in the next century.

For India a great renewal of education holds the key to the opening of a new future of moral and material development. But to achieve this, it is necessary to comprehend the nature, role and process of education relevant to our contemporary situation carrying the burdens of its past and looking ahead to the emerging future. This calls for clear and creative thinking. Unfortunately creativity has not received its due attention as an important attribute of human resources in the scheme of things so far. Creativity should not be linked only with art, culture etc. It is not only great ideas but even the small ones that contribute towards making a difference.

The Honourable Shri K.C. Pant, former union minister of education while inaugurating a seminar on the New Educational Policy, at Madras in June 1985 observed, “The comprehensive review of the existing National Educational
Policy is being done with a view to making education the more effective instrument of social transformation and National Development. Education can no longer be a matter of concern only for the pupil or for the parent. As the main instrument of change education should be considered a key input for national development. There is indeed no field of activity or sectoral development which does not have its impact on the educational system. The challenge of the 21st century imposes a responsibility on us for re-structuring our educational system to suit the changing needs of the future. Education is a charter for the development of human resources. Education therefore should be regarded as an investment in the future.

Shri Kirit Joshi special secretary Ministry of education, Government of India, in his key-note address said, “The human personality consists in the harmonisation of the capacities of the physical, the vital and the mental being under the guiding force of three values namely truth, beauty and goodness which are inherent in our deepest centre of integration. A fully developed personality manifests a progressive syntehsis of wisdom, power, harmony and excellence in skill and works. The teaching learning process should be so organised that capacities and powers of personality are constantly irrigated and nourished by the inspiring flow of values of personality.”

From the above thoughts we can observe that the very nature of relationship between the individual and education
is changing when the society finds itself on the threshold of great changes, education ceases to be a mere reproduction of the past but rather it becomes creative in the sense of preparing people positively for the creation of new society.

The new system of education should be one which is relevant to the individual's and society's particular needs and purposes. In such a context the function of the school should be a different one from the existing one. This requires a re-structuring of the primary system improvements in the quality of instruction radical changes in teaching methods and in teacher's attitudes, innovations in the curricula etc.

Students have to become the transformers of the world. They should be the catalytic agents of change. To aid this change education should provide the students with a new form of wisdom. What is required is not knowledge alone but resourcefulness also, and to develop this, learnings should be in terms of ‘Whole’ person learning.

The substance of education should lead to the creating a fuller man in the sense of having a person capable of positive interaction with the environment. The latent resources and potential energies dwelling deep through operational scientific humanistic and rational organization. ‘Man making as Swami Vivekananda would call it, should be the aim of education.’
Each child should have the opportunity under competitive guidance to develop fully and richly as an individual and as a co-operating member of an interdependent society, full of manifold, social, religious, economic community."

It should be concluded from the above discussion that efforts should be made to make the students original, more flexible and creative to tackle any problem or situation. If the modest beginning is made while they are in school, they can reap the fruits of the rich harvest in their later life.

As a mother, the researcher saw some unique talents in the children, related especially to verbal abilities. The researcher took efforts to enrich and foster the talents in every possible way she could. The whole exercise was very satisfying and the results were fruitful.

As a teacher, especially as a language teacher, the researcher experienced very happy and gratifying moments in her teaching career. When the proper efforts were undertaken, it was found that pupils could express themselves better in speech and also in their written work. Such moments were rare but very exciting. The researcher helped the students to prepare themselves for various elocution competitions, essay competitions and dramatics. The rewards were rich. So the researcher gave a serious thought to the whole scheme of things and wondered if some kind of training could be imparted to these young
minds whereby they could learn to think in a little different unconventional way. She was convinced that even a slight change in the thinking pattern will go a long way.

Today it is known and proven that creative production can be reasonably increased by proper training procedures. The time has come to start somewhere. A small beginning may have a great potential.

1.15 **Need And Significance Of The Research Problem**

It is a common observation that most of the active time of students is spent in a class room where they are under the constant guidance of the teachers. The teacher's class-room verbal behaviour, therefore is likely to have a direct impact upon the development and unfoldment of their capacities, abilities and their personalities. If the teachers can spend some specific time in training the students to develop their verbal talent, skill and creativity it will be very beneficial to them. Here the researcher decided to give a specific type of training to the students during the school hours and it was decided to prepare a special training package to reach the goal.

1.15.1 **Statement Of The Problem**

Development of a training package for enhancement of verbal creativity of IX Std. Marathi Medium students.
1.15.2 **Research Hypothesis**

The training is effective in terms of significant increase in the scores on the creativity test.

**Null Hypothesis**

There is no significant difference between the scores on the creativity test before the training for creativity and the scores after the training.

1.15.3 **Objectives Of The Problem**

I) To prepare a training package.

II) To construct the items of the package to test the ability of convergent and divergent production in symbolic content area.

III) To test the effectiveness of the package.

IV) To include the following ten abilities in the package-
   - Cognition of semantic transformations (CMT)
   - Convergent production of semantic units (CMU)
   - Convergent production of semantic transformations (NMT)
   - Divergent production of symbolic units (DSU).
   - Divergent production of semantic transformations (DMT)
   - Divergent production of semantic units (DMU)
   - Divergent production of semantic classes (DMC)
- Divergent production of semantic relations (DMR)
- Divergent production of semantic systems (DMS)
- Divergent production of semantic implications. (DMI)

1.15.4 Sample -
It was decided to draw sample from two schools. It was decided to have 200 students from IX Std.

1.15.5 Tools -
It was decided to use the following tools -

1. Standardised test for measuring verbal creativity prepared by Dr. M.B. Kundale.
2. A verbal package prepared by the researcher.

1.15.6 Statistical Techniques -
It was planned to apply the ‘t’ test to examine the significance of difference between the means.

1.15.7 Definitions Of The Terms Used

i) Verbal package - A learning package is a very practical and successful for individualised instruction. It contains following features.

- A general idea stating what is to be studied.
- Specific skills to be achieved
- Enrichment activities
- A series of three tests - A test of prior knowledge, a self test and a mastery test to determine the students’ level of competence after completion of the package.

ii) Creativity - Creativity means different things to different people. Various eminent educationists, psychologists have defined it in different, various ways.

Simpson - defined creativity as the initiative which one manifests by his power to break away from the usual sequence of thought into an altogether different patterns of thought.

Wilson defined creativity in terms of the mental process of manipulating environment which results in the production of new ideas, patterns or relationships.

Rogers defined the creative process as emergence in action of novel rational product, growing out of the uniqueness of the individual on the one hand and the materials events circumstances of his life.

According to Taylor it is the moulding of experiences into organizational patterns which are new and different.
A comprehensive definition has been given by Drevdahl\textsuperscript{33}. He considers it as the ability of human beings to produce conclusions of discretionary kind which are essentially new and can involve a synthesis of ideas which is more than a mere collection of thoughts.

Taylor and Dawn\textsuperscript{34} define creativity as a system in which a person designs or transactionally shapes his environment by transforming basic or generic problems into fruitful generative products in a facilitating stimulating climate.

According to Torrance\textsuperscript{35}, Creativity is a process of -

- becoming sensitive to problems deficiencies gaps in knowledge missing elements, disharmonies and so on (stage of preparation).

- identifying the difficulty searching for solutions (stage of Inculation).

- making guesses of formulating hypothesis about the deficiencies (stage of illumination) and

- testing and re-testing these hypothesis and possibly modifying and re-testing them and finally communicating the results (stage of verification).
1.16 **Operational Definition of Creativity Accepted In The Present Study** -

After studying the multifacets of the concept called creativity it is necessary to state the definition which is accepted in the study. As the span of the study is limited it is necessary to concentrate on a few important aspects of creativity. From all the definitions the researcher derived an operational definition, which is as follows, 'Creativity is a cumulative score on the creativity test.' This sort of definition is implicit in research.

The researcher feels that creativity is an ability of the Individual to find out new meanings connections into existing systems. The thinking becomes more flexible. It is an inherent and cultivated activity. It is an ability based, on the the past experiences of the Individual. It is like a magic wand. If one has it in oneself or experiences it at a particular moment, it is expressed in the form of a product. It is purposeful and goal directed activity, although the product may not be absolutely complete or perfect. It can assume an artistic, literary or scientific form. It may have a basis of technology of mythology. The activity experiences are very satisfying to the Individual.
1.17 **Scope and Limitations Of The Present Study** -

1. The training (verbal) package will be prepared to enhance the verbal creativity.

2. The verbal package will be used for training only in Marathi medium schools in Pune city. Only some divisions of IX std. students in some schools will be participating in the training programme.

3. The enhancement of creativity is a prolonged and continuous process. More time may be required to strengthen the abilities which will be developed through the training programme. The duration of the training programme will be about 3 to 4 weeks due to the various constraints.

4. Creativity can be enhanced through various techniques. All techniques will not be included due to the time limit.

5. The results of the present experimental study will be confined to this experimental and will not be applicable universally.

Last but not the least, the realm of creativity is very vast. It is fascinating field for researchers also. So it was decided to observe the number of researches undertaken in the field. Such a search adds more dimension to the whole pattern. The researches are presented in the second chapter.
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