CHAPTER I

INTRODUCTION

1.1. INTRODUCTION

The importance of individuals with creative talents is paramount in today's modern world. Thus, discovering and enhancing creative talents has become the need of the hour. The nation demands creative individuals along with high level of cognitive abilities to keep pace with the advance countries in all spheres of life.

The present educational system is unable to fulfill the requirements of the nation completely. Today's education places undue emphasis on rote learning and memorization and it has very few provisions to help students develop independent and innovative thinking. The teacher rarely encourages a different answer from the student. In fact, sometimes a student is ridiculed by other students and the teacher does not do anything about it, which is a sort of discouragement for the student. This mars the child's creative potentials. The present educational system could make these creative students frustrated youths. Therefore, innovations within the frame work of the existing system are necessary.

With the advent of the new century, sweeping changes are witnessed in almost every field, related to human endeavor. Education, which is a very vital link between man and the outside world, too, has been
undergoing change and is being revitalized. The aim being the same, bringing forth and enhancing individuals’ potentials. Thus, it places a lot of responsibility on the teacher, who not only is supposed to be an architect of the child’s destiny but also needs to be a visionary. To achieve this goal, the teacher has to take into consideration not only the interest, needs and motivation of each individual but also 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.

It is very essential for the individual to become sensitive to the problems around it. The mind not only has to locate the problems but it also has to think of solutions too. The solutions may be varied. The main objective of the teacher must be to displace the rigidity and instead make the young minds creative.

When children are made to conform to behavioral norms at school, they neglect their natural and creative urges and thus develop resentment towards the school. Thus the school will have to share the blame of destroying the creative urges in the students.

All these years a belief was shared by the intellectuals that creative talents would find its course. Hence nurturance of creativity was neglected. However in recent times educationists and psychologists have taken keen
interest in the area of training and creativity. Accurate identification, appropriate education and effective use of the different kinds of creative talent are the need of the hour.

1.2. CONCEPT OF CREATIVITY

Guilford observes that creativity “like love” is a many splendored thing. Small wonder that few have ventured to define it. At a conference on creativity, each of the thirty odd members was asked to write a list of his free associations to the word ‘Creativity’. The results were almost as varied as the personality of those present.¹

Agreeing substantially with Guilford, Mackinnon explains in the following words how creativity is a multi-faceted phenomenon –

Many are the meanings of creativity. Perhaps for most it denotes the ability to bring something new into existence, while for others it is not an ability but a psychological process by which novel and valuable products are fashioned. For still others, creativity is not a process but a product. Definitions of creativity range all the way from the notion that creativity is simple problem solving to conceiving it as the full realisation and expression of all of an individual’s unique potentialities. One would be ill advised to seek to choose from among these several meanings the best single definition of creativity, since creativity properly carries all of these

meanings and many more besides. Creativity is, indeed, a multi faceted phenomenon.¹

For this reason, there is a multiplicity of the definitions of creativity. Some of the much prevailing definitions of creativity in psychological and educational literature are as follows:-

Hutchinson writes, ‘By creative effort I mean the initiation and execution of some work of literature, art, music or science which is essentially new to its author.’²

Barron says, ‘Creativity is energy being put to work in a constructive fashion.’³

According to Berdyaev as quoted in Barron’s book, “The creative act is free and independent force, immanently inherent only in a person, a personality, only something arising in original substance and possessing the power to increase power in the world can be true creativity. Creativity is an original act of personalities in the world.”⁴

Mednick defines creative thinking as “the forming of

4. Barron, F. Ibid. p. 154
associative elements into new combinations which either meet specified requirements or are in some way useful.”¹

Wallach and Kogan suggest a basically similar notion “..... creativity should be indicated by the ability to produce more associations and to produce more that are unique”²

According to Gray Stanley “Creative thinking means that the predictions and/or inferences for the individual are new, original, ingenious, unusual. The creative thinker is one who explores new areas and makes new observations, new predictions, new inferences.”³

According to Torrance, “Creativity is a process of becoming sensitive to problems, deficiencies, gaps of knowledge, missing elements, disharmonies and so on, identifying the difficulties, searching for solutions, making guesses or formulating hypotheses and possibly modifying and retesting them and finally communicating results.” This definition is an older definition as is given in the creativity pamphlet in the year 1963. Torrance has defined creativity in 1969 as “the process of sensing gaps or distributing missing elements, forming ideas or hypotheses; and


2. Ibid p.414

communicating the results, possibly modifying and retesting the hypotheses.”¹

According to Vernon, “Creativity means a person’s capacity to produce new or original ideas, insights, restructurings, inventions or artistic objects, which are accepted by experts as being of scientific, aesthetic, social or technological value. In addition to novelty as our major criterion; we must incorporate in our definition the acceptability or appropriateness of the creative product, even though this valuation may change with the passage of time.”²

In the Dictionary of Education, Good described creativity as associational and ideational fluency, originality, adaptive and spontaneous flexibility and ability to make logical evaluation.

The Dictionary of Psychology, edited by Warren contains a comparatively old definition of ‘creativity’. It has been defined as ‘the capacity of certain individuals to produce compositions of any sort (works of art, mechanical device, etc) which are essentially novel, or which were previously unknown to the producer.


‘Creative Thinking’ as defined in Harriman’s Handbook of Psychological Terms, is purposeful imaginative activity, which typically proceeds from preparation, incubation and illumination to verification. This definition is almost an elaboration of Drever’s expression that ‘the mental product (in creative thought) is not a mere summation.’

Dececco states, “so much confusion surrounds the term ‘creativity’ that it is most difficult to discuss and use it. Ausubel believes that we should use it to refer to ‘rare and unique talent in a particular field of endeavor’. He further states: ‘Creative achievement............. reflects a rare capacity for developing insights, sensitivities, and appreciation in a circumscribed content area of intellectual or artistic activity. ‘According to Ausubel, the creative individual who embodies this capacity is, by definition an uncommon individual, much rarer than the intelligent person’.

Trowbridge, while discussing in a seminar the multiplicity of definitions of creativity, remarked that

Many definitions of creativity have been advanced. Some are mainly concerned with the process, some with the products, and others with persons who create. Two basic concepts, however, are evident in most definitions.

1) The creative must be unusual, imaginative, novel, unique, and distinctly different.

2) The creative must also be appropriate, apt, worthwhile, more aesthetic, a better solution.¹

Thus it may be seen that numerous meanings are attached to the word “creativity”. Some authors look at it as a super energy, which produces unusual things, while the others tend to define creativity in terms of the process involved in making a novel contribution. Depending upon their choice, creativity has been defined by various authors in the way they approach the problem of measuring creativity.

Commenting upon this aspect Klein observes that one meaningful way of organizing these definitions, however, is in terms of their approach to assessing creativity. A review of literature in this area reveals that there are three major measurement strategies, which focus on the characteristics of: (1) The creative process, (2) The creative person, (3) The creative product. In other words, the three approaches are (i) The “Process” approach, (ii) The “Person” approach and (iii) The “Product” approach.²

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Some authors (Rhodes 1961; Mooney 1963; Holland 1964; Guilford 1967;) have suggested a fourth approach “Press” approach – that is the role of environment in creativity.

1.3. THEORIES OF CREATIVITY

Various attempts have been made to understand the causes of creative behaviour ranging from purely literary and speculative shades to scientific and empirical attempts. Some of them are as follows:

1) Creativity as Divine Inspiration:- According to Plato, a creative writer no longer remains in control of himself but he becomes an agent of higher power. Tagore writes in his Gitanjali. “I am a dead reed, but you make it a flute by playing various tunes through me over vales and hills.” Most of the creative artists, especially poets and singers have expressed such feelings where they perceive that they are simply puppets in the hands of some higher power which is squeezing out the best from them. Being a highly subjective experience, it is not open to scientific analysis.

2) Creativity as Madness:- According to Freud, an artist was one who found in art a means of expressing inner conflict that would otherwise issue in neurosis. Creativity was therefore said to have catharsis effect which kept
man sane and healthy. His beautiful definition of an artist befits here, ‘A neurotic is an artist san art’, i.e., a neurotic is that artist who has not created art. This, however, is a very negative view of creativity. It means given no conflicts and frustrations, there would be no creativity’.

3) Creativity as Intuitive Genius:- According to this viewpoint, creativity is a highly developed form of intuition. The creative person rare specie, intuits directly and immediately. It cannot be said for definite whether this mysterious force like intuition is a form of insight or not. The idea of the genius originated in the late Renaissance, when it was applied to explain the creative powers of such men as da Vinci, Vasari and Telesio etc. Kant in his classical work ‘The Critique of Pure Reason’ says that creativity is natural and therefore cannot be taught. But we see now that creativity is more developable than intelligence.

4) Creativity as Association:- According to this theory, thinking is the association of ideas, governed by the laws of frequency, recency and vividness. New ideas are produced from older ones by a process of trial and error. Hence more association means more ideas and more creativity. But there can be no prediction in creativity whereas association theory presupposes prediction. Also association hardly fits in the known facts of creativity. In his book “The Sleep
Walkers” a study of the great scientists of Renaissance, Arthur Koestler emphasizes again and again the seemingly irrational slips and errors that actually helped Copernicus, Kepler and Galileo in formulating their theories. The new ideas thus emerged not from past connections, but by breaking the past connections, from probably the unconscious mind which is not determined by past connections.

5) Psychoanalysis and Creativity:- As already mentioned in the theory on ‘Creativity as Madness’ that according to Freud, creativity originates in a conflict within the unconscious mind. Sooner or later, the unconscious produces a solution to this conflict (also referred to as incubation). If the solution is ego-syntonic (i.e. if it reinforces an activity intended by the ego or conscious part of the personality) it will issue forth in creative behavior. If not, it will be repressed and shall emerge as neurosis. Thus neurosis and creativity are siblings, they have the same roots. The creative person thus accepts the free-rising ideas of the unconscious. One aim of psychoanalytic therapy is to help the patient to regress or relax his ego voluntarily without fear that he will succumb to his unconscious.

6) Hemisphere Theory of Creativity:- According to this theory, creative acts are said to be the result of interaction between the two hemispheres of the individual’s brain. It gives quite a predominant biological base to the upsurge and functioning of Clark (1983) and
Kitano and Kuby (1986) have demonstrated that creative individuals are usually right hemisphere-dominant while logical, rational thinkers are left-hemisphere-dominant.

7) Creativity as Native or Inborn:— According to another viewpoint, creativity is regarded as something native, an innate or inborn trait, a special mental power or unique cognitive ability that cannot be acquired by learning or training. Thus, according to this theory creative are born and not made. One may have a special inborn sensitivity to sound; another may have extremely sensitive vocal chords, senses of touch, sight or smell to enable him to be highly talented or creative in any of these spheres. One may have been born with extraordinary intuitive power for a sudden or quick grasp of new things or phenomenon in any field or a fine imagination and insight for discovering new things like scientists James Watt, Newton, Einstein or Mathematicians Gauss and Ramanujan.

8) Theory of Environmentally Acquired Creativity:— According to this view point, creativity is not only the result of one’s heredity, inborn capacity of God’s gift. It is acquired and nurtured like other human traits. A positive environment or situation that is open, democratic and free may be said to contribute positively to the release and development of creative potential. On the other hand, a closed society, culture or situation may act as a strong deterrent to the
development of initiative within the individual. Arieti (1976) proposed the concept of creativogenic society to emphasise the influence of culture and environment on the development of creativity. According to him, the creativogenic society or environment is distinguished by its lack of emphasis on immediate gratification, its tolerance for and interest in divergent points of view, and its use of incentives and rewards for creativity. As a result of such favourable environment, creativity may get full nourishment and creative build up. Hence it is the environment – favourable or detrimental – which is responsible for making one creative or non-creative.

1.4. ASSUMPTIONS FOR DEFINING CREATIVITY

Though definition of creativity has unlimited scope, it can be narrowed down by making some assumptions. The two fundamental assumptions which are implicit in all empirical enquiries into creativity are:-

(i) The abilities involved in being creative are universal Creative capacity is not restricted only to geniuses but it exists in lesser mortals too. It is probably only a layman’s idea that the creative person is peculiarly gifted with a certain quality that ordinary individuals do not have. The general conviction seems to be that
all normal individuals possess, to some degree, all mental abilities. Creative acts can therefore be expected, no matter how feeble or infrequent of almost all individuals.

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. If qualities of creativity are not limited to exceptional adults then they must be observable at least in a rudimentary form in childhood also. This gives rise to a particular problem for teachers and parents. What aspects of children’s behaviour should be scrutinized 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 ‘imagination’ is a more appropriate description of the creative behaviour of children. This brief consideration of the development of creative tendencies in childhood leads to the second important assumption.

(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.
1.5. APPROACHES TO CREATIVITY

The four approaches of creativity are as follows:

a) The Process Approach of Creative Thinking

When an attempt is made to answer questions like what actually happens in creative thinking one has to consider the different stages of creative thinking.

Many psychologists like Foshay, Schachtel, Maslow, Rossman, Wallas, Haftmann, Parnes and Bruner have given different stages of creative process. The most comprehensive explanation of the process approach is given by Wallas.

Wallas has suggested the following four stages of creative thinking process:

1) Preparation: Preparation consists of the persons total acquaintance with the problem or object, his total previous experiences.

2) Incubation: After preparation is completed and before the arrival of a creative idea there is an interval. This is called incubation. It is a peculiar stage in creative thinking in which apparently there is activity on the part of the individual, but during which or at the end of which there comes a strikingly new idea after a period of unconscious work.

3) Illumination: Illumination flashes suddenly and therefore it is known as the period of "luminous surprise", "intellectual rhythm" and
“subconscious at work”. Illumination coupled with luck is known as ‘inspiration’ which implies some super-natural influence. This notion has rendered a somewhat mystic touch to creativity.

4) Verification: Verification involves both elaboration and evaluation. Evaluation in creative thinking is an unavoidable step if any of the creative product is to be of any use to a community. It is a part of the creative process.¹

If one thinks of creativity as a process, one can avoid the problems associated with cultural differences inherent in the use of the term. It also helps to think in terms of the abilities involved in the successful operation of the process or for the production of creative products. Qualities of the product will result from the process itself. Personality variables or environmental conditions that facilitate or hinder the creative functioning can also be described by the process definition.

b) The Personality Approach of Creative Thinking.

Many researchers have revealed a wide range of characteristics associated with creative productivity of the individual. According to these researches a creative individual exhibits.

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¹ Deshmukh, M. N. Creativity in Classroom. New Delhi: S Chand and Company Ltd., 1984. p. 27
1) High ego strength and emotional stability.

2) Strong need for independence, rebelliousness and autonomy; self-sufficiency, self-assertiveness, self-direction.

3) High degree of control of impulses.

4) Superior general intelligence.

5) Liking for abstract thinking and a drive towards comprehensiveness and elegance in explanation.

6) High personal dominance; and forcefulness of opinion but a dislike of personally toned controversy.

7) Greater tolerance for discomfort.

8) More stability, more feministic interests and characteristics.

9) More complex, more resourceful, more adventurous, more introverted but bold.

10) Rejection of conformity pressures in thinking (although not necessarily in social behaviour).

11) Intuitive thoughts, aesthetic sensitivity, freedom from crippling restraints, high energy level.

12) Open to experience both of the inner self and the outer world, however, irrational it may be.

13) A somewhat distant or detached attitude in interpersonal relations though not without sensitivity or insight, a preference for dealing with things or abstraction rather than with people.
14) A liking for order, method, exactness, together with an excited interest in the challenge presented by contradictions, exceptions and apparent disorder.

c) The product Approach of Creative Thinking.

Creativity has its origin from the Latin word ‘creare’ that means to create. According to Webster’s dictionary (1977) the meaning of ‘to create’ is to originate, to bring into existence something new, a work of thought or imagination. This definition emphasizes the product aspect of creativity.

The criteria to judge the creativity in the product under different classification is as follows:-

Objective Creativity

i. Appropriateness: 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.

ii. Novelty: The product should be unusual as judged by appropriate norms or should lead to an uncommon way of experiencing the world.

iii. Transformation: A creative product is judged 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.

iv. Condensation: A creative product fulfills its purpose in a strikingly simple manner.

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.

d) The Environment Press Approach of Creative Thinking

Creative thinking process has been considered as bipolar in which there is an interaction between a person and the environment in which he exists. Creativity is considered as a multi-dimensional process of interaction between the organism and its environment that results in the emergence of a new and unique product.

The history of civilization suggests the interdependence between creativity and democratic climate. Freedom and order, properly proportioned, are necessary for emergence of creativity. A democratic climate provides enough freedom to challenge the creative potential of an individual and enough order to provide the means to actualize it.
School culture is an important determinant of the creativity of the students. The teacher plays a very important role in providing conducive climate for creative growth in the classroom. Only, he must be aware of and in control of the verbal and non-verbal communication with students as he now controls the content in the traditional classroom.

Home and family environment have been persistently indicated as a major influence on creativity of the child. The conditions under which the child grows in the family are vital to the growth of his creativity.

The parents of high IQ children as compared to high creative children are more vigilant about the behaviour of their children and their academic performance.

They are more critical of the children and the school and equally concerned about the desirable qualities of their friends. They focus on the qualities like cleanliness, good manners, studiousness and so on. In contrast, the parents of the creative adolescents focus upon the qualities like child’s openness to experience, his values, interests and enthusiasm.

The parents of the creative children are found giving more autonomy to their children. They are moderately affectionate, non-rejecting and highly encouraging intellectual independence and showing positive attitudes and attributes. Respect in the family for autonomy and non-conformity, a respect for child’s individuality and ability, parental tolerance and self-
control are some of the factors of home environment found to be related to creativity.

**Approach to Creativity in the Present Research**

To conclude, the present researcher has used the environmental press approach in her study, so far as the creation of environmental condition in the classroom is concerned. The experimenter has tried to create a conducive climate in the class, a climate where the students feel free to express themselves, to raise questions and to be accepted by the others as they are. The researcher has also used personality approach as she has tried to study the interaction between the treatment and those characteristics in the students which are expected to be possessed by creative people.

### 1.6. COMPONENTS OF CREATIVITY

Creative writing gives the reader a pleasure, which arises from the things, which are written. Gerald (1971) has said that creative writing 'stirs the emotion, delineates a new idea or gives a fresh insight into life'.

Guilford presented a factorial design for the study of creativity. He revealed in his first study, the following seven factors:

(1) Sensitivity to problems; (2) Fluency, (3) Flexibility, (4) Originality, (5) Analysis, (6) Synthesis and (7) Redefinition

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After further research, he added one more factor ‘Elaboration’ to the original list. He explained that creative abilities would become meaningful when they are compared with other kinds of abilities and relations in between them are known.

Torrance has presented the following six factors:

(1) Sensitivity to problem; (2) Fluency, (3) Flexibility, (4) Originality, (5) Elaboration and (6) Redefinition

The following abilities clarify the nature of these factors:-

Ability to produce large number of ideas, ability to represent novel, uncommon ideas, ability to add some details in the plan, ability to have knowledge of different ways of expression, ability to realise the need and remedy for it.

The present researcher has tried to develop these abilities in the students by using the eclectic approach to teach the experimental group.

1.7. CONCEPT OF STUDENTS’ ATTITUDE TOWARDS SCHOOL

Attitudes, values and ideals that are propagated by education play a significant role, in building the personality, and the entire mental set-up of an individual. What a pupil thinks, feels and values is a reflection of his

attitudes.

Attitudes usually arise in individuals as a result of their efforts to satisfy particular tendencies. If the individual is assisted in finding or by chance comes upon an object that satisfies a strong tendency, his future reactions to that object will be positive. That is, he will seek, pursue, secure, and try to keep that object each time the tendency usually attracts to the object, so that the individual will react favourably toward it whether the tendency is present or not. In this case, a person has developed a positive attitude towards the subject. On the other hand, if an object fails to satisfy a tendency, or annoys or arouses strong feelings and emotions each time it is present, the individual may develop a negative attitude towards it.

Attitudes are the final products of feelings and emotions experienced in connection with given things. They develop through years of slow and often unnoticed learning and undergo changes according to the emotional reaction occasioned by their stimuli. Young children are quick to develop attitudes and quick to change them, but older persons remain relatively unchanged from year to year, except in particular instances. Before comprehending the various aspects of the attitudes of students towards their school, it is necessary to understand the meaning of attitudes, so as to understand the concept clearly.
Meaning of Attitudes:

According to Crow and Crow, “Attitudes, the affective by-products of an individual’s experience, have their bases in his inner urges, acquired habits, and the environmental influences by which he is surrounded” ¹

Allport in Murchison’s book has defined an attitude as a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual’s response to all objects with which it is related.” ²

According to Skinner, “An attitude is defined as a development state of organismic valence, created by psycho-biological processes, exerting a motivational influence upon the individual’s responsive behaviour in situation directly and indirectly related to it.” ³

Attitudes may be manifested either through behaviour or through verbal statements. There are great variations in likes and dislikes of children for school subjects and school activities. Attitudes are greatly dependent upon environmental factors such as the types of home and school.


As Crow and Crow put in “we are not born with our attitudes but develop them as accompaniments of experience.”

The attitude of the students towards the school is said to be favourable if the student loves to come to school, has no fear or negative reaction towards it, finds interest in the work done at school, participates in the school activities and develops pride in the achievements of the school. The attitude of the students towards the school is said to be negative when the student hates to come to school, has to be forced by the parents to go to school, does not participate in the school activities, always criticizes the school functioning and feels ashamed of being a student of that school.

The attitude of the student is likely to change with the change in the teaching learning process, democratic way of teaching, more sympathetic and positive behaviour of the teachers towards students.

As Skinner puts in, “A permissive classroom atmosphere that promotes free expression and discussion has been proposed as a means for changing attitudes in the classroom.”

1.8. TECHNIQUES OF ENHANCING CREATIVITY

The techniques used by the researcher in the present investigation are

a) Brainstorming, b) Inquiry training, c) Synectics, d) Role-Playing. Each one is discussed in detail as follows:-

**a) Brainstorming:**

Brainstorming has been used very successfully, as a technique of teaching for enhancing creativity. The technique of organized ideation is labeled quite aptly as “brainstorming” which means using the brain to storm a creative problem.

Brainstorming dramatises new ideas, makes people focus their attention upon them and realize the importance of ideas. It encourages the participants and makes them feel that they have the ability to think new ideas. This builds their self-confidence and it also helps ego-maximisation.

Brainstorming has been evolved as the principle of deferred judgment. This principle can be practiced in two ways-solo or in group. In sole ideation, self- evaluation is prohibited or criticism of ideas in any form is not allowed. For group brainstorming small groups are preferred but brainstorming was found to be successful with as large a group as of 150 participants. (Osborn, 1953)

Conducive environment is very essential for the brainstorming sessions to be successful. Therefore in group brainstorming much depends upon the leader. If the leader displays that he knows everything he will create fear in the minds of timid members who will be reluctant to open
their mouths. The leader, who allows criticism into the preceding, likewise fails to get the best out of the participants.

Is brainstorming an individual technique or a group technique?

In brainstorming the success of the group is more important than that of an individual, because most great ideas have occurred in the context of group interaction. The creative person is interdependent rather than independent.

**Procedure:**

The following steps are involved in the brainstorming session.

**Step 1:** Sensing the problem and challenge.

Usually the brainstorming session begins with a problem at hand, a perplexing situation or episode encountered by the group members, paradox, gaps in knowledge or some puzzling phenomena. The problem is specific, familiar, simple and talkable.

Osborn feels that if the problem is presented to the group, several days before, it gives better results. But Harvard group of Business school students think that such practice could have adverse effect. They feel that in thinking about the problem a participant considers many solutions, some of them he discards himself. These ideas could have been the one that would trigger off a worthwhile idea by another. Another reason is that at times the participant may become ego centrically involved with the idea he thinks worthwhile. He then becomes a less effective contributor. Besides it
would probably provoke more and spontaneous reactions if the problem is presented at the beginning of the session.

Step 2:- Fact-finding

After introducing the problem, facts about it is searched out. In the light of these facts the problem is redefined. This is done by getting to the essence of the problem and finally breaking down the problem into sub-problems for solution. In the classroom situation this step involves pooling the information from the experiences of children, from text-books, from reference sources or from experimentation. This stage helps to warm up and involves the students in the problem.

Step 3:- Brainstorming

This is the actual idea-producing stage. A large number of alternate solutions are produced here. Brainstorming session is always kept informal so that a creative atmosphere with psychological safety and freedom prevails in the session. A deliberate attempt to break habitual response and to inhibit impulsive criticism is a pre-requisite of idea production. Group members are given to understand that silly ideas can also be useful and are appreciated.

To create an effective climate certain rules, which have to be followed are:

1. Criticism is ruled out.
One of Osborn's contentions was that creative thinking and evaluative thinking cannot occur very effectively simultaneously. He thinks that if you judge and evaluate ideas as they are coming, the person whose idea is being questioned is more concerned with defending his idea rather than thinking further for new and better ideas. Therefore all forms of criticism are forbidden in brainstorming session. Any evaluative comments, ridicule, laughter, or non-verbal expression of either admiration or disgust are stopped immediately. Insistent critics are dealt with firmly.

2. Freewheeling is welcomed

Wilder the ideas, the better. Offbeat, impractical, silly ideas may trigger in other group members a practical breakthrough idea which might not occur otherwise.

3. Quantity is wanted.

The principle of plenty of variation is the essence of scientific experimentation. Quantity eventually breeds quality in creative effort. It also helps to rule out evaluation of ideas. The best idea seldom occurs first. Therefore, the group is instructed to produce maximum possible number of ideas. They are asked not to confine to the obvious and to extend their effort for more uncommon ideas. This extended effort can fetch the remotest ideas from the depth of the mind.

4. Combining and Improvement of Ideas is ought.
Group members are encouraged to hitchhike or build upon or modify the ideas of others, to suggest how ideas of other group members can be turned into better ideas, or how two, or more ideas can be combined into a still better idea. There are few additional suggestions for a successful brainstorming session.

1. Too many experts should not be included in the brainstorming group.
2. Mixed groups are considered more beneficial.
3. For brainstorming sessions, mornings are preferred.
4. It is also suggested that the problem should be specific and should have fairly limited range.

Step 4:- Evaluation of Ideas.

When brainstorming is used in the classroom situation as a creative problem solving procedure, it is sometimes required to select one or best solution from the many suggested during ideation stage. It is better if the group discusses the whole session and develops an evaluation criterion of its own, an objective standard for selecting the most promising ideas.

Step 5:- Planning for Implementation

After finding out the promising ideas, there is a challenge to make them acceptable. It might sometimes be necessary to tailor the ideas for a special group to make them attractive and to gain acceptance for them.
Why is brainstorming productive?

This technique has been preferred by many workers in the field of creativity to develop creative ability of the subjects because the problem selected for brainstorming is always simple, specific and easily understandable to group; and it concentrates solely on creative thinking and excludes discouragement and criticism which so often cramps imagination. Every attempt is made during brainstorming to create free, friendly, informal, non-threatening and non-evaluative climate for uninhibited thinking. With a competition without rivalry, everyone tries to produce the maximum possible good ideas. Chain thinking facilitates the group in this job.

b) Inquiry Training:-

Inquiry training is designed by Suchman to bring students directly into the scientific process through exercises that compress the scientific process into small periods of time. It originated with a belief in the development of independent learners; its method requires active participation in scientific enquiry. Children are curious and eager to grow, and enquiry training capitalizes on their natural energetic explorations, giving them specific directions so that they explore new areas more forcefully. Inquiry Training helps students develop the intellectual discipline and skills necessary to raise questions and search out answers stemming from their curiosity. Thus Suchman is interested in helping
students inquire independently, but in a disciplined way. He wants students to question why events happen as they do and to acquire and process data logically, and he wants them to develop general intellectual strategies that they can use to find out why things are as they are.

Thus Suchman's theory is that:

1. Students enquire naturally when they are puzzled.
2. They can become conscious of and learn to analyse their thinking strategies.
3. New strategies can be taught directly and added to the students' existing ones.
4. Co-operative enquiry enriches thinking and helps students to learn about the tentative, emergent nature of knowledge and to appreciate alternative explanations.

Procedure:

Inquiry training has five phases. The first phase is the students' confrontation with the puzzling situation. Phases two and three are the data gathering operations of verification and experimentation. In these two phases, students ask a series of questions to which the teacher replies 'yes' or 'no', and they conduct a series of experiments on the environment of problem situation. In the fourth phase, students organize the information they obtained during the data gathering and try to explain the discrepancy.
Finally, in phase five, students analyse the problem-solving strategies they used during the enquiry.

Phase one requires that the teacher present the problem situation and explain the inquiry procedures to the students (the objectives and the procedure of the yes/no question). The formulation of a discrepant event requires some thought, although the strategy can be based on relatively simple problems—a puzzle, riddle or magic-trick—that do not require much background knowledge. The ultimate goal is to have the students' experience the creations of new knowledge, such as scholars do.

Phase two, verification, is the process whereby students gather information about an event they see or experience. During verification they may ask questions about objects, properties, conditions, and events. Object questions are intended to determine the nature or identity of objects. Event questions attempt to verify the occurrence or nature of an action. Condition questions relate to the state of the objects or systems at a particular time. Property questions aim to verify the behaviour of objects under certain conditions as a way of gaining new information to help build a theory.

Phase three is experimentation; students introduce new elements into the situation to see if the event happens differently. Experiments serve two functions: exploration and direct testing. Exploration is not necessarily guided by a theory or hypothesis, but it may suggest ideas for a theory. Direct testing occurs when students try out a theory or hypothesis.
Although verification and experimentation are described as separate phases of the model, the students’ thinking and the types of questions they generate usually alternate between these two aspects of data gathering.

In phase four, the teacher calls on the students to organize the data and to formulate an explanation that fully responds to the problem situation.

Finally in phase five, the students are asked to analyse their pattern of inquiry. They may determine the questions that were most effective, the lines of questioning that were productive and those that were not, or the type of information they needed and did not obtain.

**Role of the Teacher:**

Teachers and students participate as equals where ideas are concerned. The teacher should encourage students to initiate inquiry as much as possible. In the initial stages of inquiry the teachers’ role is to select the problem situation, to referee the inquiry according to inquiry procedures, to respond to students’ probes with the necessary information, to help beginning inquirers establish a focus in their inquiry, and to facilitate discussion of the problem situation among the students. During the second phase the teacher’s task is to help the students to inquire but not to do the inquiry for them. If the teacher is asked questions that cannot be answered by a ‘yes’ or ‘no’, he or she must ask the students to rephrase the questions so as to further their own attempts to collect data and relate them
to the problem situation. During the last phase, the teacher’s task is to keep
the inquiry directed towards the process of investigation itself.

The chief learning outcomes of inquiry training are the processes
involved—observing, collecting, and organising data, identifying and
controlling variables, making and testing hypotheses, formulating
explanations and drawing inferences. The model splendidly integrates these
several process skills into a single, meaningful unit of experience.

The format of the model promotes active, autonomous learning as the
students formulate questions and test ideas. It takes courage to ask
questions, but it is hoped that this type of risk will become second nature to
the students. They will also become more proficient in verbal expression as
well as in listening to others and remembering what has been said.

(c) Synectics:

Synectics is an interesting approach to the development of creativity
designed by J. J. Gordon and his associates. In synectics exercises, students
‘play’ with analogies until they relax and begin to enjoy making more and
more metaphoric comparisons. Ordinarily, when one is confronted with a
task – say a problem to be solved or a piece of writing to be produced – one
consciously becomes logical. For most problems and tasks of expressing
oneself one’s logic works well enough. When one’s old solutions or ways
of expressing oneself are not sufficient one uses synectics. It is designed to
lead one into a slightly illogical world – to give one the opportunity to
invent new ways of seeing things, expressing oneself and approaching problems.

**Procedure:**

There are actually two strategies or models of teaching based on synectics procedure. One of these is designed to make the familiar strange, to help students see old problems, ideas or products in a new, more creative light. The other strategy is designed to make new, unfamiliar ideas more meaningful. Creating something new is strategy one and making the strange familiar is strategy two.

**Strategy One:**

Strategy one helps students see familiar things in unfamiliar ways by using analogies to create conceptual distance. Except for the final step, in which the students return to the original problem, they do not make simple comparisons. The role of the teacher is to guard against premature analyses and closure.

The different phases of strategy one are

**Phase one: Describing the problem or present condition:**
Teacher asks students to discuss the familiar idea. Teacher has students state the problem and defines the task at hand.

**Phase two: Direct Analogy:** Teacher moves the students into analogies. He asks for a direct analogy. He also specifies the nature of the analogy in order to assure getting one of some distance. The teacher reflects
to the students what they are doing so that they can be pushed to more creative analogies. Teacher lets students select the analogy but he provides the criterion for selection: "strangest comparison". Teacher moves students simply to explore before making comparisons to their original source. Teacher controls responses to keep students from pushing to a comparison too soon. No comparisons to original source are made before moving on to another analogy.

Phase three: Personal Analogy: Teacher asks for personal analogy. Teacher reflects to students the fact that they are describing the object, not what it feels like to be that object.

Phase four: Compressed Conflict: Teacher asks for compressed conflicts as outgrowth of the personal analogy. Teacher makes students stop enumerating possible compressed conflicts and select one. The teacher furnishes the criterion.

Phase five: Direct Analogy: Recycling the analogies; compressed conflict is not explored but serves as the basis of the next direct analogy. There is no mention of the original. Teacher ends the enumeration of direct analogies. Again, he has the students select one but he gives the criterion. Teacher makes the students explore the characteristics of the analogy. Then the teacher proceeds to obtain more information about the analogy.
Phase six: Re-examination of the Task: Teacher gets the students to make further comparisons. It is only at this stage that the students return to the original problem or test.

The synectics model stimulates the students to see and feel the original idea in a variety of fresh ways. If they had been solving a problem, we would expect that they would see it more richly and increase the solutions they could explore.

Strategy two:

By contrast, strategy two, making the strange familiar, increases the students understanding and internalization of substantially new or difficult material. In this strategy, metaphor is used for analyzing not for creating conceptual distances as in strategy one. For example, the teacher might present the concept of ‘civilization’ to her class. Using familiar analogies the students begin to define the characteristics that are present and those that are lacking in the concept. This strategy is both analytical and convergent. Students constantly alternate between defining the characteristics of the more familiar subject and comparing these to the characteristics of the unfamiliar topic.

In phase one of this strategy, while explaining the new topic, the students are provided with information. In phase two the teacher, or the students, suggest a direct analogy. Phase three, involves “being the familiar”. In phase four students identify and explain the points of
similarity between the analogy and the substantive material. In phase five, students explain the differences between analogies. As a measure of their acquisition of the new information, students can suggest and analyse their own familiar analogies in phases six and seven.

The major difference between the two strategies lies in their use of analogy. In strategy one, students move through a series of analogies without logical constraints; conceptual distance is increased, and imagination is free to wander. In strategy two, students try to connect two ideas and to identify the connections as they move through the analogies. The strategy the teacher selects depends on whether he is trying to help students create something new or to explore the unfamiliar.

**Role of the Teacher**

The model is moderately structured with the teacher initiating the sequence and guiding the use of the operational mechanisms. The teacher also helps the students intellectualise their mental processes. The teacher must accept all student responses to ensure that students feel no external judgments on their creative expressions. In strategy two, the teacher should guard against primitive analyses. He also clarifies and summarizes the progress of the learning activity.

Participation in a synectics group creates a unique shared experience that fosters interpersonal understanding and a sense of community. Individuals become acutely aware of their dependence on the various
perceptions of other group members. Simply having a thought is the sole basis for status in this community, and the playfulness of synectics activities encourages even the most timid participant.

(d) Role Playing:

In role-playing students explore human – relations by enacting problem situations and then discussing the enactments. Together, students can explore feelings, attitudes, values and problem solving strategies.

Role-playing is dealing with problems through actions; a problem is analysed, acted out, and discussed. Some students are role-players while others are observers. A person puts himself in the place of another person and then tries to interact with others who are also role-playing. Empathy, sympathy, anger and affection are all generated during the interaction. This emotional content as well as the words and actions are later analysed. After the acting is over, even the observers are involved enough to know why each person reached his decision, what the sources of resistance were, and whether there was another way of dealing with the situation.

Procedure:

Shaftels suggests that the role-playing activity consists of nine steps (1) Warm up the groups, (2) select participants; (3) set the stage; (4) prepare observers; (5) enact; (6) discuss and evaluate; (7) reenact; (8) discuss and evaluate; (9) share experiences and generalize.
Phase one: warm up the group, involves introducing students to a problem so that they recognize it as an area with which everyone needs to learn to deal. The warm-up can begin, for example, by identifying a problem within the group. The second part of the warm-up is to express the problem vividly through examples. The last part of the warm-up is to ask questions that make the children think about and predict the outcome.

In phase two, select participants, the children and the teacher describe the various characters – what they are like, how they feel and what they might do. The children are then asked to volunteer to role play. A child must want to play a role. Although the teacher takes into account the children’s preferences, he should exercise some control in the situation.

Roles can be assigned to those children who appear to be so involved in the problem that they identify with a specific role, those who express an attitude that needs to be explored, or those who should learn to identify with the role or place themselves in another person’s position.

In phase three, set the stage, the role players outline the scene but do not prepare any specific dialogue. They simply sketch the setting and perhaps one person’s line of action. The teacher may help set the stage by asking the students a few simple questions about where the enactment is taking place, what it is like, and so on.

In phase four, prepare the observers; it is important that observers become actively involved so that the entire group experiences the
enactment and can later analyze the play. The observers should determine what the role players are trying to accomplish on, they can watch one particular role to define the feelings of that person. The observers should understand that there will be more than one enactment in most cases, and if they want to enact in a different way, they can do so later.

In phase five, enact, the players assume the roles and "live" the situation spontaneously responding realistically to one another. The role-playing is not expected to be a smooth dramatization, nor is it expected that each role player will always know how to respond. If the follow-up discussion reveals a lack of student's understanding about the events or roles, the teacher can then ask for a re-enactment of the scene.

The purpose of the first enactment is simply to establish events and roles, which in later enactments can be probed, analysed and reworked. During the initial enactment, the players of the major role can be changed to demonstrate variety of the role and to generate more data for discussion.

In phase six, discuss and evaluate, if the problem is an important one and the participants and the observers are intellectually and emotionally involved, then the discussion will begin spontaneously. At first, the discussion may focus on different interpretations of the display and on disagreements over how the roles should have been carried out, this leads to reenactment in which role players change their interpretations, playing the same role in a different way.
In phase seven, reenact, the reenactment may take place many times. The students and the teacher can share new interpretations of roles and decide whether new individuals should play them. The activity alternates between discussion and acting. As much as possible, the new enactments should explore new possibilities for causes and effects. In this way, the role-playing becomes a dramatic conceptual activity.

In phase eight, discuss and evaluate, there is a discussion of the second enactment. The students are willing to accept the solution, but the teacher pushes for a realistic solution by asking whether they think this ending could really happen.

Phase nine, share experiences and generalize, teacher should not expect the generalization to come immediately. Such generalizations require much experience. The teacher should attempt to shape the discussion so that the children, after long experience with this strategy, begin to generalize about approaches to problem solutions. Ideally, the children will gradually master the strategy, so that when a problem comes up, they will be able to use role playing to clarify and gain insight into the problem.

Role of the Teacher

The model is moderately structured. Teachers are responsible, at least initially, for starting the phases and guiding students through the
activities within the phase. The content of the discussion and the enactment is determined by the students.

The teacher's questions and comments should encourage free and honest expression of ideas and feelings. Teachers must establish quality and trust between themselves and their students. They must accept all suggestions as legitimate and make no value judgments. Even though teachers are chiefly reflective and supporting they assume direction as well. They select the problem to be explored, lead the discussion, choose the actors, make decisions about when the enactments are to be done, help design the enactments, decide what to probe for and what suggestions to explore.

The role-playing model is extremely versatile and applicable to several important educational objectives. Through role playing students can increase their abilities to recognize their own and other people's feelings, they can acquire new behaviors for handling previously difficult situations; they can also improve their problem solving skills.

1.9. CONCEPT OF EXTROVERSION - INTROVERSION

According to Allport, "Personality is the dynamic organization within the individual of those psychological systems that determine his
According to Thorpe, "Personality is synonymous with the idea of the organismic functioning of the total individual, including, all his various verbally separated aspects, such as intellect, character, drive, emotionalized attitudes, interests, sociability and personal appearance as well as his general social effectiveness." 1

One of the most challenging theories of personality type is given by a Swiss Psychiatrist, Carl Jung, who attempted to classify human beings on two behavioral dimensions extroversion and introversion. He viewed extroversion versus introversion as the most basic dimension of human temperament. Etymologically ‘extroversion’ means ‘outward turning’ and ‘introversion’ means ‘inward turning’.

Extroversion:

Jung, a Swiss Psychiatrist, who was an exponent of the extroversion and introversion type theory of personality, defines extroversion in the following manner, "Extroversion means an outward – turning of the libido. With this concept I denote a manifest relatedness of subjective interest towards the object.

Everyone in the state of extroversion thinks, feels and acts in relation to the object, and moreover in a direct and clearly observable fashion, so that no doubt can exist about his positive dependence upon the object.”

Good in his ‘Dictionary of Education’ defines ‘Extroversion’ as “a general attitude of group of traits characterized by a predominant interest in the external world, and social life and a correspondingly diminished concern for fantasies, reflection and introspection.”

Introversion:

According to Jung, “Introversion means an inward turning of libido, whereby a negative relation of subject to object, is expressed. Interest does not move towards the object, but recedes towards the subject. Everyone whose attitude is introverted thinks, feels and acts in a way that clearly demonstrates that the subject is the chief factor of motivation while the object at most receives only a secondary value.”

According to the ‘Dictionary of Education’ by Good, “Introversion is a trait complex, probably of diverse genetic origin, characterized by a tendency to shrink from social contacts, by a preference for covert and symbolic as opposed to overt activities, by great personal sensitiveness


and by a proness to autictic thought."\(^1\)

Many researches have revealed that extroverts are more creative than the introverts. Some researches have revealed just the opposite.

1.10. CONCEPT OF LOCUS OF CONTROL

Empirical researchers as well as conceptual literature have found that there are people who believe that everything that happens, either good or bad, occurs by chance and man is not the master of his fate. In contrast, some others believe that man controls everything that happens in his own life. He believes that he is responsible for his fate. These two concepts put together constitute a major construct in psychological enquiry known as the locus of control.\(^2\)

Locus of control refers to the perception of possible occurrences and causal attribution between action and outcome, that is, to what extent an action produces an outcome and the type of causes (i.e. internal or external) that are attributed to the outcome.

Rotter in 1966 conducted many researches on social learning theory and conceptualized locus of control. He defines locus of control in these terms.

\(^1\) Good, C.V. Op cit. p. 299.

“When a reinforcement is perceived by the subject as following some action of his own but not being entirely contingent upon his action, then, in our culture, it is typically perceived as the result of luck, chance, fate as under the control of powerful others, or as unpredictable because of the great complexity of the forces surrounding him. When the event is interpreted in this way by an individual we have labeled this a belief in external control. If the person perceived that the event is contingent upon his own behaviour or his own relatively permanent characteristics, we have termed this a belief in internal control.”

Individuals vary along a continuum between the two extremes of internal and external locus of control. At one extreme, individuals who possess internal locus of control believe that consequences whether good or bad are under his/her control. At the other extreme, those who have an external locus of control believe that such consequences occur by chance, or by luck or by fate.

Researches reported under the categories of naturalistic observation and laboratory expectation suggest that people who experience a lack of personal control over events will experience more stress. The literature suggests that internals are highly confident of themselves; use their own

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2. Ibid. pp. 511-512
energies and wisdom to direct the events and control the outcomes. Internals take more active part in coping with the environment; they actively seek information relevant to control of their environment, seek control over its pleasures and frustrations. They are more oriented towards positions of power and control. They are better adjusted and experience less anxiety than the externals. The person who has an external locus of control perceives himself/herself to be helpless in influencing the life events and attributes consequences to luck, chance and fate. Internals are likely to hold jobs of higher status, advance more rapidly in their careers and prefer intrinsic rewards while externals are more interested in job security and extrinsic rewards such as promotion, status, bonus and so on.

Locus of control is predominant in students also. Some students blame someone or something else for their poor performance like a poor test, a confusing book, or an incoherent teacher. These students attribute their downfall to the external aspects of their environment. Psychologists classify such personality control which pertains to how an individual perceives the link between his behaviour and its consequences and whether he/she accepts responsibility for his/her own actions.

"Researches show that relationship of locus of control to personality characteristics have revealed that subjects having internal
locus of control have greater will power, assertiveness, self-esteem and are better in concept forming ability, besides being more trusting, more imaginative, more achievement oriented. They also have greater super ego strength. Subjects with external locus of control, on the other hand, tend to be low achievers, more frustrated, more anxious, psychologically morbid and neurotic, and more conservative in their attitude."

Many studies have revealed that those who have internal locus of control are more creative than those who have external locus of control.

1.11. CONCEPT OF HEMISPHERICITY

A human brain is truly a remarkable organ. It is the source of emotions, such as love, fear and rage. The characteristics of the brain are its great versatility of wonderful functions. It is able to perform its countless functions in many different ways using its multiple connections and pathways to establish new routes of activity when necessary. The power of the brain is tremendous and it seems certain that no other machine will ever be capable of the generation of ideas, which cannot be measured in terms of quality and quantity.

A model of Brain Functioning:

The functions of the brain are more complex than the processes such as standing, walking, breathing, and carrying out well coordinated voluntary movements. These processes are dependent on certain parts of the brain as well as on the spinal cord.

The largest part of the brain is called the cerebrum and is divided into two hemispheres, the right and the left hemisphere. Each hemisphere receives and sends messages to the apposite side of the body. The two hemispheres, right and left, perform different functions through different modes.

Right Hemisphere Functions:

The language area of the right hemisphere is capable of processing language if the discriminations are uncomplicated. It is nonverbal in nature with limited language processing ability, and it is creative in language. The right hemisphere deals with the tonal memory, tonal qualities, and tonal patterns. For singing songs with pitch, rhythm, intonation, and lyrics the right hemisphere should function effectively.

The interpretation and retention of complex visual patterns, such as geometric designs and graphs, model building and recognition of faces are the important functions performed by right hemisphere.
The right hemisphere functioning for left side of the body, is also in charge of spatial movement, finding way in space front and back space awareness and perception of fine and gross motor activities.

The functions of the right hemisphere have generally been described as creative, divergently productive, deductive, intuitive, holistic, gestalten, concrete and analogic.

The right hemisphere functions in such a way that it is capable of dealing with the most difficult, logical and systematic problems and finding solutions.

It deals with the functioning of iconic presentation of information such as graphic displays, diagrams, flow charts and greatly facilitates both the comprehension and the retention of information. The right hemisphere helps to design thought experiments which left hemisphere simply could not.

The right hemisphere deals with the body image and it controls emotional aspects such as laughing, crying and tonal expression. This part of the brain is passive and its mysterious nature of functioning is well – activated for aesthetic functions.

**Left Hemisphere Functions:**

Expression of language through speech, verbal memory, word parts, syllable recognition, analyses of speech sounds, use of verbs,
and verbal aspect of writing are functions predominantly done by left hemisphere.

Right visual field and right side of the brain, motor activities of speech, action, words describing movement of hands in speech, verbal expression of movement through memory are the functions activated by left hemisphere.

The left hemisphere is considered to be a rational linear mind specializing in sequential processing, logical, analytical thinking, inductive and convergent in production of ideas.

Mathematical reasoning, particularly calculations, algebraic abstract mathematics, digital operations and computations are activated by left hemisphere.

Education of relations, ability to analyse the common aspects of task and relationship among tasks, linguistic task, retention of language and comprehension, learning the 3 R’s and acquisition of new habit patterns are the functions of left hemisphere.

Left hemisphere functions in daydreams, ‘drugging’, meditation, fantasy hypnosis, diversion and play. The left hemisphere functions for activating aggressive behaviour of a man and maintaining his masculine nature.

Effective education results from a fully acknowledged commitment to the functions of both cerebral hemispheres. Hence the
application of the knowledge of hemisphericity in education will bring significant changes in teaching methods to enhance the creative potentialities of the learner.

1.12. CONCEPT OF MOTIVATIONAL FACTORS

Why an individual does what he does? What are those factors, which motivate an organism for action? These problems bring one to the concept of motivation. The problem of motivation has been the subject of interest and inquiry for all those who dealt with human relations since man's existence on earth.

According to Dececco and Crawford, "Motivation refers to those factors which increase and decrease the vigor of an individual's activity. In educational parlance, motivation is often called effort. In terms of effort, the study of students motivation searches for those factors which increase the students effort to make desirable responses." ¹

According to Cronbach, " a) Every activity should lead to goals which students are aware of and will want to attain. b) Goals should be attainable and students should have confidence that they can attain the goals. C) Students should be able to judge correctly whether they are attaining their goals and how they are falling short. d) Classroom activities should lead to

goals that students will also seek outside the classroom so that the learned action will be used in non-school situation."

The present study focuses on manipulating the environmental conditions within the classroom to make it conducive for the enhancement of creativity among the students. This conducive environment may stimulate the students and motivate them to develop creative thinking abilities. So it is important to study motivational factors as one of the variables of the study.

According to Laycock, in addition to intellectual factors, motivational factors are important in creativity. These motivational factors include (i) the desire to question, (ii) high intellectual persistence, (sticking to a problem over a long period) (iii) a delight in thinking and toying with ideas, (iv) the need for variety and independence, (v) insatiable curiosity, (vi) a tolerance of ambiguity, (the willingness to put up with the frustration of not being able to solve a problem because all of the evidences isn’t in) (vii) high energy and vast output of work.

In order to create an environment in the class where the students enhance their creative thinking abilities, the researcher has tried to

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incorporate these factors in the treatment meted out to the experimental group. There is a scope for students to ask questions, they can express their ideas freely, there is a lot of variety in the teaching methods. The students’ curiosity is satisfied, and at the same time the students know that there are no such set formulae to solve problems.

1.13. CONCEPT OF CLASSROOM CLIMATE

In a classroom, there are organized interpersonal relationships between its members. These relationships are basically of two types – (1) teacher – pupil relationships; and (2) pupil – pupil relationships. The nature of these relationships has an influence on the general atmosphere of the classroom within which the process of teaching – learning takes place.

A student comes in contact with various teachers having individual differences in temperament, behaviour, intellectual level, method of teaching and interaction with students. Moreover, often, the same teacher exhibits different behaviour on different occasions depending upon the prior conditions and mood of the teacher. Such discrepancies confuse the student and it becomes difficult for him to understand what is expected of him by the teacher.

Initially, the relationship between the teacher and the students is study-oriented but later the students start accepting the teacher and a cohesive group is formed, where there is a general feeling of belonging and
welfare of the class. Thus personal-social group starts getting shaped which determines the overall climate of the classroom. Thus each classroom portrays a unique pattern of behaviour.

If the students have pleasant, positive experiences in the classroom, they are expected to develop attachment towards it. If these experiences are unpleasant they develop aversion not only towards teachers but also towards classroom, learning, school and peers. So it is very important to have a conducive climate where teaching-learning takes place in a very natural way.

Definitions of Classroom Climate.

According to Good's Dictionary on Education, "Classroom climate includes heat, light, seating, and individual differences among members of the group, teacher personality and teacher-pupil relationship." In general, it may be said that classroom climate includes the physical, social and psychological dimensions.

According to Moos and Tricket, there are three general categories which can be used in conceptualizing those individual dimensions that characterize diverse psychological environments. They are the relationship dimension, the personal development dimension and the system.

1. Good, C. V. Op Cit p. 135
maintenance dimension. It is desirable that any instrument used for assessing human environments provide adequate coverage to each of these three basic types of dimensions as they cover all the aspects of the processes going on in a classroom.

Dimensions of Classroom Climate

For a systematic study of classroom climate, it is necessary to identify and describe its dimensions.

According to Moos and Trickett\(^1\) the three basic dimensions of classroom climate are as follows:

1) **Relationship Dimension** which identifies the nature and intensity of personal relationship within the environment and assess the extent to which people are involved in the environment and support and help each other.

2) **Personal Development Dimension** which assesses the basic directions along which personal growth and self enhancement tend to occur.

3) **System Maintenance Dimension** which involves the extent to which the environment is orderly, clear in expectations, maintains control and is responsive to change.\(^2\)

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1. Ibid. p. 14
2. Ibid. p. 16
These dimensions characterizing various classroom environments have been further divided into certain specific subcategories.

1) Relationship Dimension: This category includes (a) involvement, (b) affiliation, (c) teacher support

(a) **Involvement**: It refers to "the extent to which students have attentive interest, participate in discussions, do additional work and enjoy the class."\(^1\)

The students take part in the activities in the class get interested in the work, actively participate in discussions and seem to enjoy doing whatever work is assigned in the class. The lessons given to the treatment group included all these activities which would help students enhance their creativity.

(b) **Affiliation**: It is "the extent to which students help each other, get to know each other easily and enjoy working together."\(^2\)

Since the interaction between students is very essential for exchange of ideas to take place, it should be the first priority of the teacher to make the students develop social skills and only then the teacher can expect to enhance the creative thinking abilities in her students.

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1. *Ibid* p. 19
2. *Ibid* p. 19
(c) **Teacher Support:** It refers to "the extent to which the teacher helps, befriends, trusts and is interested in students."¹

It is very essential for a teacher to help students, make them her friends and trust them and show interest in them to make them develop as they should. This would develop their confidence in themselves, which would help them to open up and express their thoughts freely.

2) Personal Development Dimension:- This category includes (a) Task orientation, (b) competition, (c) innovations.

(a) **Task Orientation:** It refers to "the extent to which it is important to complete activities planned and to stay on the subject matter."²

It is very essential for a teacher to complete whatever activities that have been planned for a stipulated time. It is also essential to conduct activities whereby she stays on the subject matter and does not deviate from it. So in doing so not only does she mean to teach but also teach in the best possible way, so that she takes care of other development too.

(b) **Competition:** It refers to "the emphasis placed on students competing with each other for grades and recognition."³

A general atmosphere of healthy competition helps the students to perform better. It encourages even the average students to make known to

1. Ibid p. 19
2. Ibid p. 19
3. Ibid p. 19
the others the potentialities they possess. It is the duty of the teacher to create healthy spirit of competition and enable them to become overt in their expression.

(c) Innovations: It refers to “the extent to which the teacher plans new, unusual and varying activities and techniques and encourages students to contribute to classroom planning and to think creatively.”

To plan new, unusual and varying activities the teacher first has to lay down the goals. The purpose of the activities has to be very clear. It is very essential for the student to have many varied experiences for it to make his development richer and thus be able to enhance creativity.

3) System Maintenance Dimension: This category includes (a) order and organisation, (b) rule clarity, and (c) teacher control.

(a) Order and Organisation: It refers to “the emphasis on students behaving in an orderly, quiet and polite manner and on the overall organisation of classroom activities.”

To get the students to do, whatever they do, in a much disciplined way is very important for a teacher. To get the students to be disciplined it is very essential for the teacher to make the goals of education, also the goals of the students, then there will be harmonious overall organisation of

1. Ibid p. 19
2. Ibid p. 19
classroom activities.

(b) **Rule Clarity:** It refers to “the emphasis on clear rules, on pupils knowing the consequences for breaking rules and on the teacher dealing consistently with pupils who break the rules.”¹

The teacher should mete out punishment for the wrong act and not to the person. Every student is worthy of respect and the students who break rules consistently will have to be dealt with very tactfully. Teacher is expected to have a very sympathetic attitude towards students. She has to have a lot of tolerance if she desires to enhance creativity among students.

(c) **Teacher Control:** It refers to “the number of rules, how strictly they are enforced and how severely rule infractions are punished.”²

The teacher will have to be democratic in setting rules. Autocratic functioning may bring about resentment from the students. Even while activities are being conducted rules will have to be followed. If there has to be smooth functioning of the teaching learning process.

Since enhancement of creativity is expected to depend upon the environment that is created in the classroom, it has become very important for the researcher to include classroom socio-psycho climate as a variable in the study so as to ascertain whether the classroom climate is the same in both the groups (experimental and control).

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1. Ibid p. 19
2. Ibid p. 19
In the present study, classroom climate has been conceptualized on the basis of the dimensions identified by Moos and Tricket.

1.14. RATIONALE OF THE STUDY

The central purpose of education is to develop cognitive abilities and thinking power of the students. Therefore, school activity programmes need to be geared to develop both intelligence and creativity. But it is seen that as compared to intelligence, very little is being done for the development of creative abilities in schools.

Several investigations in various countries have shown that creative expression is a learned behaviour which can be developed in a shorter time period by giving creative instruction in school in any school subject.

Many researchers have tried out self-prepared packages to enhance creativity in students. A majority of self prepared packages incorporated most of the different methods taken individually. Some other researchers have used brainstorming and morphological analysis to enhance creativity. Still others have used synectics and some have used problem solving with guided discovery to enhance creativity. Some more have used role playing. Some have also used instructional materials like audio visual aids and media techniques to enhance creativity. All these methods were found to be successful in enhancing creativity. Very few have used the eclectic
approach involving brainstorming, inquiry training, synectics and role-playing, together, to teach various school subjects.

Many researchers have tried to enhance creativity in Mathematics, Science and languages. Very few have tried to enhance creativity by teaching subjects like History and Geography.

It is quite possible that the eclectic approach for enhancing creativity may interact with students with different levels of motivational factors, hemisphericity dominance, extroversion – introversion, locus of control, socio-economic status and gender.

The present study has also included students’ attitude towards school as a dependent variable. It also tries to investigate the impact of the eclectic approach on students’ attitude towards school. It is expected that use of the eclectic approach could create enthusiasm in the students about school activities, motivate them towards school learning and create a general feeling of satisfaction with the school as well as a favourable disposition towards the school in the experimental group. Hence attitude towards the school is included in the present study as a dependent variable and as a by-product of the eclectic approach to enhancing creativity.

The motivational factors included in the study including students' curiosity, need for variety, thinking and toying with ideas and so on are likely to interact with the experimental treatment. Students from the experimental group who are moderate or high on such motivational factors
are likely to benefit more from the experimental treatment as compared to those (i) low on motivational factors and (ii) from the control group. Hence motivational factor is included in this study as a mediator variable.

The extroverts are more vocal in their opinions, are outgoing and enjoy being in the company of others. Such characteristics are likely to interact with the experimental treatment. Students from the experimental group who are moderate or high on extroversion are likely to benefit more from the experimental treatment as compared to those (i) low on extroversion (ii) from the control group. Hence extroversion – introversion is included in this study as a mediator variable.

Those students whose right hemisphere functioning is dominant are intuitive and gestalten. They are able to retain complex visual patterns. They exhibit control on emotional aspects and they are aesthetic in nature. Such qualities are likely to interact with the experimental treatment. Students from the experimental group who have right hemisphere or dual hemisphere dominance are likely to benefit more from the experimental treatment as compared to those (i) who have left hemisphere dominance and (ii) students from control group. Hence hemisphericity dominance is included in this study as a mediator variable.

Those students who have internal locus of control believe that consequences such as learning, getting rewards and avoiding punishments are under their own control. They exhibit confidence. They take an active
role in coping with the environment. They seek relevant information to control their environment, experience less anxiety, are better adjusted than the externals. Such qualities are likely to interact with the experimental treatment. Students from the experimental group who are high on internal locus of control are likely to benefit more from the experimental treatment as compared to those. (i) low on internal locus of control. (ii) from the control group. Hence this variable has been included in this study as a mediator variable.

Those students who are high on socio-economic-status are likely to have greater exposure to the modern technology and are likely to be more confident. Thus students' level of socio-economic-status is likely to interact with the experimental treatment. Hence this variable is included in the study as a control variable.

The treatment meted out to boys and girls is the same in both the groups so no additional gender related gain in creativity are expected either from the treatment group or from the control group. Hence gender is included in the study as a control variable.

1.15. STATEMENT OF THE PROBLEM

Does the eclectic approach enhance creativity in classroom? This is stated in the form of a title as follows:

"An Eclectic Approach to Creativity in Classroom: An Experiment."
1.16. VARIABLES OF THE STUDY

The Dependent Variables are

a. Creativity of Students.

b. Students’ Attitude towards School.

The Independent Variables are:

a. Experimental Treatment using an Eclectic Approach

b. Lecture Method in the Control Group.

The Moderator Variables are

a) Hemisphericity

b) Motivational Factors.

c) Extroversion - Introversion

d) Locus of Control

The Control Variables are

a) Gender of the Students.

b) Socio-Economic-Status of the Students.

c) Time of Teaching.

d) Content Matter

e) Teacher Personality and Characteristics.

f) Classroom Climate.
1.17. OPERATIONAL DEFINITIONS OF THE TERMS

1 **Creativity** : It is defined as the level of a student’s fluency, flexibility, originality, ability to elaborate.

2 **Attitude towards School** : An attitude towards school may be defined as the predisposition to respond in a favourable, unfavourable or indifferent way towards the school.

3 **Socio-Economic Status** : It refers to the nature and extent of wealth, power and prestige enjoyed by a student.

4 **Introversion** : Introversion is characterised by a tendency to shrink from social contacts, by a preference for covert and symbolic, as opposed to overt abilities, by great personal sensitiveness and by a proneness to autistic thought.

5 **Extroversion** : Extroversion is characterised by a predominant interest in the external world and social life and a correspondingly diminished concern for fantasies, reflection and introspection.

6 **Locus of Control** : Locus of control is the desire to which an individual attributes the causes to his/her behaviour to environmental factors or to his/her own decisions or efforts. It has two dimensions (i) When the individual attributes the causes of his/her behaviour to his/her own decisions or efforts, it is considered as internal locus of control. (ii) When the individual attributes the causes of his/her behaviour to
environmental factors – chance, luck or fate, it is considered as external locus of control.

7 Motivational Factors: It incorporates a student’s desire to question, high intellectual persistence, a delight in thinking and toying with ideas, the need for variety and independence, insatiable curiosity, a tolerance to ambiguity and high energy and vast output of work.

8 Hemisphericity: It is a tendency for an individual to rely more on one than the other cerebral hemisphere for information processing.

9 Eclectic Approach: The eclectic approach refers to the description of the techniques / activities and features from different methods selected together describing the nature of teaching and learning and conditions that allow for successful use of these processes.

1.18. AIMS OF THE STUDY

The broad aims of the present study are as follows:

1. To develop instructional material for enhancing creativity in students in the history, geography and English language by using brainstorming, synectics, role-playing, inquiry training techniques together.

2. To study the effect of the instructional material on students’ gain in creativity and attitude towards the school.
3. To study the interactive effect of motivational factors, hemisphericity, extroversion, locus of control and the treatment on the students’ gain in creativity and attitude towards school.

1.19. OBJECTIVES OF THE STUDY

The study was conducted with the following specific objectives:

1) To compare the pretest scores of creativity of experimental and control groups.

2) To compare the posttest scores of creativity of experimental and control groups.

3) To compare the pretest scores of students’ attitude towards the school for experimental and control groups.

4) To compare the posttest scores of students’ attitude towards the school for experimental and control groups.

5) To ascertain the relationship between pretest and posttest scores of creativity.

6) To ascertain the relationship between pre-test and posttest scores of students’ attitude towards the school.

7) To compare the pretest and posttest scores of creativity of experimental group.
8) To compare the pretest and posttest scores of creativity of control group.

9) To compare the pretest and posttest scores of students’ attitude towards school of experimental group.

10) To compare the pretest and posttest scores of students’ attitude towards school of control group.

11) To compute gain scores of creativity in terms of

   \[
   \text{Gain score} = \text{posttest score} - \text{pretest score}.
   \]

12) To compute gain scores of students’ attitude towards school of in terms of

   \[
   \text{Gain score} = \text{posttest score} - \text{pretest score}.
   \]

13) To compare gain scores of creativity of experimental and control groups.

14) To compare gain scores of students’ attitude towards school of experimental and control groups.

15) To study the interaction effect of gender and treatment on gain scores of creativity.

16) To study the interaction effect of gender and treatment on gain scores of students’ attitude towards school.

17) To study the interaction effect of socio-economic status score and treatment on gain scores of creativity.
18) To study the interaction effect of socio-economic status score and treatment of gain score of students' attitude towards school.

19) To study the interaction effect of motivational factors score and treatment on gain scores of students' creativity.

20) To study the interaction effect of motivational factors score and treatment on gain scores of students' attitude towards school.

21) To study the interaction effect of locus of control score and treatment of gain scores of creativity.

22) To study the interaction effect of locus of control score and treatment of gain score of students' attitude towards school.

23) To study the interaction effect of extroversion-introversion score and treatment on gain score of creativity.

24) To study the interaction effect of extroversion-introversion score and treatment on gain scores of students' attitude towards school.

25) To study the interaction effect of hemisphericity dominance score and treatment on gain scores of creativity.

26) To study the interaction effect of hemisphericity dominance score and treatment on gain scores of students' attitude towards school.

27) To study the interaction effect of scores on classroom climate and treatment on gain scores of creativity.

28) To study the interaction effect of scores on classroom climate and treatment on gain scores of students' attitude towards school.
29) To study the effect of the treatment on the posttest scores when the differences in the pretest scores of the two groups have been partialled out.

30) To compute the residual scores of creativity after controlling pretest scores and socio-economic status scores, using Dyer's Regression Residuals Method.

31) To compare the residual scores of creativity of the experimental and control groups after controlling pretest scores and socio-economic status scores.

32) To compute the residual scores of creativity after controlling scores on socio-economic status, motivational factors, locus of control using Dyer's Regression Residuals Method.

33) To compare the residual score of creativity of experimental and control groups after controlling scores on socio-economic status, motivational factors, locus of control.

34) To compare gain scores of a) fluency, b) flexibility, c) originality, d) elaboration of experimental and control groups.

35) To compute the magnitude of effectiveness of the eclectic approach on a) creativity and b) students' attitude towards school.
1.20. HYPOTHESES OF THE STUDY

Research Hypothesis:

The gain in creativity of students belonging to experimental group where the eclectic approach incorporating brainstorming, inquiry training, synectics and role playing for teaching history, geography and English language is used is expected to be greater as compared to the control group.

Moreover, different variables such as motivational factors, locus of control, hemisphericity, extroversion - introversion are expected to interact with the treatment and therefore likely to have different influence on students’ gain in creativity.

The gain in attitude of students towards school in the experimental group is likely to be higher as compared to the control group due to its exposure to a variety in teaching methods.

Null Hypothesis:

In order to attain the specific objectives of the study the following null hypothesis were formulated:

1. There is no significant difference in the pretest scores of creativity of experimental and control groups.

2. There is no significant difference in the posttest scores of creativity of experimental and control groups.
3. There is no significant difference in the pretest scores of students’ attitude towards school of experimental and control groups.

4. There is no significant difference in the posttest scores of students’ attitude towards school of experimental and control groups.

5. There is no significant relationship between pretest and posttest scores of creativity.

6. There is no significant relationship between pretest and posttest scores of students’ attitude towards school.

7. There is no significant difference in the pretest and posttest scores of creativity of experimental group.

8. There is no significant difference in the pretest and posttest scores of creativity of control group.

9. There is no significant difference in the pretest and posttest scores of students’ attitude towards school of experimental group.

10. There is no significant difference in the pretest and posttest scores of students’ attitude towards school of control group.

11. There is no significant difference in the gain scores of creativity of experimental and control groups.

12. There is no significant difference in the gain scores of students’ attitude towards school of experimental and control groups.

13. There is no interaction effect of gender and treatment on gain scores of creativity.
14. There is no interaction effect of gender and treatment on gain scores of students’ attitude towards school.

15. There is no interaction effect of socio-economic status and treatment on gain scores of creativity.

16. There is no interaction effect of socio-economic status and treatment on gain scores of students’ attitude towards school.

17. There is no interaction effect of motivational factors and treatment on gain scores of creativity.

18. There is no interaction effect of motivational factors and treatment on gain scores of students’ attitude towards school.

19. There is no interaction effect of locus of control and treatment on gain scores of creativity.

20. There is no interaction effect of locus of control and treatment on gain scores of students’ attitude towards school.

21. There is no interaction effect of extroversion-introversion and treatment on gain scores of creativity.

22. There is no interaction effect of extroversion-introversion and treatment on gain scores of students’ attitude towards school.

23. There is no interaction effect of hemisphericity dominance and treatment on gain scores of creativity.

24. There is no interaction effect of hemisphericity dominance and treatment on gain scores of students’ attitude towards school.
25. There is no interaction effect of classroom processes and treatment on gain scores of creativity.

26. There is no interaction effect of classroom processes and treatment on gains scores of students’ attitude towards school.

27. There is no significant effect of the treatment on the posttest scores when the differences in the pretest scores of the two groups have been removed.

28. There is no significant difference in the residual scores of creativity of experimental and control group after controlling pretest scores and socio-economic status scores.

29. There is no significant difference in the residual scores of creativity of experimental and control group after controlling socio-economic status, motivational factors, locus of control.

30. There is no significant difference in a) fluency, b) flexibility, c) originality, d) elaboration of experimental and control groups.

1.21. SCOPE AND DELIMITATIONS OF THE STUDY

This investigation ventures to study the effectiveness of creative teaching techniques viz. brainstorming, inquiry training, synectics and role-playing jointly. It does not include other techniques such as morphological analysis, problem solving and so on nor does it venture to study the effect
of any one specific teaching technique / model in enhancing creativity singly.

The research includes only one experimental group and one control group. It is conducted only in two schools with English as the medium of instruction and does not include any other media of instruction. It was carried out in schools affiliated to the SSC Board and not in schools affiliated to any other boards like the CBSE or ICSE. The lessons were given in the subjects of English, History and Geography only and not in any other subjects like Mathematics and Science. The study is conducted only on VIII standard students and not on any other class.

The study does not consider any teacher variables such as teacher's level of creativity, anxiety, achievement motivation, personality, intelligence, locus of control and so on.

The experimental group was given the treatment where creative teaching practices of the four techniques were used. The by-product of teaching the experimental group considered is the change in the attitude of the students towards their school and not any other by-product like rate of attendance, scholastic achievement, motivation and interest of the students. Creativity was measured using only paper-pencil test and not performance test. Both the aspects of creativity i.e. verbal and figural were considered jointly. The components of creativity included in the study are fluency, flexibility, originality and elaboration. The sample includes both boys and
girls. The test used to measure creativity is a group test and not individual test of creativity.

In the study the researcher has found the magnitude of effectiveness of the eclectic approach by considering a) the gain scores in creativity of both the groups. b) the posttest scores of creativity when the differences in the pretest scores were removed of both the groups. c) the residual scores of creativity after controlling pretest scores and socio-economic status scores of both the groups. d) the residual scores of creativity after controlling scores on socio-economic status, motivational factors and locus of control of both the groups.

The present research is delimited to studying the impact of the eclectic approach on immediate enhancement of creativity. It does not include long term enhancement of creativity.

1.22. SIGNIFICANCE OF THE STUDY

The school authorities are always on a lookout to find new methods of teaching to make the teaching learning process more interesting and action oriented, not only to motivate the children towards learning so that they develop positive attitude towards school, but also to develop the creative thinking abilities in the students. This study would help them to make possible both these goals without introducing any extra periods in the
school time-table as these methods to enhance creativity incorporate the syllabus of History, Geography and English language.

The teaching community seems to be obsessed by the idea that the applicability of these methods to classroom teaching has severe limitations. Though most of the developed countries have made such practices common, India has still not been able to develop creative potentials. Indians are still apprehensive about the utility of such methods in enhancing creativity. The success of the present research will develop confidence in them about the utility of these methods to enhance creativity and thus change their attitude towards the applicability of these methods in classroom teaching.

The same changes are also expected in the students. As a consequence of teaching them by using these methods they would gain extra confidence and become bold and express themselves freely and generate more and more ideas without the fear of being ridiculed. They would start believing in their ability to produce new ideas, which would enhance not only their creative thinking abilities, but also to enhance their personality.

The teacher educators would be able to equip the next generations with certain strategies, which would enable the teacher trainees to enhance creativity among their students. Thus it would prove beneficial to teacher training colleges.
The society also would subsequently benefit because these students are going to be the future citizens of the country – more sensitive to the problems. They would be better equipped with the coping strategies to solve their problems in unique ways and thus prove to be useful citizens of the country.