

1. Details of Module and its structure

Module Detail	
Subject Name	Psychology
Course Name	Psychology 02 (Class XI, Part- 2)
Module Name/Title	Thinking – Part 2
Module Id	kepy_10802
Pre-requisites	Basic knowledge of thinking, problem solving, creativity, decision making etc.
Objectives	<p>After going through this lesson, the learners will be able to understand the following:</p> <ul style="list-style-type: none">• Nature of creative thinking• The process of creative thinking• Barriers in creative thinking• Strategies for creative thinking• To determine the relationship between thought and language
Keywords	Creativity, Divergent, Convergent, Fluency, Flexibility, Incubation

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Introduction

- Creativity is the basis of development and advancement in the world.
- All scientific and artistic inventions are the result of creative thinking.
- Language is an integral part of our thinking process, as it helps us in communicating our ideas and receiving feedback from others on our ideas.
- Language is used as a tool of thought or a tool of communication and hence its proper development is emphasized

Creative thinking

You must have read about unique inventions made by young people. For example, a young engineer from Bengaluru invented a prosthetic leg made out of bamboo. He wanted people without legs to have legs not only to walk but also to run, play and dance. Another entrepreneur has made carry bag that is edible and hence biodegradable. What is unique to these young entrepreneurs? It is creative thinking i.e., thinking out of the box.

Let's look at what creative thinking is?

- Creative thinking is ability or a skill to create something unique, look at problem from a different perspective.
- It can be applied in almost all areas of human activity at different level such as writing, teaching, cooking, enacting roles, storytelling, painting, trying to solve day today activities.
- Using creativity in day to day activities such as way of perceiving, thinking and problem solving is called **everyday creativity**.

For example: Cooking a dish in a different way or thinking of ways to reduce traffic in a particular area are examples of everyday creativity.

- The creativity which is seen in outstanding creative achievement is called **special talent creativity**.

Characteristics of creative thinkers

Let's look at the characteristics that creative individuals possess.

- They prefer complexity and some degree of apparent imbalance in phenomena.
- They are more complex psycho dynamically and have greater personal scope.
- They are more independent in their judgments.
- They are more self-assertive and dominant.
- They reject suppression as a mechanism for the control of impulse.

Nature of Creative thinking

- Creative thinking involves production of novel and original ideas or solutions to problem
- **Creative thinking refers to originality and uniqueness of ideas or solutions that did not previously exist.**
- According to Bruner, Creative thinking is characterised by **effective Surprise**-it is the instant surprise we experience when the idea or product is unusual. Remember the time when Archimedes ran out of the bath tub screaming 'Eureka' as he had discovered a way to test the gold in the king's crown.
- Creative thinking should characterise by appropriateness as well in a particular context.

For example: Some creative thinker might invent a machine which can read what goes in the mind of a student in class. Now is it appropriate for anyone to read other people's thoughts. Definitely not. As thoughts are personal and you do not want others to read them.

- Thinking is said to be creative when it is reality-oriented, appropriate, constructive, and socially desirable.

For example: You can find a way of making a house with paper pulp so that it is earthquake resistant. This is due to creative thinking but then is it reality oriented? Can it withstand rain and storm as well? Is it socially desirable if so many trees will be cut to make a house?

- The types of thinking proposed by J.P. Guilford, a pioneer in creativity research are:

Convergent thinking

- **It refers to thinking that is required to solve problems which have only one correct answer.**

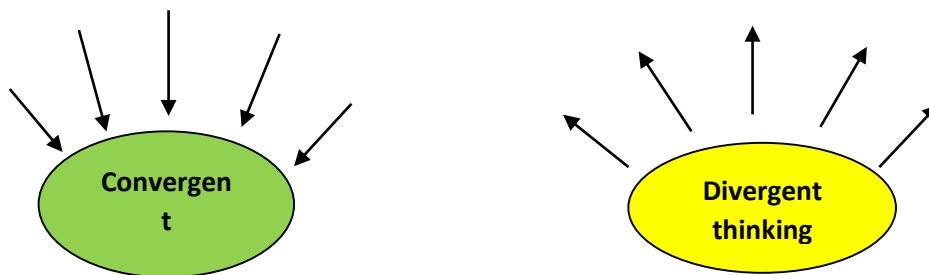
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- Convergent thinking provides solution to the problem, which is not original rather has been given by somebody else as well.

For Example: In a math problem of addition $3+3$, answer will always be 6.

Divergent thinking

- It is an open-ended thinking in which variety of thoughts are involved.
- **It refers to the type of thinking where the individual can think of different answers to the questions or problems in terms of his/her experiences.**

For example: A singer sings the song with the same lyrics in different ways.



Abilities of Divergent Thinking

Following are the main abilities of divergent thinking:

Fluency

- It is the ability to produce many ideas for a given task or a problem.
- The ability of fluency is dependent on the number of ideas a person produces.

For example: using tables in different ways such as using it as stool, chair, or may be to put a decorative piece etc

Another example could be different uses of paper cup. It can be used to drink water, used as a bowl, can be used for drinking tea etc.

Flexibility

- It indicates variety in thinking.
- It involves thinking of various uses of an object, or different interpretation of a picture, story or different ways of solving a problem or able to see situations from multiple perspectives.

For example: In the example of table, using it for decoration in different ways shows flexibility.

Another example could be using the paper cup as a birthday cap by decorating it or use it to draw a circle or use it to make toy phones by attaching two cups with a string etc.

Originality

- It is the ability to produce ideas that are unique and original.
- It is done by seeing new relationships, combining old ideas with new ones and by seeing things from different perspectives.

For example: one can think of using the paper cup in such a way which no one had ever thought of. Maybe to make a bigger vessel by using the pulp of many used cups.

Elaboration

- It is the ability that enables a person to go into details and work out implications of new ideas.

For example: Taking the vessel made of the used paper cups, one works out its other details. Will it be economical? Will more water be wasted to make it into a pulp? Will it store liquids etc?

Lateral Thinking

- The term lateral thinking was used by **Edward De Bono**. It is another term used for divergent thinking.
- According to Bono, lateral thinking can help in making mental leaps and can create different ways of thinking.
- Edward Bono developed, “**six thinking hats**” technique, to stimulate different modes of thinking.
- These hats can be put on or taken off according to the type of thinking required to be used.
- **White hat** means gathering information, facts, figures, and filling gaps in information.

Red hat covers expression of feelings, and emotions on the subject.

Black hat represents judgment, caution and logic.

Yellow hat covers thinking on what will work and why it will be beneficial.

Green hat is for creativity, alternatives and changes.

Blue hat represents thinking about the process and not the ideas as such.

Difference between lateral and vertical thinking

Vertical thinking

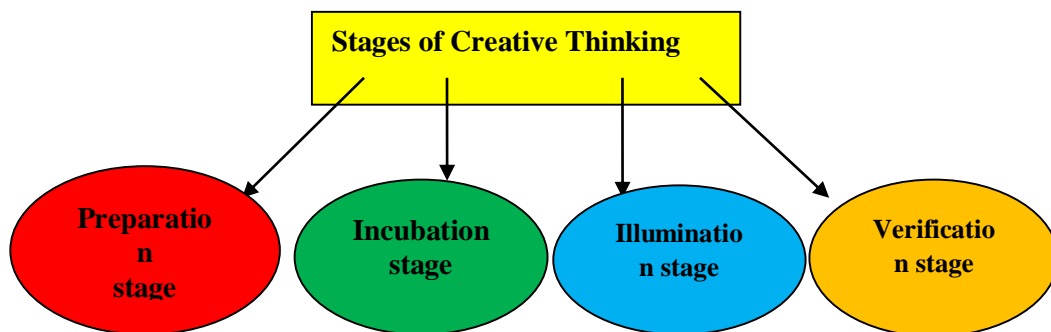
- Vertical thinking involves mental operations that move in a straight line back and forth between lower and higher level concepts.
- Vertical thinking involves deeper thinking in the same direction.

Lateral thinking

- Lateral thinking involves looking for alternative way of defining and interpreting problems.
- It is concerned with digging holes in different place that is, thinking in different directions.

Process of Creative Thinking

The main stages of creative thinking process are as follows:



Preparation stage

- This is the first stage of creative thinking. In this stage the person understands problem, analyses it and gets the information or facts related to it.
- The process evokes curiosity and excitement to think more and more in different directions.
- The person tries to look at the task or problem from different perspectives. So if you are a musician you listen to various other musicians to get inspiration to create a new piece.

Incubation stage

- In this period some of the ideas that were interfering with the solution will tend to fade.
- The overt activity and sometimes even thinking about the problem is absent in this stage.
- The unconscious thought process involved in creative thinking is at work during this period. So in this stage the music that you are creating is not coming the way you want, so you leave it for a while.

Illumination stage

- After the period of incubation, the creative ideas occur suddenly. Consequently, the obscure thing becomes clear. This sudden flash of solution is known as illumination.
- It's an Aha! experience, which we get the moment we normally associate with emergence of creative ideas. Here you find that the type of music you want to create

suddenly flashes in your mind and the exact musical notes comes to the forefront of your mind.

Verification stage

- It is the last stage in which evaluation of the solution is done.
- In this stage the worth or appropriateness of the idea or solution is evaluated using convergent thinking. This is the stage for self-criticism and reflection. Will this musical piece be appreciated by young people or is it similar to the musical piece that has already been sung by another musician etc.?

Developing Creative Thinking

Now that we are aware about the nature, characteristics and process of creative thinking, the next question that arises in our mind is that, can creative thinking be developed.

- The expression of creative thinking varies from person to person.
- Heredity factors play an important role in determining the extent to which a person is creative.
- Also, environmental factors facilitate or hamper the development of creative thinking abilities.

Barriers to creative thinking

Following are the main barriers to creativity:

Habitual factors

- Habitual learning is important for smooth and efficient functioning within the daily routine, but habits hamper creative thinking.

Perceptual factors

- Perceiving situation in a familiar way is detrimental to creative thinking.
- The tendency to arrive at conclusions immediately, following the same perspective and resisting to overcome pre-conceived viewpoints, prevent us from thinking creatively.

Motivational and emotional factor

- The blockage in these factors too affects the creative thinking of an individual.
- Lack of motivation, fear of failure, fear of being different, fear of ridicule or rejection, poor self-concept, negativism etc., hamper creative thinking.

Cultural barrier

- Cultural factors are related to excessive adherence to tradition, expectations, conformity to pressures and stereotypes.
- Cultural blocks arise due to fear of being different, the tendency to maintain status quo and willingness to accept mediocrity. Preservation of personal security, social pressure, over dependence on others etc.

Strategies for creative thinking

The main strategies to enhance creative thinking abilities are as follows:

Awareness and sensitivity

- To be more aware and sensitive to notice and respond to feelings, sights, sounds, textures around.
- Identifying problems, missing information, anomalies, gaps, deficiencies and so on.
- Noticing the contradictions and incompleteness in situations that others may not do.
- Cultivating the habit of wider reading, exposure to variety of information, and developing the art of asking questions, pondering over the mysteries of situations and objects.

Generation of ideas

- Generating many ideas, responses, solutions or suggestions on a given task or situation to increase the flow of thoughts.
- Trying deliberately to perceive the situation from different perspectives to increase the flexibility in thinking.

For example: Thinking of alternative arrangement of furniture in the room to generate more space, trying different ways of conversing with people, looking for various benefits of a career option, looking for various ways of dealing with annoyed friend, different ways of helping friend etc.

Brainstorming

- This technique can be used to increase fluency and flexibility of ideas to open-ended situations.
- It is based on the principle that producing ideas should be kept separate from the evaluation of their worth.
- The basic assumption of brain storming technique is to let minds think freely and the tendency to put judgment on the worth of ideas may be postponed.

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- Imagination to be given priority over judgment till all the ideas are exhausted. This helps in increasing the fluency of ideas and pulling up alternatives.

Originality

- It can be developed by practicing fluency, flexibility, habit of associative thinking, exploring linkages, and fusing distinct or remote ideas.
- A creative thinker, may not evolve new ideas but evolve new combination of ideas.
- The new ideas come from chain of thoughts and cross-fertilisation of ideas.
- Original ideas or solution require shift from the usual and expected solution or may require thinking that is opposite of the usual pattern of thoughts.
- Originality requires co-existence of conflicting thoughts.

Engaging in imagination and original thinking

- Using imagination and original thinking frequently as per the interest, helps in enhancing creativity.
- Engaging in activities that require more imagination and work according to the interest and hobbies help in enhancing creativity.

For example: decorating the house, redesigning old objects, making use of waste products in improvised manner, completing incomplete ideas in unique ways, developing puzzles, solving mysteries etc.

Feedback

- Getting feedback on the solutions from others who are less personally involved.
- Thinking about the possible solutions which others might provide.

Developing independent thinking

- Developing independent thinking in making judgments, figuring out things without any help or resources.

Visualize causes and consequences

- Visualizing causes and consequences and thinking ahead, predicting things that have never happened

For example: Thinking, what would happen, if time starts going backwards?

Self-confidence and positivity

- Another important strategy to enhance creativity is being self-confident, positive and experiencing the joy of creation.

Resisting reward temptation

- The temptation for immediate reward and success should be resisted. Also, frustration and failure need to be coped.

Awareness of one's own defences

- Awareness of an individual towards one's own defenses concerning the problem. As when we are threatened by a problem we are less likely to think of creative ideas.

Thought and Language

Let us look at the role of language in the development of thought. Some psychologists like Piaget said that thought comes before language, as it is only one of its forms of expression.

- Some theorist view role of language in thinking, and claim that language can determine thought
- While, some theorists believe that thought determine language and precedes it.
- Also, it has been argued that thought and language develops differently.

Language as determinant of thought

- In Hindi and other Indian languages, we use a number of words for various kinship relationships.
- Different terms are used for different relationships such as mother's brother, father's elder brother, mother's sister's husband etc. whereas an English person uses just one-word uncle to describe all kinship relationships.
- This leads to many questions like, do such differences matter for how we think? Does an Indian child find it easier to think about and differentiate between various kinship relationships compared to her English speaking counterpart?
- According to **Benjamin Lee Whorf**, language determines the content of thought. This view is termed as linguistic relativity hypothesis.
- This view states that, language influences the perceptions and thoughts of people, thus affecting their behavior. If we have to speak any language, we need to pay attention to the meanings that are grammatically marked in that language.

For example: In English it is necessary to mark the verb to indicate the time of occurrence of an event you are speaking about: It's raining; It rained; and so forth. Some thoughts are easier in some language as compared to another.

For example: In Hindi and other Indian languages we use different words for various kinship relationships. We have different terms for mother's brother, father's elder sister, father's sister's husband etc. But, an English person may use only uncle to describe all these relationships.

Thought as determinant of language

- According to Jean Piaget, though not only determines language but precedes it also.
- He argued that children form an internal representation of the world through thinking.

For example: When a child sees something and copies it (imitation learning) later, thinking does take place, which does not involve language.



- Language is just one of the vehicles of thinking.
- As actions become internalized, language may affect the children's range of symbolic thinking but is not necessary for the origin of thoughts.
- According to Piaget, though language can be taught to children but the understanding of words requires development some level of mental abilities.
- Hence, thought is basic, and necessary if language has to be understood.

Different origin of language and thought

- According to Russian psychologist, Lev Vyogotsky, thoughts and language develop separately till two years of age and then merge.
- Before two years of age, thought is preverbal and is experienced more in action.
- The child's utterances are more automatic reflexes, such as, crying when uncomfortable.

- Around two years of age, the child expresses thought verbally and his/her speech reflects rationality.



- At this age, the children are able to manipulate thoughts using soundless speech. The development of language and thinking during this period is interdependent.
- The development of conceptual thinking depends upon the quality of inner speech and vice versa.
- Thought is used without language when the vehicle of thinking is non-verbal such as a visual or movement related.
- Language is used without thought when expressing feelings or exchanging pleasantries.

Development of language

Nature of language

- Language consists of a system of symbols organized by means of certain rules that we use to communicate with each other.
- Language is used to communicate thoughts, feelings, ideas and emotions.

For example: As a child when we first started saying ma, ma, it only gave us boost to continue repeating the activity and also, gave joy to our parents. Gradually, the word mama and papa were used by us to communicate our needs, thoughts and feelings. We learnt many words and their appropriate usage.

- The basic characteristics of language are as follows:

Presence of symbols

Symbols represent something or someone.

For example: Words such as market, school etc. don't have any meaning, but when they are associated with some event or object, they attain meaning and hence, the recognition of those objects or events begin with those symbols.

A set of rules

The second characteristic of language is that it involves rules. **Rules are the definite and accepted order of presenting words.**

Communication

- The third characteristic of language is communication.
- It is used for communicating ideas, thoughts, feelings and emotions, one holds for others.
- It can be both verbal, where words are used as the medium of expression, as well as non-verbal, where body parts are used to express feelings, emotions and thoughts.

Bilingualism

It is an ability of an individual to attain proficiency in communicating through any two languages.

Multilingualism

It is an ability of an individual to attain proficiency in communicating through more than two languages.

Development of language

- Language is a complex system and unique to human beings
- Human language is creative, spontaneous and more complex as compared to the system of communication of other animals.
- The children's acquisition of language follows a **predictable pattern** and **regularity** all over the world.
- Language development takes place through some stages. They are as follows:

➤ **Crying**

- The initial sound produced by babies is crying.
- Crying is undifferentiated in the beginning, but gradually its pattern varies in its pitch and intensity to signify different states such as hunger, pain and sleepiness etc.

➤ **Cooing sounds**

- The undifferentiated crying sounds become meaningful cooing sounds, like uu, aa etc.).

➤ **Babbling stage**

- Children enter this stage at six months of age.
- The early BABBLING involves repetition of vowels and consonants sounds for a long time, like aa-, da-, ba-.
- By six months of age, children show some understanding of words and sometimes accidentally imitate few words as well.

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- By nine months of age, that is in the later babbling stage, the sounds get elaborated to strings of some sound combinations, such as dadadadada, bababababa etc.
 - The repetitive pattern of sound is called **echolalia**.
 - In the later babbling stage, children imitate adult voices.

➤ **One-word-stage**

- By one year of age, most of the children enter this stage, though the age may vary from child to child.
- The first word in this stage, consist of one syllable such as, ma or ba.
- Children in this stage, move from one word to two words and combine them to form sentence or phrases. Hence, they are called **Holophrases**.

➤ **Two-word stage**

- Children reach this stage when they are 18 to 20th months of age.
- In this stage, children start using two words together. They are called telegraphic words. For example: eat food, want water etc.

➤ **Multi-word stage**

- The child enters this stage by two and half or three years of age.
- In this stage the children start using complex language which is rule based.

Acquisition of language

Nature Vs nurture: According to most psychologist, the acquisition of language takes place as a result of inherited characteristics, that is **nature**, as well as, it results from the effects of learning, that is **nurture**. Thus, for language acquisition both nature and nurture are important.

- **Role of nurture in language development**

- According to B.F. Skinner a behaviourist, language development in human being takes place in the same way as it takes place in the animals.
- Skinner's emphasis on learning explain why infants acquire the language they hear and how they add new-words to their vocabularies.
- Development of language, according to behaviourist, hence takes place through **learning principles**.
- The main learning principles which are used are as follows:
 - **Association:** language development takes place through association.
For example: When a child sees a parent saying the word 'bag', while holding it in hand. The child learns the word through associating the two things together.

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- **Imitation:** Another learning principle which can be used for language development is, imitation. In this method, the acquisition of language takes place just by imitating somebody who is using it.

For example: A child learns to use new words by imitating their parents.

- **Reinforcement:** Language acquisition is also dependent on the reinforcement received on its usage.

For example: When a child uses a correct word and gets appreciation for the same, he/she develops a habit of using it again and thus, acquiring the language.

- **Shaping:** The principle of shaping leads to successive approximation of the desired responses so that the child eventually speaks well just like an adult.

- **Role of nature in language development**

- According to Linguist Naom Chomsky, innate factors play an important role in the development of language.
- The acquisition of complex language in children cannot take place by imitation.
- According to him, all children have a **critical period**- a period when learning must occur, if it is to occur successfully.
- All the children go through the same stages of language development.
- Language development is like physical maturation, according to Chomsky, which needs proper care and due attention.
- Chomsky believed that children are born with “**universal grammar**” and they quickly learn the grammar of whatever language, they are taught.

His emphasis on our innate ability or preparedness to learn grammar explains why children acquire language so quickly without direct teaching.