CHAPTER II

THEORETICAL PERSPECTIVE

2.0 INTRODUCTION

2.1 CREATIVE THINKING
   2.1.1 Divergent Thinking
   2.1.2 Lateral Thinking

2.2 TEACHER'S ROLE IN DEVELOPING CREATIVE THINKING

2.3 THE STRUCTURE OF INTELLECT MODEL

2.4 CREATIVE ENRICHMENT MODEL

2.5 ENRICHMENT TRIAD MODEL

2.6 CREATIVE LEARNING MODEL

2.7 CREATIVE TEACHING MODEL
2.0 INTRODUCTION

The students must be prepared for the world in which their ability to function will not depend on their mastery of fact and principles now taught in the schools but rather on their ability to deal with new facts and principles that have not yet been imagined. So the primary aim of education is to raise the level of academic achievement of an individual in the school. The academic achievement is closely related to the intelligence of the individual. One should think of the use of various models of teaching to raise the academic achievement and intelligence of the individual.

This study concerns with the creative teaching model, hence the investigator has tried to brief the theoretical perspectives of various models of teaching related to the creative thinking.
2.1 **CREATIVE THINKING**

The teacher should provide the proper guidance and environment to develop the thinking process of the students. The students also will have to learn how to think rather than what to think. The teacher should create a climate in the classroom where the creative thinking can be flourished. For developing creative thinking, the divergent thinking and lateral thinking should be developed by providing proper environment.

2.1.1 **Divergent Thinking**

The 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 are acceptable and some of which may be creatively superior. The divergent thinking is identified by fluency, flexibility, originality and elaboration in a process that is three wheeling and imaginative. The divergent thinking is free to develop its own data to raise its own questions and to take new directions.
The unique features of divergent problem is a variety of responses produced. The product is not completely determined by information, that is to say that the divergent thinking does not come into play in total process of reading a unique conclusion, for it comes into play wherever there is trial and error thinking.

The fluent thinking is tested by asking the examinee to list the words satisfying a specified letter required. The ability is now regarded as a facility in divergent production of symbolic unit. The parallel semantic ability has been known as identical fluency, the divergent production is believed to be the unique featured, of a factor called spontaneous flexibility. In this, subject goes frequently from one class to another, when subject goes to think about one class to us, it is to be called identical fluency.

A unique ability improving relations is called associational fluency. One factor pertaining to the production of system is known as expressional fluency.

A factor that has been called originality is recognised as adoptive flexibility with semantic material where there
must be a shifting of meaning. The examinee must produce the change in meaning and so come up with novel, unusual, clever ideas. The number of clever responses given by an examinee is his score for originality.

The ability to produce a variety of implications is elaboration of given information.

They all, above mentioned, are the divergent thinking abilities and they are the bases for creative thinking.

2.1.2 Lateral Thinking

The lateral thinking is closely related to creative thinking. Edward De Bono suggested in his book lateral thinking that at school the emphasis has traditionally always made on vertical thinking which is effective but incomplete.

The vertical thinking is traditional type of thinking. It is one moves towards by sequential steps, each of which must be justified. Correct solution would be impossible.

One selects act only what is relevant.

The lateral thinking emphasis the effectiveness of vertical thinking. The vertical thinking develops the idea generated by lateral thinking. One could not dig a hole in a different place by the same hole deeper at a time. The vertical thinking is used to dig a hole in a different place at a time. The vertical thinking itself is dangerous because it is useful to some extent.

Insight and humour both involves restructuring put with more emphasis on escape from restricting pattern. The lateral thinking involves restructuring escape and the provocative of new patterns. It is closely related to creative thinking but where creative thinking is too often only the description can only admire a result but one learn to use process.

The lateral thinking is concerned with the generation of new ideas. New ideas are stuff and innovative so they would progress in every field from science to art, from politics to personal happiness. It is also concerned with
breaking out of prison of the old ideas. It leads to this change in attitude and approach to looking in a different way at things which have always been looked at in the same way. Liberation from old ideas and the stimulation of new ones are twin aspects of lateral thinking.

The lateral thinking like logical thinking is a way of using mind. There are specific techniques in logical thinking. Goodwill and exhortation are not enough to develop skills in logical thinking. One's need is an actual setting in which to practice and some tangible techniques with which to practice.

From an understanding of techniques and from fluency in their use, lateral thinking develops an attitude of mind. Lateral thinking is not same magic new system. Lateral thinking is a very basic part of thinking and that one can develop some skills in it.

2.2 TEACHER'S ROLE IN DEVELOPING CREATIVE THINKING

The educationists are interested in understanding the school conditions which affect the development of creative
thinking positively. Research workers have shown that the school conditions, the pupil's needs and motivations, teacher's behaviour in the classrooms, teacher-pupil relationships, methods of teaching and materials of teaching are important factors to help developing creative thinking of the pupil. The degree of intellectual environment of school directly affects the level of growth of pupil's creative thinking.

The teacher's role in the classroom is very important which influences the pupils in many ways. As the teacher's classroom behaviour and approach affect the learning of the pupil. Teacher's controlling strategies, open-mindedness, authoritarianism and other teaching characteristics affect the pupil. Teacher's level of creative teaching directly influences pupil's creative thinking.

Behler\(^2\) has quoted twenty principles for developing creative thinking through school experience listed by Sparnes and Harding. They are worth to be noted.

---

1. Be on the alert for new ideas and encourage the pupils to develop all their creative talents.

2. Make children more sensitive to environmental stimuli.

3. Encourage manipulation of objects and ideas.

4. Teach how to test systematically each idea, starting from as early as third grade. Show pupils how to define a problem and keep testing each idea. The heuristics described by Polya might be used as a guide.

5. Development of tolerance of new ideas.


7. Develop creative classroom atmosphere, a free, relaxed and unhurried one.

8. Teach the child to value his creative thinking. Encourage students to note down their ideas in concrete form whenever possible perhaps in a special notebook set aside for that purpose.

9. Teach skills for avoiding peer sanctions. If a highly creative pupils rubs to many classmates the wrong way, help him to become more aware of feeling of others.
10. Give information about the creative process. You might do this by acquainting students with Wallach's four steps in problem-solving and by nothing some of heuristics.

11. Dispel the sense of awe of master-pieces. Indicate some of the methods and difficulties, experience brilliant and perfect insight of the first try.


13. Create 'Thorn in Flesh'. Ask controversial questions and call attention to disturbing data.

14. Create necessities for creative thinking, confront your students with provocative problems. You might use the suggestions of Bruner and Biggs as guide.

15. Provide for active and quite periods. Remember the impact of habitual set and functional fixedness.

16. Make available resources for working out ideas.

17. Encourage the habits of working out the full implications of ideas.
18. Develop constructive criticism not just criticism.

19. Encourage the acquisition of knowledge in a variety of fields.

20. Develop adventurous, spiritual teachers.

2.3 THE STRUCTURE OF INTELLECT MODEL

According to Guilford and Manfield, human creativity is a whole cluster of ability. The major ones so far identified are the ability to ideate capiously, the ability to come up with a variety of perspectives, approaches and solution. The ability to hit upon novel uncommon solutions or relationships that are useful. The ability to sense problems and incogruities, the ability to grasp the causes and consequences of a situation, the ability to elaborate upon the creative insight, the ability to redefine problems so that they became enable to creative solution.

Guilford J.P. proposed a box like model, the structure of Intellect Model as shown in fig. 1.

In this model one dimension is operation. Operation indicates the mental processes performed or actively involed. There are five kinds of operation viz., cognitive, memory, divergent production, convergent production and evaluation. Both the production abilities have to do with the retrieval of information from memory storage but convergent production occurs under several restrictions starting with the given information. There is only one right or conventionally acceptable answer. At present education is concerned with promoting convergent production ability.

Figure 1: The structure of intellect model

Dimension 1 - Operation
Dimension 2 - Product
Dimension 3 - Content
Divergent production ability plays an important role. It is a fact that the operation of production is a matter of generating items of information by retrieval or recall of these items from memory storage. Thus, there are chances to solve new problems and those items of information should be recalled in new connections or in revised form that comes as a novelty divergent thinking. Such thought processes or speculation, imagination, and invention processes imply that there may be several good ways to solve a problem.

2.4 CREATIVE ENRICHMENT MODEL

Feldhusen and Kolloff developed a creative enrichment model which stresses the development of basic thinking skills, cognitive strategies, and independent learning in gifted children. This model is known as the Three-stage Model which is shown in Fig. 2.

STAGE I
DEVELOPING BASIC DIVERGENT AND CONVERGENT THINKING SKILLS AND AFFECTIVE RESPONSES, TEACHER LEADS.

SHORT TERM ACTIVITIES

EG. fluency, flexibility, originality, elaboration, logic, critical thinking, values clarification, self understanding.

STAGE II
DEVELOPING HIGHER LEVEL COGNITIVE STRATEGIES, WORK STUDY PRODUCTION SKILLS.
STUDENTS TAKE MORE INITIATIVE

EG. creative problem solving, research methods, library skills, time management, interviewing, inquiry techniques writing.

STAGE III
DEVELOPING INDEPENDENCE RESEARCH AND CREATIVE PRODUCTION,
STUDENTS TAKE INITIATIVE, TEACHER SERVICE AS RESOURCE PERSON AND GUIDE.

EG. experimental research, writing reports, formal presentations, extended synthesis projects creative performances.

Figure 2
Creative Enrichment Model
(The Three-stage Model)
The stage first activities in this model are designed to teach and strengthen basic divergent, convergent and imagination abilities and to foster basic language and mathematics skills.

Second stage is concerned with fostering broader strategies using convergent, divergent, evaluative and cognitive skills. The gifted students assume somewhat more self-direction in these activities.

Third stage introduces gifted students to independent project activity in which they can use their basic skills and abilities and cognitive strategies taught in stage second to develop facility in self-direction. The teacher now assumes the resource role. The students plan and conduct their own investigation, inquiry or project. The goal is to develop increased capacity for such self-direction, self-motivation and use of creative skills.
2.5 **ENRICHMENT TRIAD MODEL**

Renzulli and L.H. Smith (1977) developed Enrichment Triad Model which is shown in fig. 3.

The three level enrichment activities are illustrated in this model. The Enrichment Triad Model emphasizes the need for students to have variety of exploratory experience and to learn to use many basic skills of critical and creative thinking, in preparation for interest centred involvement in the investigation of real problem at a very high level of complexity and challenge.

Type I enrichment called "General Exploratory Activities" gives students opportunities to sample a variety of topic outside the regular curriculum. It may involve such activities as guest speakers, film strip or films or media presentations or work with interest development centres in the classroom.

---

FIGURE 3
ENRICHMENT TRIAD MODEL
Type II Enrichment called "Group Training
Activities" which provide opportunities for learning process, inquiry and methodological skills involve teaching students process skills including methods of problem solving, thinking skills research or inquiry method of a general nature and method of research that are specific to disciplines in which students are particularly interested.

Type III Enrichment called "Individual and small group investigation of real problem" call for students to become producers of knowledge. Thus, it places a strong emphasis on defining a real problem, formulating an original solution developing a product and sharing the results or products with appropriate guidance. It involves a problem for which the student has considerable motivation and emotional investment (task committees). Type III opportunities arise from the student's involvement and personal commitment to solving a particular problem in an effective and creative way.
2.6 CREATIVE LEARNING MODEL

Treffinger (1930) has presented a model of creative learning that involves three levels of sequential stages. It is illustrated in fig. 4. The model emphasizes that creative learning involves with a cognitive and affective dimension. Students thinking and feeling process must be considered as teachers plan ways to enrich their learning in creative ways.

Level I is called 'Divergent Functions.' In this level, students learn to use basic tools that will enable them to work successfully with complex reasoning and problem-solving task. It includes many enjoyable and popular activities such as brainstorming, attribute listing and scamper. They can be easily related to many content or subject matter topic at a variety of grade levels.

Level II is called 'Complex Thinking and Feeling Processes.' At this level students learn and practice more

The Practicing Professional

Cognitive
- Independent Inquiry
- Self-direction
- Resource Management
- Product Development
- "The Practicing Professional"

Affective
- Internalization of Values
- Commitment to Productive Living
- Toward Self-actualization

Cognitive
- Application
- Analysis
- Synthesis
- Evaluation
- Methodological and Research Skills
- Transformations
- Metaphor and Analogy

Affective
- Awareness Development
- Open to Complex Feelings
- Conflict, Growth
- Values Development
- Psychological Safety
- In Creating Fantasy, Imagery

Cognitive
- Fluency
- Flexibility
- Originality
- Elaboration
- Cognition and Memory

Affective
- Curiosity
- Willingness to Respond
- Openness to Experience
- Risk Taking
- Problem Sensitivity
- Tolerance for Ambiguity
- Self-confidence

FIGURE - 4
CREATIVE LEARNING MODEL
complex methods and systems for creative thinking and problem-solving.

Level III of the model is called 'Involvement in Real Challenges.' At this level, students develop confidence and competence in dealing with real problems and challenges. Real problems viewed in Treffinger's model are those for which the students have a great deal of personal concern or involvement. In the description of ownership of a problem, Treffinger has emphasized three criteria:

1. Interest (whether you want to do something about the problem),
2. Influence (whether it is possible for you to take action on the problem), and
3. Imagination (whether you are really searching for new or creative solution).

Treffinger's creative learning model emphasized the need for gradual or systematic development of creative thinking and problem-solving skills through carefully instructional or enrichment programmes.
2.7 CREATIVE TEACHING MODEL

Frank E. Williams had developed a creative Teaching Model. This model is useful in implementing cognitive-affective behaviours in classroom. This model is shown in fig. 5. It is known as Williams' Model.

Williams' argument was based on the principle, "Thinking processes cannot really operate without feeling processes. Nearly all cognitive behaviour have an affective component." It is possible to attain feeling goals by cognitive means and to attain thinking goals by affective means. For effective human development, the combination of both cognitive and affective domains is needed. The pupils' need for knowledge and information is closely related to his personality dispositions and his internal set of values.

Usually during the classroom teaching, pupils ask the questions. The teacher should not rush to them with a answer. He should encourage the children to explore possible answers.

Under this approach pupil will become ventursome in their thinking, confident and independent in their temperament and courageous and appreciative of their own predictions.

According to Williams' strategies of learning have four advantages.

1. Pupils will creatively produce responses rather than passively learn facts from book or teacher. The pupil realies that he is interesting with many things which he already knows.

2. Pupils are provided opportunities to collect data on their own experiences, organise and classify that data, and verify it according to certain criteria. These thinking and feeling processes are ingredients of creativity.

3. To direct pupil's thinking and feeling process across school subjects lesson ideas could be used. For this no special equipment is needed. Also the teachers need not abondon the good methods which they are using.

------------------------

9. Ibid, p.3.
This approach benefits all students, the gifted and talented. The under-achiever and the slow learner are benefitted by this approach too. Research had proved that creative talents were found distributed throughout any group of normal pupil in some degree.

Though the teachers knew that the pupil should be the center of interest and not the content they could not meet the needs of the pupil. There are very few models of teaching which could integrate pupils behaviors as desired outcomes with strategies that teachers can use across subject matter contents.

The present model is a three dimensional structure which characterize an interrelationship between strategies employed by the teacher (Dimension 2) across subject matter (Dimension 1) in order to elicit pupils behaviours (Dimension 3).

**Dimension - 1 : Subject content**

Dimension -1 lists six subjects content areas of conventional school curriculum. They include science, language, social studies, mathematics, art and music.
Dimension - 2: Teacher Behaviour

Demension - 2 lists eighteen strategies or styles of teaching to be used individually or in sets by the teachers in the classroom. Such a list provides teachers with a wide repertoire of modes for teaching, extending great latitude and flexibility in the manner in which subject content is presented. These become the flight plan or route a teacher plots to take with subject content as vehicle to lead students to their destinations by thinking and feeling divergently. The strategies of this dimension are explained as follows:

1. **Paradoxes**: There are self contradictory statements or observations which the student has to explain.

2. **Attributes**: There are inherent properties, conventional symbols or identities and ascribing qualities involved in given information.

3. **Analogies**: If there exist situations of likeness, similarities between things, the comparison of one thing to
another is called Analogies.

4. **Discrepancies** :

   Gaps of limitations in knowledge, missing links in information are known. Here the student has to find such discrepancies.

5. **Provocative Questions** :

   Provocative questions leads the students towards inquiry to bring forth meaning, incite knowledge exploration, summons to discovering new knowledge.

6. **Examples of change** :

   This strategy provides opportunities for making alternations, modifications and substitutions.

7. **Examples of Habit** :

   In the classroom, generally the thinking is developed traditionally. There are less chances of building sensitivity against the rigidity in ideas and well tried ways. Such habit should be developed in a classroom.
8. **Organized Random Search**: 

Here using a familiar structure one has to go at random to built another structure. Thus, the new approaches occur at random.

9. **Skill of Search**:

Search for ways something can be done in three ways,

(i) **Historical Search**, 
(ii) **Descriptive Search**, and 
(iii) **Experimental Search**.

such situations develops the skill of search.

10. **Tolerance for Ambiguity**:

This strategy provides situations with puzzle, intrigue or challenge thinking. Here there are openended situations which do not force closure.

11. **Intuitive Expression**:

Intuitive expression arises the feeling about the things to all the senses. It is the skill of expressing emotion. To develop expressing emotion one should be sensitive to inward hunches or nudges.
12. **Adjustment to Development** :

Developing many options or possibilities from the information, one has to adjust to proper one. Here the students learn from their mistakes or failures.

13. **Study creative People and Process** :

Here the students have to analyse traits of eminently creative people. They study the process which lead to problem solving, invention, incubation and insight.

14. **Evaluate Situations** :

The student has to evaluate the situation by deciding the possibilities by their consequences and implications. They have to check or verify ideas and guess against the facts.

15. **Creative Reading Skill** :

This strategy developed to mind-set for using information that is read. They learn the skill of generating ideas by reading.
16. **Creative Listening Skill**:

In this strategy the students learn the skill of generating ideas by listening. Here they have to listen for information allowing one thing to lead to another.

17. **Creative Writing Skill**:

In this strategy the students learn the skill of communicating ideas in writing. Here they have to learn the skill of generating ideas through writing.

18. **Visualization**:

This strategy emphasizes to express ideas in visual forms. Here students have to illustrate thoughts and feelings. Moreover, one has to describe experience through illustrations.

**Dimension -3 : Pupil Behaviour**

Dimension - 3 lists the four cognitive pupil behaviours i.e. Fluent Thinking, Flexible Thinking, Original Thinking and Elaborative Thinking and four affective pupil
behaviours i.e. Risk Taking, Complexity, Curiosity and Imagination as end of results or objectives to be derived from lesson ideas. These become ways pupils can produce by using content presented through certain strategies. Enabling pupils to be productive by thinking and feeling in these eight ways becomes the main emphasis in this type of teaching and learning. The eight pupil behaviours are spelled out in detail as follows:

Cognitive Behaviours (Intellectual):

Fluent Thinking, Flexible Thinking, Original Thinking and Elaborative Thinking are the four cognitive behaviours of pupil.

1. Fluent Thinking:

Here the student can think in the different ways. He can generate the ideas and gives a flow of thought. The fluent thinking depends upon the number of relevant responses given by the students.

2. Flexible Thinking:

In this thinking student applies the various approaches to the situation. Thus, the variety of kind
of ideas are gathered. Flexible Thinking measures the ability to shift categories of the responses given by the student.

3. **Original Thinking**:

    Original thinking means to think in novel or unique ways, keeping in view the given situation. The production of unusual responses or clever ideas are always away from the obvious responses or common responses. It depends upon the number of novel or unique responses.

4. **Elaborative Thinking**:

    Elaborative thinking means to add something to the situation. To stretch or expand upon the things and ideas which leads towards the elaborative thinking. It emboiders upon a simple ideas or response to make it more elegant.

**Affective Behaviours (Feelings)**:

Risk Taking, Complexity, Curiosity and Imagination are the four Affective behaviours of pupil.
1. **Risk Taking**:

   In risk taking the student has courage to expose oneself to failure or criticism to make a guessing, to function under unstructured conditions and to defend himself with his own ideas.

2. **Complexity**:

   In this affective area, the student is challenged to seek many alternatives, to see gaps between how things are and how they to be and to bring order out of disorder situation.

3. **Curiosity**:

   The students are always curious to think about the new situation. Here student is willing to be inquisitive and wonder, to be open to puzzling situations, to ponder the mastery of things and to follow a particular hunch just to see what will happened. Here the student is willing to toy with the ideas.
Imagination is a main factor to develop the creative thinking. Here the student has power to visualize and build mental images, to dream about things that have never happened. Students can feel intuitively and reach beyond sensual or real boundaries.

The above model tried and tested by F.E. Williams across all ability levels of pupils. It was found to be effective with slow, average and fast learners. Williams' claim is that all pupils are creative to an extent and it is possible to nurture it through this model.