



Development Of Creative Thinking Skills In Science At The Middle School Level Through The Synectics Model Of Teaching

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ABSTRACT

The paper summarizes the theoretical underpinnings for CREATIVITY and points out the benefits OF IRRATIONAL THINKING AND EMOTIONAL THINKING IN FOSTERING CREATIVE THINKING SKILLS in the teaching-learning process.

Keywords: Synectics, Model of teaching, Creative Thinking Skills, Middle School

Synectics is a creative way to learn new information or solve complex problems. Synectics incorporates new concepts in what the learner already knows, which increases the transfer of knowledge.

The Synectics Model of Teaching is used in fostering Creative thinking Skills in Science

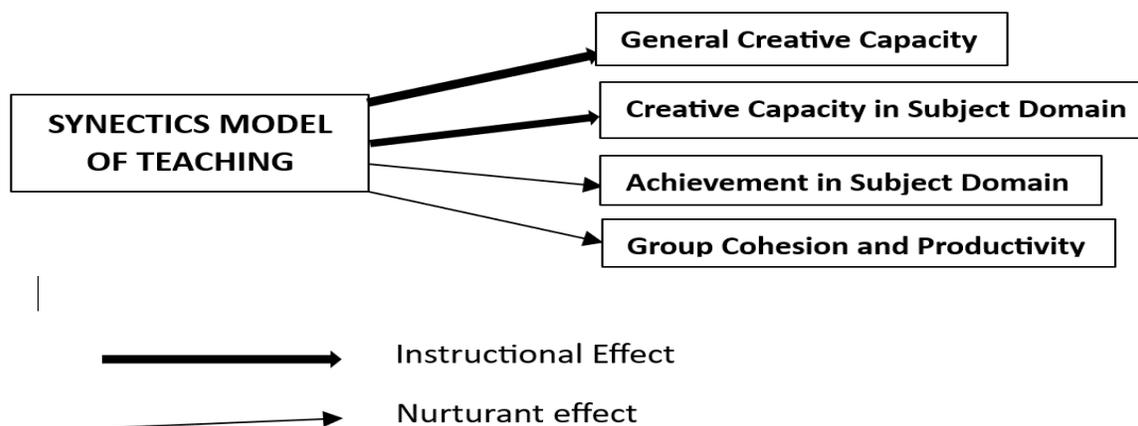


Fig 1: Instructional and Nurturant Effects of the Synectics Model of Teaching

This model of teaching consists of two approaches

Making Familiar Strange (MFS)- Learner oriented and

Making Strange Familiar (MSF)- Instructor oriented.

The researcher has taken strategy II Making Strange Familiar to foster Creative Thinking Skills in Science among students at the middle school level.

The metaphoric activity in Synectics renders creativity to emerge as a conscious process. It frees the participant himself to develop imagination and insights into everyday activities.

Introduction: Creativity is a crucial skill for success in the 21st century, as it is an important driver of innovation and progress. It is therefore essential that the students developed their creative thinking skills in the classroom. science education in particular has been shown to play a significant role in first setting creativity among students. However, traditional science teaching methods often emphasize rote learning and memorization, which can limit the development of students' creative potential. To address the challenge, researchers have developed alternative teaching approaches designed to promote classroom creativity. One such approach is the Synectics model of teaching which J.J. William Gordan and his colleagues developed in 1961.

Creativity involves breaking out of established patterns in order to look at things in a different way
-Edward de Bono

Creativity is the ability to generate novel and valuable ideas, products, or solutions. It is a critical component of human imagination and crucial in shaping innovation, personal and professional growth, and problem-solving. Creativity involves using imagination, originality, and original thought to create something new and innovative.

The paper summarizes the theoretical underpinnings for CREATIVITY and points out the benefits OF IRRATIONAL THINKING AND EMOTIONAL THINKING IN FOSTERING CREATIVE THINKING SKILLS in the teaching-learning process.

Keywords: Synectics, Model of teaching, Creative Thinking Skills, Middle School

Definitions

1. **Synectics:** Synectics is a creative problem-solving methodology combining a structured approach with lateral thinking.
2. **Model of teaching:** A model of teaching is a plan or pattern that can be used to shape curriculum (long-term courses of study), design instructional materials, and guide instruction in the classroom and other settings.
3. **Creativity Thinking Skills:** Creative Thinking Skill is the ability of an individual to think about problems, issues, and conditions in a slightly different way so as to generate new solutions.
4. **Middle School:** Middle School is the stage in education that provides education to Students between Primary School and Secondary School.

There are many different ways to define and understand creativity, and it can manifest in a variety of forms, including art, music, writing, design, and even scientific discovery.

1. Guilford (1950) - Creativity is the ability to produce ideas that are both original and valuable.
2. Amabile (1996) - Creativity is the production of novel and appropriate ideas
3. Sternberg (1999) - Creativity is the ability to come up with novel and useful ideas
4. Eisner (2002) - Creativity is the ability to make connections among previously unrelated things, to discover new and original relationships, and find new and unconventional solutions to problems.
5. Runko and Acar (2012) - Creativity is the production of novel and valuable ideas or outcomes.

These definitions highlight the central elements of creativity, including originality, usefulness, and the production of valuable outcomes. they emphasize the importance of Creative Thinking in generating innovative ideas and solving problems.

The Synectics model of Teaching is a problem-solving approach that emphasizes the use of creative thinking to find innovative solutions. It is based on the idea that Creative Thinking can be taught and that students can develop their creative problem-solving skills by creating an environment that supports and encourages creativity. The model involves a series of exercises and activities that encourage students to think out of the box and find unique solutions to problems. It also emphasizes the development of imaginative thinking and empathetic understanding. In comparison to the traditional methods of teaching, the selected approach tends to place a greater emphasis on fostering creativity and empathy as well as promoting higher levels of student engagement and motivation.

One of the key differences between the Synectics model of teaching and the traditional teaching method is the focus on open-ended and non-linear thinking. In the traditional method, the focus is often on the memorization of information, whereas in the selected model, the students are encouraged to explore multiple perspectives and make connections between seemingly disparate ideas. In terms of creativity, the Synectics model of Teaching has been shown to have a positive impact on the student's ability to generate original ideas.

Teaching is a complex activity and models of teaching have an important place in teaching. Joyce & Weil developed different types of models for achieving specific instructional goals. These models help in the transmission of knowledge, imparting skills, and formulation of attitudes, values, and behavior among learners. In models of teaching, the activities are arranged in a sequence to be carried out by the student and teacher so as to attain the pre-determined goals.

According to Joyce & Weil (1980) Model of teaching is defined as a plan or pattern which is used for shaping the curriculum, designing instructional material, and guiding instructions in classrooms.

According to Sansanwal & Singh (1991), the Model of teaching is a systematic plan, based upon well-defined principles. It follows the systematic steps which the teacher uses to create certain effects on the part of the learners.

Joyce and Weil (1980) have classified into four basic families based on the nature, distinctive characteristics, and effects of models.

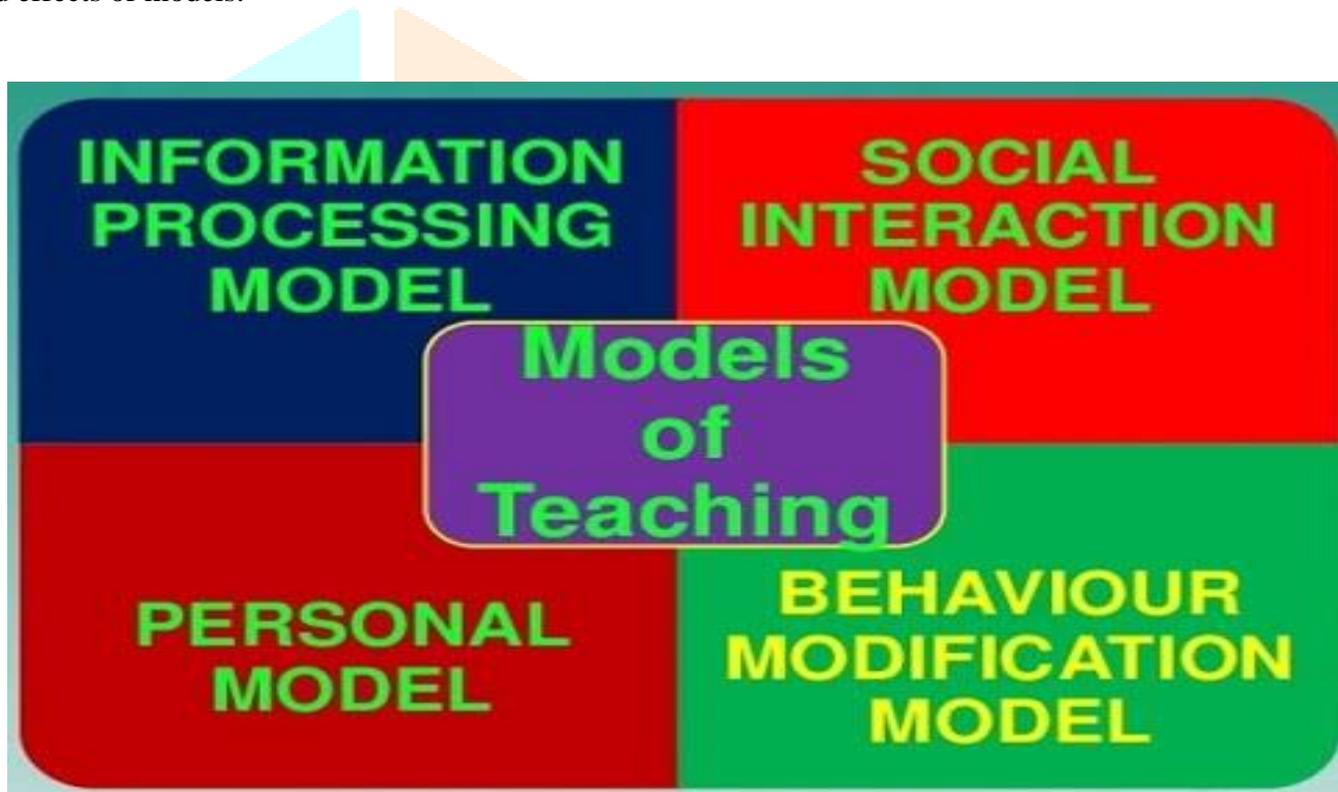


FIG 1: FAMILIES OF MODELS OF TEACHING

These four families are -

1. Information Processing Model:

- Focuses on intellectual capacities.
- Helps individuals acquire knowledge through analysis of data.

- Fosters the ability to think logically

2. Personal Model

- Deals with the personal development of the individual.
- Helps students understand
- Increases the student's sense of self-worth
- Helps students refine their emotions
- Fosters students' creativity

3. Social Interaction Model

- Emphasizes the relationship of the individual to society
- Trains students to work together
- Inculcates personal and social values
- Develops skills for maintaining human relations

4. Behavior Modification Model

- Changes the observable behavior of the learner
- Masters techniques for stress reduction
- Fosters leadership qualities

The **Synectics Model** of Teaching comes under the **PERSONAL** Family of Models of Teaching.

Synectics: Synectics is a problem-solving methodology that stimulates thought processes of which the subject may be unaware. The process was derived from tape-recording (initially audio, later video) meetings, analysis of the results, and experiments with alternative ways of dealing with the obstacles to success in the meeting. "Success" was defined as getting a creative solution that the group was committed to implementing.

Synectics can be used with adults as well as children as Synectics is based on creativity and creativity is ageless. Synectics is a creative way to learn new information or solve complex problems. Synectics incorporates new concepts in what the learner already knows, which increases the transfer of knowledge.

Shown below is the Schematic Diagram with Instructional and Nurturant effects of the Synectica Model of Teaching:

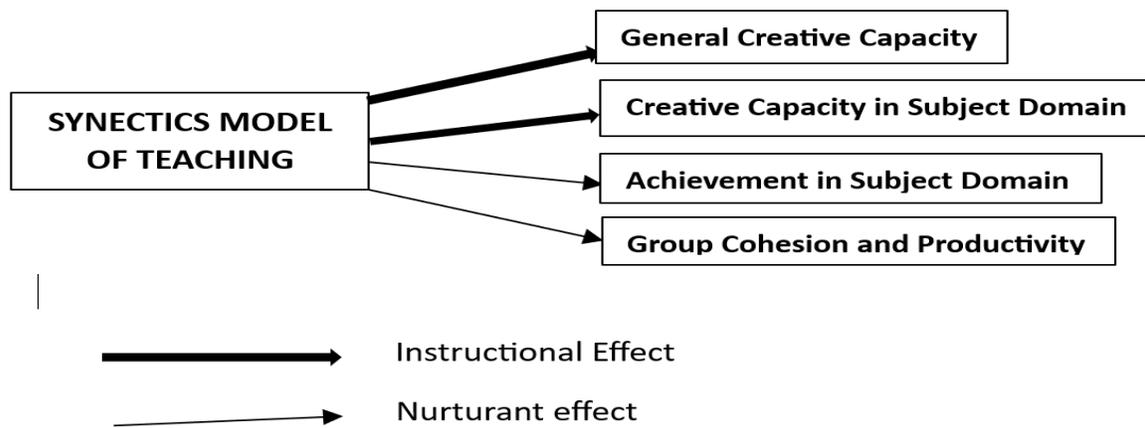


Fig 2: Instructional and Nurturant Effects of the Synectics Model of Teaching

This model of teaching generally consists of two approaches

Strategy 1: Making Familiar Strange (MFS)- Learner-oriented and

Strategy 2: Making Strange Familiar (MSF)- Instructor-oriented.

Strategy 1: Making Familiar Strange (MFS) is a *Learner-oriented* strategy wherein the student describes a situation or topic as they see it, suggest direct analogies, chooses one, and describes it in detail. Students try on the direct analogy; they become the thing. They then create a new direct analogy based on the compressed conflict and use description and create compressed conflicts. Students create a new direct analogy based on the compressed conflict and use the new analogy to re-examine the original situation or problem. To sum up, they tend to create something new from the familiar thing.

Strategy 2: Making Strange Familiar (MSF)- Instructor-oriented.

SYNTAX

- **Substantive input**

The teacher presents information for a new topic or subject matter.

- **Direct Analogy**

The teacher suggests a direct analogy and the students describe it.

- **Personal Analogy**

The teacher directs the student to become a direct analogy.

- **Comparing Analogy**

Students describe the similarities between the analogy and the new topic.

- **Explaining Differences**

Students explain the ways in which the analogy does not fit the new topic.

- **Exploration**

Students re-explore the original topic on its own terms, free from analogy.

- **Generating Analogy**

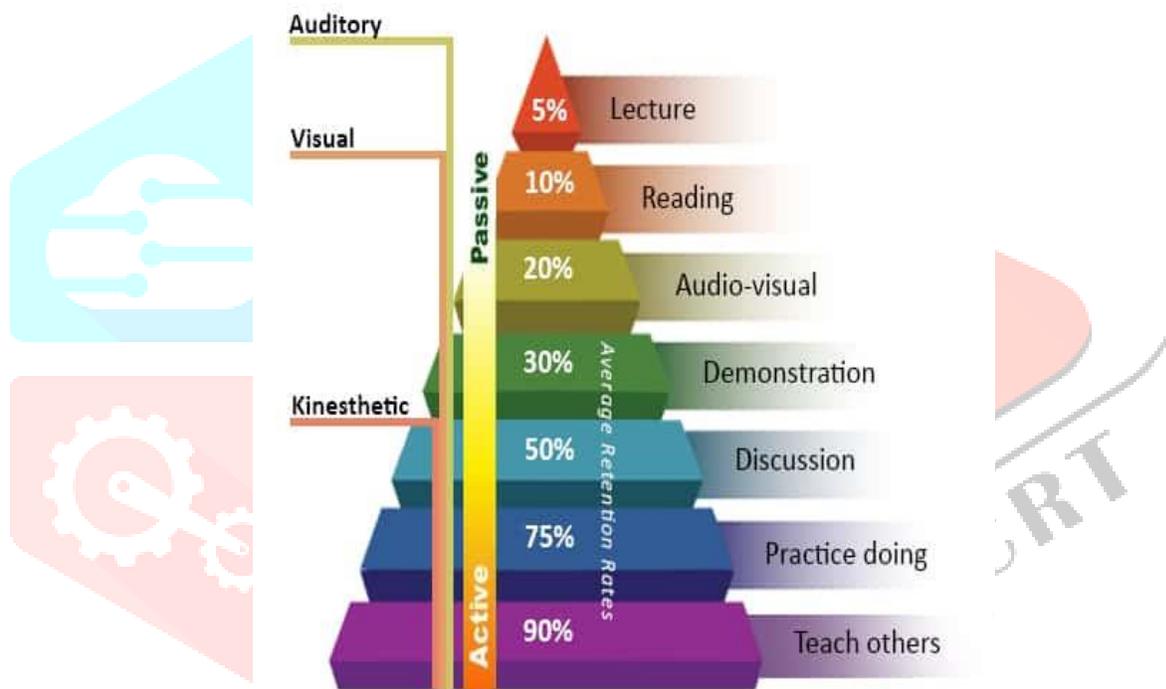
Students create their own direct analogy and describe the similarities and differences with the topic. They feel free to recombine things in new and different ways, even if those combinations seem silly or even wrong.

The metaphoric activity in Synectics renders creativity to emerge as a conscious process. It frees the participant himself to develop imagination and insights into everyday activities.

Strategy – II MSF facilitates breaking set and conceptualizing problems in a new way in order to suggest fresh approaches to them in personal life as well as in the classroom.

It is really important to reflect on how one learns!

An insight into the learning pyramid directs us to the areas where the creative capacities of learners can be honed



Adapted from the NTL Institute of Applied Behavioral Science Learning Pyramid

The concept of making the students practice what is preached helps 75% of content register in the minds of the students.

Pushing boundaries in Creativity: Creativity can be fostered by designing an innovative, interesting and child-centered practices. It is required to extend the boundaries to give learners opportunities to achieve that extra mile. This can be done by

- Making the students empathize with the situation by providing stretching exercises in the form of offering them some situations

b. Introducing the topic to the students and helping them find analogies

c. Encouraging irrational and emotional thinking and expression of ideas in support of the analogies related to the concept taught

d. Finally divide the class into groups of 7/8 students and give them a short duration wherein they discuss how they would effectively enact the learned concept in science by becoming the animate or the inanimate object related to the concept.

- One group as directed by the facilitator. represents the concept in front of other groups who are equally knowledgeable and prepared to teach the same concept.
- The group that represents teaches the rest of the learners in the class and after the entire presentation, the learners are free to question for clarity of doubts, if any.
- The facilitator then provides the learners with some questions based on the same concept or an application-based question on the same topic and the learners produce the answers systematically based on their enactment or observation as the case may be, in their school copies.
- The innovative technique thus fosters empathy, creativity, and finally achievement in Science in measurable terms.
- It also reaches the base of the cone of learning Adapted from the NTL (National Training Laboratories) Institute of Applied Behavioral Science learning pyramid which mentions the average retention rates- 75% retention is attained by practising the learned content and 90% retention is obtained by teaching others.

The present teaching methodology needs a change for good.

The Principals, administrators and educators need to reflect on ways to foster Creative Thinking Skills in young minds. They should

- familiarize themselves with the Synectics model of Teaching especially the Strategy -II Making Strange Familiar (MSF).
- analyze the environment for metaphoric activities.
- experiment with the Synectics model of teaching by pushing boundaries or breaking boundaries.
- teach the concepts using the Synectics model of Teaching throughout the year.
- motivate a student who exhibits Fluency, flexibility, originality, and Divergent thinking and accordingly reward them.

The methodology is unique....

The road is less travelled.....

Education still stays as a noble profession due to those few dedicated individuals who are honest to the core and strive to be more effective in imparting knowledge today than they did yesterday!

All that is required is a willingness from within to go that extra mile and be true to this noble profession!

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