

# INTRODUCTION TO THINKING

UNIT-5

# THINKING

- Thinking is a problem-solving process in which we use ideas or symbols in place of overt activity.
- In this sense, thinking includes imagining, remembering, problem solving, daydreaming, free association, concept formation, and many other processes.

- ⦿ Thinking may be said to have two defining characteristics:
- ⦿ (a) It is covert—that is, it is not directly observable but must be inferred from actions or self-reports; and
- ⦿ (b) it is symbolic—that is, it seems to involve operations on mental symbols or representations.

# TYPES OF THINKING

## ● 1. PERCEPTUAL OR CONCRETE THINKING

- Basis of this type is Perception
- Interpretation of sensation according to experience
- Also called concrete thinking- as thinking based on actual events or concrete objects.

## 2. CONCEPTUAL OR ABSTRACT THINKING

- Use of concepts, the generalized objects and languages, it is regarded as being superior to perceptual thinking as it economizes efforts in understanding and problem-solving.

# 3. REFLECTIVE THINKING

- ⦿ This type of thinking aims in solving complex problems, thus it requires reorganization of all the relevant experiences to a situation or removing obstacles instead of relating with that experiences or ideas.

- In this type, thinking processes take all the relevant facts arranged in a logical order into an account in order to arrive at a solution of the problem.

# 4. CREATIVE THINKING

- ⦿ This type of thinking is associated with one's ability to create or construct something new, novel or unusual.
- ⦿ It looks for new relationships and associations to describe and interpret the nature of things, events and situations.
- ⦿ Here the individual himself usually formulates the evidences and tools for its solution.
- ⦿ For example; scientists, artists or inventors.



# CHARACTERISTICS OF CREATIVE THINKING:

- ① a. Creative thinking, in all its shapes and forms -an internal mental process and hence =one's cognitive behaviour.
- ① b. Every one capable of creative thinking and is therefore universal
- ① c. Production of something new or novel; a new form of arrangement of old elements.

- ⦿ d. Involves divergent thinking instead of the routine and conventional thinking.
- ⦿ e. Creative thinking and its out part is quite comprehensive and built wide.

# 5. CRITICAL THINKING

- It is a type of thinking that helps a person in stepping aside from his own personal beliefs, prejudices and opinions to sort out the facts and discover the truth, even at the expense of his basic belief system.

- Here one resorts to set higher cognitive abilities and skills for the proper interpretation, analysis, evaluation and inference, as well as explanation of the gathered or communicated information resulting in a purposeful unbiased and self-regulatory judgement.
- Person- unbiased, fair-minded, well informed, flexible, inquisitive,

## 6. NON DIRECTED OR ASSOCIATIVE THINKING

- ⦿ Unique type of thinking which is nondirected and without goal.
- ⦿ It is reflected through dreaming and other free-flowing uncontrolled activities.
- ⦿ Psychologically these forms of thought are termed as associative thinking.
- ⦿ Eg- day dreaming, fantasies, delusions-escaping from reality

# 7. IMAGINAL THOUGHT

- Thought that uses visuals/images that can be from any sense modality (consists of images that we can see, hear, or feel in our mind)
- Imaginal thinking is thinking in a multi-dimensional associative structure of —images in time and space.
- Often, the structure has visual aspects, hence the term imaginal thinking.

# 8.REASONING

- MEANING- Best forms of controlled thinking consciously towards the solution of a problem.
- It is realistic in the sense that the solution is sought always in reference to the reality of the situation.
- We can solve many problems in our day-dreams, dreams and imaginations but they are unrealistic solutions.

- Not only when we want to solve an immediate problem but also when we anticipate future problems.
- Role in one's adjustment to the environment.
- It not only determines one's cognitive activities but also influences the behaviour and personality.



# DEFINITION

- ① 1. Reasoning is a stepwise thinking with a purpose or goal in mind—Garrett.
- ② 2. Reasoning is the term applied to highly purposeful, controlled and selective thinking— Gates.

# TYPES OF REASONING

## ① 1. INDUCTIVE REASONING

It is a specialized thinking aimed at the discovery or construction of a generalized principle by making use of particular cases, special examples and identifying of elements or relations.

## 2. DEDUCTIVE REASONING

- It is the ability to draw some logical conclusions from known statement or evidences.
- Here one starts with already known or established generalized statement or principle and applies it to specific cases.
- For example, all human beings are mortal you are a human being, therefore, you are mortal.

# ADEQUACY OF REASONING PROCESS:

- ① Thinking is also influenced by the mode of reasons one adopts.
- ① Illogical reasoning often leads to incorrect thinking.
- ① Logic is the science of correct reasoning which helps to think correctly. Therefore, we should cultivate the habit of logical reasoning among our children.

# 9. PROBLEM SOLVING

- ⦿ Mental process involving discovering, analyzing and solving problem.
- ⦿ To overcome obstacle and find a solution that best matches with the issue/problem.

# STEPS OF PROBLEM SOLVING

- ① 1. IDENTIFYING THE PROBLEM
- ② 2. DEFINING THE PROBLEM
- ③ 3. FORMING A STRATEGY
- ④ 4. ORGANIZING INFORMATION
- ⑤ 5. ALLOCATING RESOURCES-priority
- ⑥ 6. MONITORING PROGRESS
- ⑦ 7. EVALUATING RESULTS-immediate  
or delayed

# 10. LANGUAGE

- Most efficient and developed vehicle used for carrying out the process of thinking.
- When a person reads, writes or hears words or sentences or observes gesture in any language one is stimulated to think. Same with Reading and Writing

- Concepts, symbols, signs, words and language are the vehicles as well as instruments of thought.
- Without their proper development one cannot proceed effectively on the path of thinking.



# THEORIES OF THINKING

## ● 1. STIMULUS RESPONSE(S-R THEORY)

Behaviour is developed as a result of the interplay between stimulus and response.

In other words, behavior cannot exist without a stimulus of some sort

Eg;-Pavlov experiment

# COGNITIVE THEORY

- Cognitive theory is an approach to psychology that attempts to explain human behavior by understanding your thought processes.
- Piaget proposed 4 major stages(each stage correlated with an age period of childhood) of cognitive development-
  1. Sensorimotor Intelligence
  2. Preoperational Thinking
  3. Concrete Operational Thinking
  4. Formal Operational Thinking

# SIMULATION MODELS

- ⦿ Simulation is the imitation of some real thing, state of affairs, or process.
- ⦿ The act of simulating something generally entails representing certain key characteristics or behaviours of a selected physical or abstract system.

# TOOLS OF THINKING

## ● 1. IMAGES

- Mental pictures consists of experiences of people, object, situations, heard and felt.
- Mental pictures symbolize actual objects, experiences and activities.
- In thinking, we usually manipulate the images rather than the actual objects, experiences or activities.

## 2. CONCEPTS

- A concept is a general idea that stands for a general class and represents the common characteristics of all objects or events of this general class.
- for example, when we hear the word “elephant” reminded of the nature and qualities of elephant as a class, also our own experiences and understanding of them come to the surface in our consciousness to stimulate our thinking.

# 3. SIGNS AND SYMBOLS

- ⦿ Symbols and signs represent and stand for substitute of the actual objects, experiences and activities.
- ⦿ For example, traffic lights, railway signals, school bells, badges, songs, flags and slogans all are symbolic expressions.
- ⦿ They stimulate and motivate resultant thinking because they tell us what to do or how to act.

# 4. MUSCULAR ACTIVITIES

- The more we engage ourselves in thought, the greater is the general muscular tension and conversely as we moved towards muscular relaxation, our thought processes gradually diminish.

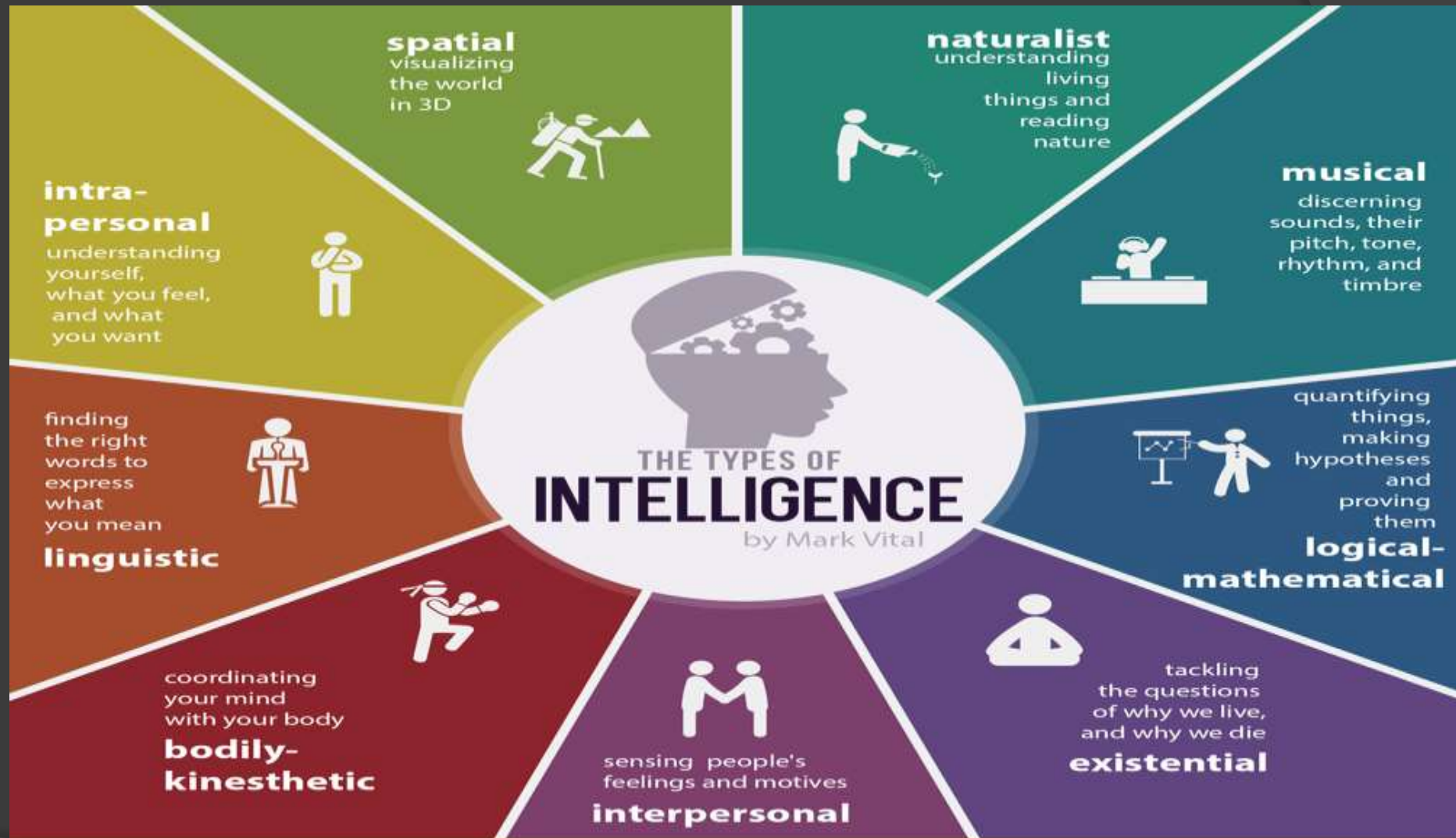
# INTELLIGENCE

- Ability to think properly, to learn from new experiences, to solve problems and to adapt to new situations
- Proper development of Intelligence for bringing up adequate thoughts.
- Intelligence, wisdom and cognitive abilities should be used to carry out thinking



- The Intelligence Quotient (IQ) is a measure of intelligence that is adjusted for age.
- The Wechsler Adult Intelligence Scale (WAIS) is the most widely used IQ test for adults.

# TYPES OF INTELLIGENCE



- In 1983, American Developmental Psychologist Howard Gardener described 9 types of Intelligence:
- Naturalist (nature smart)
- Musical (sound smart)
- Logical-mathematical (number/reasoning smart)
- Existential (life smart)

- ⦿ Interpersonal (people smart)
- ⦿ Bodily-kinesthetic (body smart)
- ⦿ Linguistic (word smart)
- ⦿ Intra-personal (self smart)
- ⦿ Spatial (picture smart)

# 1. NATURAL INTELLIGENCE

- Naturalist intelligence designates the human ability to discriminate among living things (plants, animals)
- As well as sensitivity to other features of the natural world (clouds, rock configurations).
- This ability was clearly of value in our evolutionary past as hunters, gatherers, and farmers.

- ⦿ It continues to be central in such roles as botanist or chef.
- ⦿ Consumer society exploits the naturalist intelligences, which can be mobilized in the discrimination among cars, sneakers, kinds of makeup, etc.

## 2. MUSICAL INTELLIGENCE

- ⦿ Capacity to understand pitch, rhythm, timbre, and tone.
- ⦿ Enables us to recognize, create, reproduce, and reflect on music, as demonstrated by composers, conductors, musicians, vocalist, and sensitive listeners.
- ⦿ There is often an affective connection between music and the emotions.

- ⦿ Mathematical and Musical intelligences may share common thinking processes.
- ⦿ Young adults with this kind of intelligence are usually singing or drumming to themselves.
- ⦿ They are usually quite aware of sounds others may miss.



### 3. LOGICAL-MATHEMATICAL INTELLIGENCE

- Ability to calculate, quantify, consider propositions and hypotheses, and carry out complete mathematical operations.
- It enables us to perceive relationships and connections and to use abstract, symbolic thought; sequential reasoning skills; and inductive and deductive thinking patterns.

- Logical intelligence is usually well developed in mathematicians, scientists, and detectives.
- Young adults with lots of logical intelligence are interested in patterns, categories, and relationships.
- They are drawn to arithmetic problems, strategy games and experiments

## 4. EXISTENTIAL INTELLIGENCE

- Sensitivity and capacity to tackle deep questions about human existences- the meaning of life, why we die, and how did we get here

# 5. INTERPERSONAL INTELLIGENCE

- Ability to understand and interact effectively with others.
- It involves effective verbal and nonverbal communication, the ability to note distinctions among others, sensitivity to the moods and temperaments of others, and the ability to entertain multiple perspectives.

- Teachers, social workers, actors, and politicians all exhibit interpersonal intelligence.
- Young adults with this kind of intelligence are leaders among their peers, are good at communicating, and seem to understand others' feelings and motives.

## 6. BODILY-KINESTHETIC INTELLIGENCE

- ⦿ Capacity to manipulate objects and use a variety of physical skills.
- ⦿ This intelligence also involves a sense of timing and the perfection of skills through mind– body union.
- ⦿ Athletes, dancers, surgeons, and crafts people exhibit well-developed bodily kinesthetic intelligence.

# 7.LINGUISTIC INTELLIGENCE

- The ability to think in words and to use language to express and appreciate complex meanings.
- Allows us to understand the order and meaning of words and to apply meta-linguistic skills to reflect on our use of language.

- Most widely shared human competence and can be seen in poets, novelists, journalists, and effective public speakers.
- Young adults with this intelligence enjoy writing, reading, telling stories or doing crossword puzzles.



## 8. INTRA-PERSONAL INTELLIGENCE

- Capacity to understand oneself and one's thoughts and feelings, and to use such knowledge in planning and directing one's life.
- It is evident in psychologist, spiritual leaders, and philosophers.
- These young adults may be shy. They are very aware of their own feelings and are self-motivated.

# 9. SPATIAL INTELLIGENCE

- ⦿ Ability to think in 3-D
- ⦿ Core capacities-mental imagery, spatial reasoning, image manipulation, graphic and artistic skills, and an active imagination.

- ◎ Sailors, pilots, sculptors, painters, and architects all exhibit spatial intelligence.
- ◎ Young adults with this kind of intelligence-attracted to mazes or jigsaw puzzles, or spend free time drawing or daydreaming.

# THEORIES OF INTELLIGENCE

## ● 1. GENERAL INTELLIGENCE

British psychologist Charles Spearman (1863–1945) described a concept he referred to as general intelligence or the g factor.

After using a technique known as factor analysis to examine some mental aptitude tests, Spearman concluded that scores on these tests were remarkably similar.

- People who performed well on one cognitive test tended to perform well on other tests, while those who scored badly on one test tended to score badly on others.
- He concluded that intelligence is a general cognitive ability that can be measured and numerically expressed

## 2. PRIMARY MENTAL ABILITIES

- Psychologist Louis L. Thurstone (1887–1955) focused on seven different primary mental abilities
  1. Associative memory: The ability to memorize and recall
  2. Numerical ability: The ability to solve arithmetic problems
  3. Perceptual speed: The ability to see differences and similarities among objects
  4. Reasoning: The ability to find rules

5. Spatial visualization: The ability to visualize relationships
6. Verbal comprehension: The ability to define and understand words
7. Word fluency: The ability to produce words rapidly

### 3. THEORY OF MULTIPLE INTELLIGENCES

- One of the more recent ideas to emerge is Howard Gardner's theory of multiple intelligences.
- His theory proposed eight different intelligences based on skills and abilities that are valued in different cultures



- Bodily-Kinesthetic intelligence: The ability to control your body movements and to handle objects skillfully
- Interpersonal intelligence: The capacity to detect and respond appropriately to the moods, motivations, and desires of others
- Intrapersonal intelligence: The capacity to be self-aware and in tune with inner feelings, values, beliefs, and thinking processes

- Logical-mathematical intelligence: The ability to think conceptually and abstractly, and the capacity to discern logically or numerical patterns
- Musical intelligence: The ability to produce and appreciate rhythm, pitch, and timbre
- Naturalistic intelligence: The ability to recognize and categorize animals, plants, and other objects in nature

- Verbal-linguistic intelligence: Well-developed verbal skills and sensitivity to the sounds, meanings, and rhythms of words
- Visual-spatial intelligence: The capacity to think in images and pictures, to visualize accurately and abstractly

## 4. TRIARCHIC THEORY OF INTELLIGENCE

- Psychologist Robert Sternberg defined intelligence as "mental activity directed toward purposive adaptation to, selection, and shaping of real-world environments relevant to one's life."
- Sternberg proposed what he referred to as "successful intelligence," which involves three different factors

- ⦿ Analytical intelligence: Your ability to evaluate information and solve problems
- ⦿ Creative intelligence: Your ability to come up with new ideas
- ⦿ Practical intelligence: Your ability to adapt to a changing environment

# INTELLIGENCE TEST

- “Series of tasks designed to measure the capacity to make abstractions, to learn, and to deal with novel situations.”
- The test is scored in terms of intelligence quotient, or IQ, a concept first suggested by German psychologist William Stern and adopted by Lewis Terman in the Stanford-Binet Scale.
- The IQ was originally computed as the ratio of a person's mental age to his chronological (physical) age, multiplied by 100.
- Thus, if a child of 10 had a mental age of 12 (that is, performed on the test at the level of an average 12-year-old), then the child was assigned an IQ of  $(12/10) \times 100$ , or 120.

- A score of 100, for which the mental age equaled the chronological age, was average; scores above 100 were above average, scores below 100 were below average.

# FACTORS AFFECTING IQ

## ● 1. GENETIC FACTORS

- Genes influence Intelligence and IQ.
- Genetic influence increases with age.
- Genetic influence increases with age.
- Brain structure and functioning contribute to level of intelligence(Size, shape-frontal lobe, amount of blood and chemical activity, thickness of cortex and glucose metabolic rate)



## 2. ENVIRONMENTAL FACTORS

- ⦿ Programs and trainings aimed at increasing IQ
- ⦿ Improvement in nutrition policy during prenatal and early childhood phase.