"Let us find our God, let us live for ultimate truth, which emancipates us from inner light, not of power but of love."

- Rabindranath Tagore.

(1861-1941)
CHAPTER : I

PROLOGUE

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1.1 INTRODUCTION:

The thinking is the greatest gift to the mankind. Intelligence is the supreme virtue to mankind. Creative thinking makes man superior and superior than the others.

Hence the objectives of the study are always changing keeping in view with changing values in society. Methods of teaching and process of learning are also changing keeping in view with changing recent values in society. Hence the objectives, methods and process are always in a state of constant renewal. The last one hundred years has been a period of rapid change in education. John Dewey, pestology and James were pioneers who were responsible for change in education. But the major changes in educational thinking and architectural responses came about after world war II, when the demand for new facilities occured. At the same time those social, cultural and technological changes, literally pushed education into new era. changes occured so fast that the future can no longer be regarded as a reasonable extension of the past. A brief sketch of some of the present trends in education as they appear can do no more than to indicate range.

In a present situation education is seeking further a wider variety of objectives in which education is open to a wider range of social influence and in which change is proceeding at a greatly increased speed. Our country has faced more complex and fluid conditions, than those which existed only fifty years ago.

Education is now seeking a wider change due to the exploration of knowledge. One of the basic philosophical considerations is the continuous change that occurs in education from time to time, as a result of research. Such changes based on new knowledge should be introduced for the sake of accuracy without sacrificing the learning
potential of students. The students who were under adequate guidance and experience may be encouraged to develop into future creative scientists. In future our nation can not depend on other man-power, but must strive to find high quality personnel, especially creative persons to deal with its vital problems.

John Dewey and pestology were pioneers for change in education. Other educationlists have laid down the aims and objectives of education. The list of objectives is headed by "Teaching students to think by themselves" so educator must teach "thinking" manifestly schools do not teach thinking. The educational trinity is knowledge, intelligence and thinking. Intelligence is an innate quality that may depend on early environment. Intelligence is simply a speed of processing, within the brain, which gives an intelligent person a large span over the same period of time. Thinking is an operating skill through which intelligence acts upon experience, and knowledge or information is the thinking.

In school subjects it is often assumed that information is more important than thinking. Thinking is regarded only as a tool for as simulating information, classifying, it and putting in into its proper place. Information is very much easier to teach than thinking. In the academic world, the pupils who are well informed within their own speciality can be classified as talented or brilliant. Outside that speciality, however, their ability is much less, for information can no longer be a substitute for thinking. To aim getting information is always admirable but to await for perfect information. In the real world, decisions and actions have to be taken and since that information, is usually imperfect it has to be supplemented by thinking. The relation between thinking and information can be considered in two situations. In the first situation, it is possible to collect a great deal of information.
FIGURE 1.1

THE STRUCTURE OF INTELLECT MODEL
In the second situation, it is not possible to fill the field with information.

According to Edward de Bono:

"Thinking is a skill, it can be developed and improved if one knows how." Manifestly thinking is a skill as much as thinking can be performed skillfully. Skill in thinking is a broad skill like in woodwork: knowing what to do, when to do, how to do, what tools to use, the consequences what to take into considerations. It is much more than knowing the rules of logic or learning how to avoid logical errors. Skill in thinking has much to do with perceptions and with attention directing. It is a matter of exploring experience and applying knowledge. It is knowing how to deal with situations one's own ideas, the thoughts of them. It involves planning decisionmaking, looking at evidence guessing, creativity and very many other aspects of thinking.

Emphasising on the process of thinking, Don Fabun said:

"What tomorrow needs is not the masses of educated man---man, educated to feel and to act as well as to think and to create."

These two verbetive words: to think and to create, would indicate the process of creative thinking, that is to think creatively for today and tomorrow.

1.2 CONVERGENT THINKING:

In school subjects, most of our education is concerned with promoting convergent thinking. The kind of thinking in which students are encouraged to find the 'right answers' to the problems. Such a process assumes that there is only a single right answer and that it exists somewhere usually in the text book or in the course of study. Guilford proposed a box like model structure of intellect. The structure of intellect model has been shown in figure - 1.1.
In this model there are three dimensions i.e. Content, operation and product.

Content indicates the mental communication media. There are four kinds of content viz., Figural, Symbolic, Semantic and Behavioral. The second dimension is operation. Operation indicates the mental process performed or actively involved. There are five kinds of operations. Viz, Cognition, Memory, Divergent production, Convergent production and Evaluation.

The third dimension is product. There are six kinds of products. Viz, Units, Classes, Relations, Systems, Transformations and Implication.

Both the production abilities have to do with the information from memory storage but convergent production occurs under several restrictions starting with the given information. There is only one right acceptable answer most at present education. This present education is concerned with promoting convergent production ability.

Our education is concerned with promoting convergent thinking. In this kind of thinking students are encouraged to find the 'right answer' to the problem. Such a process assumes that there is only a single right answer and that it exists somewhere, unusually in the text book on in the course of study.

1.3 DIVERGENT THINKING:-

Divergent thinking leads to a broadening of the definition and criteria of the problem so as to generate a wide variety of possible solutions, many of which may be creatively superior. Divergent thinking is free to develop its own idea, raise its own questions of taking new directions. Divergent thinking is identified by fluency, flexibility and originality. Divergent thinking, does not come into play
in total process of reaching a unique conclusion for it comes into play wherever there is trial and error thinking. Fluency is now regarded as a facility, in divergent production of symbolic unit. The divergent production on class is believed to be the unique feather of a factor called spontaneous flexibility. The number of clever responses given by an examinee is his score for originality.

1.4 LATERAL THINKING:

Lateral thinking is closely related to creativity. Lateral thinking is very basic concept of thinking and that one can develop some skills in it. Lateral thinking like logical thinking, is a way of using mind and attitude of mind. Lateral thinking is concerned with the generation of new ideas. It is also concerned with breaking out of prison of old ideas.

Dr. Edward de Bono suggested in his book "Lateral thinking" that:

"At school the emphasis has traditionally always made on vertical thinking which is an effective but not complete."

1.5 VERTICAL THINKING:

Vertical thinking develop idea generated by lateral thinking. Lateral thinking emphasis the effectiveness of vertical thinking. One could not dig a hole in different places by digging the same hole deeper. Vertical thinking is used to dig the same hole deeper and lateral thinking is used to dig a hole in different places. Vertical thinking in it self is dangerous because it is useful to some extent. Lateral thinking involves restructuring escape and the provocation of new patterns. Liberation from old ideas and stimulation of new ones are the aspects of lateral thinking.
1.6 CREATIVE THINKING:-

In view of the challenges of twenty first century, the students will have to learn how to think rather than what to think. But what is thinking? This might seem a pointless question since everyone knows by what thinking is from his own first hand experience of doing it. We all think from time to time. It is a first step to help the student to his mental thinking process and environment. In creating a climate where creativity can flourish, the teacher must assume responsibilities to the former, where work begins only after the seed is sown. The nature of the child like the nature of the seed depends upon the conditions for growth. For creative thinking, the divergent thinking and lateral thinking should be developed by providing the proper situation.

1.7 CREATIVITY AND EDUCATION:-

Education means a special training to a person, which helps to bring out his abilities that are lying innate. All kinds of abilities including intelligence and creativity also can be developed by education.

A.H. Maslow believes that-

"Education can provide creative climate to counter act this astrophying of talents."

In the beginning of this century madam montessory was the first educationalist who tried to develop creativity of a child in her own way. She was firm in her conviction that only the creative persons can reshape the world in a better way. More over she believed that God's blessing are instrumental in the development of our abilities. So she formed a poem to that effect and insisted that all the teachers should sing it as a prayer regularly. The gist of the poem runs as under.

"O God, give us the strength to understand the talents of the child."
More and more research projects have been printing up the part that education can play in the development of creative efficiency. A good number of studies agree with the statement that environment is a major factor that enhances the development of creative thinking.

Torrance argues that "Perhaps the most promising area if we are introduced in what can be done to encourage creative talent to unfold, is that of experimentation with teaching procedure which will stimulate students to think independently to test their ideas and communicates them others."

He himself conducted a number of studies about class-room climate for development of creative thinking and he found that engaging in a large variety of creative activities may result in greater word fluency. He also bound that differential rewards influence originlity of thinking.

Other educationalists also now realise the importance of creativity. From this, we can infer that in modern education also the role of creativity is the most significant. It's importance is proved within a short period of time, creativiry is a mental trait which can be undermined by adverse environment and nourished by proper environment. For this reason the present class-room situation would prevail the ability to creative thinking.

1.8 PRESENT CLASSROOM ENVIRONMENT:-

It is acknowledged by the educationalists that stereo-typed systems of education prevailing at every stage has been causing incalculable loss to the society in general and to an individual learner in particular. Our activities in formal educational set up have been considered out dated. Instead of producing creative minds they stuff the minds of learners at every stage for the purpose of passing
examination. Perhaps, this could be one of the reasons why learners fail to contribute anything new and fresh to the real advancement of the civilization.

Kabra R.N. Opines that-

"The teachers of today know a lot of methods and very much of pedagogy and they over work, over worry and over teach but under achieve because" their students are "passive".

The reasons for passiveness are boredom which is one of the greatest causes of delinquencies and the monotonous learning. Teachers take the lion's share in the whole learning process has been greatly bit and damaged by killing all the initiative and the drive to strive and learn.

Margaret Mead says -

"I didn't send my child to school because I wanted education."

By teaching, we kill their initiative to learn. We retard their problem solving. We approach their thinking to one's own set norms and discourage divergent and creative thinking.

Really, learning is a flast for the mind and spirit and a source of lasting joy. But the rigid disciplines of schools, the bell bound teaching, the compulsion, the 'Oughts' and 'musts' have made it a sort of enslave most by killing the natural pleasure which is innate, in born and instinctive.

Natural learning begins right in infancy but the educational system goes on killing it by one's do's and don'ts and make learning stereo-typed and convergent rather than divergent and creative.

There could have been many Aristotles, Socrates, Platos Tagores, and Tilaks in the societies, but they have been killing that spirit through the seals of learning which do not aim at or allow free shaping and natural growth of personality.
To say in a word, the present education is converting man into an economic being. He becomes self-centred and more formal in his day to day life. Free thinking is not allowed. Spontaneity is being killed at every stage so if education has to bear fruits creativity should be given due weightage. Education void of creativity works in the field of arts, literature and religion. The aim of education should have been to help children to grow this natural tendency. It can still be done by creating an environment where the mind is free, peaceful, full of love, sensitive and conscious. A natural urge to do something leads a child to his full development physically and intellectually. Therefore school efforts at all levels should be to develop this tendency in the child who comes to school for his mental development.

This view leads the investigator to undertake the task of developing creative abilities of the children. So investigator has decided to use creative thinking programme designed by Dr. Edward De Bono thinking programme assist to improve the creativity of students of school. Hence the investigator desire to develop the De Bono thinking programme in the special culture of Mehsana District. Researcher also aimed to study the effectiveness of the programme.

Researcher also desire to find out the achievement of the students of standard IX of Mehsana District. After the execution of these programmes these programme also assist to improve the education of school subjects. Thus de Bono thinking programmes help the students to increase achievement in school subjects.

So investigator desires to develop the De Bono thinking programme in special culture of Mehsana District. He also try to evaluate the effectiveness of treatment and its variables Viz, intelligence and Sex on creative ability on the students of standard IX of Mehsana District.
1.9 **STATEMENT OF THE RESEARCH:-**

The problem for the present research is:

**DEVELOPMENT OF CREATIVE THINKING PROGRAMME IN THE LIGHT OF PROGRAMME DEVELOPED BY DE BONO AND ITS EFFECTIVENESS ON CREATIVE ABILITY OF THE STUDENTS OF STANDARD IX OF MEHSANA DISTRICT.**

1.10 **TERMINOLOGY : ITS MEANING:-**

In order to analyse the problem, it would be necessary to be precise about the connotations and meanings of the key words involved in the statement of the research.

1.10.1 **Thinking :**

Thinking is a skill, it can be developed and improved if one knows how. There are so many definitions about thinking in education.

Charles E Skinner says. Thinking is often defined as "the action of the mind" or 'reasoning' or 'being logical.' Thinking involve discovery and exploration of situation, original ideas and new solutions to old problems.

The scientifically trained psychologists must either define his term with 'Exactness.'

Creative thinking situation is described in figure no : 1.2

2. Hindrance

1. Want or motive

4. Want satisfaction or goal

3. Possible solutions for hypothesis

5. Creative thinking.

FIGURE NO. 1.2 CREATIVE THINKING SITUATION.
In the figure no. 1.2 a want or motive (1) is directed towards a state of want satisfaction (4) but it is hindered by some difficulty (2) necessitating some sort of problem solving behaviour. It would be prepared some possible solutions or hypothesis (3) If this behaviour is not promptly successful a state of tension is created (5) which constitutes the occasion for "Creative thinking" observed event. Accuracy is the criterion of good reasoning.

1.10.2 Creativity.

Creativity is the ability to think of a lot ideas where there is a problem or a need for ideas. It is also being able to think of many different ideas of unique or original ideas and to develop or elaborate ideas sometimes. It is asking good questions which clearing a problem. It is also being able to translate ideas into a form of communication or expression which makes it possible for other people to grasp the ideas or solution to problem. Thus it is necessary to final words or an art. media, music, drama or monument to express our ideas solution or feelings.

1.10.3 Creative ability.

Creative ability is seemed to define as the action of the mind or reasoning or being logical. Creative ability involves discovery and exploration of situation, original ideas and new solutions to old problems. Accuracy and good reasoning is the best criterion of good creative ability.

1.10.4 Programme.

Programme is one kind of educational instrument in which one can teach some ideas to the students. It is seemed sometime that programme is the one or the handy educational instrument to communicate the information to others. In the present study the investigator would prepared programme to assist to improve the
creativity or the students of school. Hence the investigator desire to try out and develop in the modify the programme in the light of programme developed by De Bono in the special culture of Mehsana District.

1.10.5 Dr. Edward De Bono:

Dr. Edward De Bono is a professor of education in the university. He has deal work with creative ability. He played an important role to emphasis creative ability in secondary school students.

He said that, Thinking is a skill. It can be developed and improved knowing that to do, when to do, how to do, what tools to be used to take into consideration.

Dr. Edward De Bono desciminate thinking and divergent thinking. He determined that the students are encouraged to find the "right answers" to problems in thinking.

Dr. Edward De Bono suggested in his book 'lateral thinking' that at school students emphasis the knowledge and intelligence in broad practical thinking.

1.10.6 Creative thinking programme.

Dr. Edward De Bono has played an important role in education. He has done prominent work in creative thinking. Thinking is developed step by step in the growth of the child. He prepared and developed creative thinking programme. This programme is an innovative concept designed by Dr. Edward De Bono. It helps students broad perception and creativity. It assist to improve the creativity of the students of school. It teaches them an art of effective thinking and show them how to apply this new skill to virtually and academic subjects as well as day to day problem faced outside the class-room. It is introducing a revolutionary break through in an art of creative thinking and learning.

1.10.7 Culture of Mehsana District.
Mehsana District is belong to North Gujarat. Mehsana, Patan, Banaskantha and Sabarkantha Districts are in North Gujarat. But Mehsana District has its own culture. There are Patidars, Baniyas, Rajputs, Brahmins and Muslims casts lived to gather with the best harmony. The people of mehsana district are an honest, humble and hard worker. The main occupation of these families is farming the children of these families are an innocent and straight forward to their lives. They mainly fond of learning. They are almost interested in the subjects of Mathematics, English and Social Study. Hence in general the I.Q. of children are always high, creative ability is seemed in their behaviour. People almost say that-

"The teachers of Mathematics are provided by Mehsana District all over Gujarat State. No School of gujarat state is seemed without the teacher of mehsana district.

Day by day, the creative ability increased in the children of Mehsana District by its natural environment and social culture.

Hence in this study the investigator desire to develop creative thinking programme in the light of programme developed by de bono in the special culture of Mehsana District. Researcher would like to study of effectiveness of CTP to develop creative ability to the students of std IX of Mehsana District. Researcher also would like to enameerite the achievement of students after the implementation of creative. thinking programme developed by the investigator.

1.11 SPECIFIC OBJECTIVES OF THE STUDY.

The purpose of the study is to know relative effectiveness of three units of creative thinking programme:

namely:

(1) Operations of thinking
(2) Operations to be performed
(3) Things to be observed
The specific objectives of the study are as follow:

(1) To prepare and try out of creative thinking programme for the students of std IX of Mehsana District.

(2) To find out the effectiveness of creative thinking programme on the development of creative ability of the students of std IX of Mehsana District.

(3) To study the effectiveness of creative ability of secondary school students in relation to their intelligence.

(4) To investigate whether Sex plays role in development of the secondary school students creative ability.

(5) To compare the effectiveness of intelligence, sex and their first and second order interactions on creative ability of students of std IX of Mehsana District.

1.12 FORMULATION OF THE HYPOTHESES:

The hypotheses formulated for this present study are mentioned below:

\( H_1 \) There is a significant effect of creative thinking programme with feedback on the creative ability of the students of std IX of Mehsana District.

\( H_2 \) There is a significant effect of creative thinking programme without feedback on the creative ability of the students of std IX of Mehsana District.

\( H_3 \) There is a significant effect of creative thinking programme possessing intelligence on the creative ability of the students of std IX of Mehsana District.

\( H_4 \) There is a significant effect of creative thinking programme
possessing sex on creative ability of the students of std IX of Mehsana District.

H0<sub>5</sub> There is no first order interaction effect of treatment of creative thinking programme with feedback and intelligence on the creative ability of the students of std IX of Mehsana District.

H0<sub>6</sub> There is no first order interaction effect of treatment of creative thinking programme with feedback and sex on the creative ability of the students of std IX of Mehsana District.

H0<sub>7</sub> There is no first order interaction effect of treatment of creative thinking programme without feedback and intelligence on creative ability of the students of std IX of Mehsana District.

H0<sub>8</sub> There is no first order interaction effect of treatment of creative thinking programme without feedback and sex on the creative ability of the students of std IX of Mehsana District.

H0<sub>9</sub> There is no first order interaction effect of intelligence and sex on creative ability of the students of std IX of Mehsana District.

H0<sub>10</sub> There is no second order interaction effect of treatment with feedback, intelligence and sex on creative ability of the students of std IX of Mehsana District.

H0<sub>11</sub> There is no second order interaction effect of treatment without feedback, intelligence and sex on creative ability of the students of std IX of Mehsana District.

1.13 LIMITATIONS OF THE STUDY

The study was delimited to the following aspects:

(1) This study is limited only for Gujarati speaking students of standard IX of Mehsana District, other language students are not included in this thinking process.

(2) The investigator has limited his study only for secondary school
students of class IX of Mehsana District.

(3) The investigator has used only verbal and non verbal test for measuring creative thinking.

(4) creative thinking was represented by Fluency Flexibility and Originality.

1.14 FORMAT OF RESEARCH REPORT

The format of research report or scheme of chapterization is as under:

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