

LESSON 8

GOING BEYOND THE REALITY: THINKING AND REASONING

SUMMARY

Even a simple problem requires use of thinking and reasoning. The solution to the problem emerges after processing information that is available to you from the environment and past experiences.

Nature and Components of thinking

Features of Thinking process

- It is a mental activity, usually initiated by a problem.
- It follows a sequence of internal (mental) steps that involve a variety of activities such as judgment, abstraction, inference, reasoning, imagining, and remembering etc.
- It is a cognitive process in which we use symbols as representations of objects and events.
- It is a constructive process as we construct something new.
- It relies on a variety of mental structures such as i) concepts, ii) schemas, and iii) mental imagery.

Components of thought process

- **Concepts** - Concepts are mental structures. The categories we form are called concepts. They are the building blocks of thinking. They allow

us to organize knowledge in systematic ways. They represent objects, activities, ideas, living organisms, properties, abstractions, relations. Learning of concepts utilizes the psychological processes of generalization and discrimination.

- **Schemas** - Each schema contains many distinct concepts. Schemas are important building blocks for thinking. E.g. - Self-Schema will include concepts like level of intelligence, health, personality etc.
- **Mental imagery** - Thinking also involves the manipulation of visual, auditory or other images. It has been found that mental manipulations performed on images of objects are quite similar to those that may be performed on the actual objects.

Problem Solving

Problem solving refers to thinking directed towards solving a specific task/situation.

Stages and Strategies of Problem Solving

A problem signifies a situation that requires a solution. It has three stages



Problems may differ with respect to the levels of complexity but steps involved remain the same. For more complex problems the second stage requires more time in order to carry out a number of mental operations.

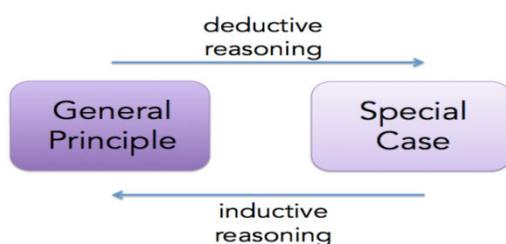
Mental Set in Problem solving

Mental Set is a tendency to respond to new problem in the same manner that was used earlier. Previous success with a particular rule provides a kind of mental rigidity which hinders creativity.

Reasoning

Reasoning is a mental process. It is involved in logical thinking, problem solving, and decision making. There are two types of reasoning:

Deductive Reasoning: In this reasoning the person tries to deduce or draw conclusions from a set of initial assertions or premises. Here, we typically go from general to the particular.



Inductive Reasoning: In this case we go from available evidence to generate a conclusion about the likelihood of something. In this type of reasoning, we consider a number of different instances and try to determine (induce) what general rules cover all instances. Most cases of scientific research involve inductive reasoning.

Decision Making - it is a kind of problem solving in which we select an appropriate alternative out of a number of alternatives available to us. We make several decisions in our day-to-day life, such as decisions pertaining to our personal life, social life, education, career etc. Decisions can lead to success or failure, but our decision making also involves judgment.

Judgement and Decision making

Judgement and decision making are interrelated processes. Judgement involves evaluation of information about the world (objects, events, persons etc.) while decision requires choices.

Language and Thought

Without language it would not have been possible to express our ideas, feelings to others effectively.

Use of Language

Language is a vehicle of thought and a tool for all kinds of social interaction. It conveys intentions, feelings, motives, attitudes and beliefs, etc.

Language and communication

We communicate information by using a system of symbols. Language is one such symbol system. It has two basic characteristics: the presence of symbols and communication.

Symbols represent or stand for something else. Words are associated with certain functions; they acquire meaning and we recognize those words and use them for communicating with others.

It also helps us in describing abstract ideas or thoughts, concrete objects of everyday use and experience.

We also communicate through the use of our body parts, called gestures and postures. It is called non-verbal communication. Sign language is also a form of human language.

Language and thinking

Most of our thinking does involve words. It is well established that language and thought are related. Watson called thinking as “inner speech”.

One can say that language is an essential tool of thinking, but it cannot be said that thinking is not possible without language. Language is helpful in thinking and at the same time language works as a vehicle of thought. That is, whatever we think it is communicated through language.

Do you know?

Approximate Age	Language Response
4 months	Babbling—a variety of sounds, often repeated
10 months	Babbling that includes language used in the household
12 to 18 months	Single words (sometimes one word has a variety of meanings— holophrastic speech)
18 to 24 months	Two-word statements (often a noun and a verb— telegraphic speech)
30 + months	More complex sentences, greater vocabulary, rapid language expansion

The average brain has between 50,000 and 70,000 thoughts a day.

95 percent of all decisions take place in the subconscious mind.

Evaluate yourself

1. Describe the main components of thought process.
2. Discuss the different types of reasoning.
3. What is a mental set?

Extend your horizon

Below is link to some fun problems, visit and play these games:

<https://www.mathsisfun.com/games/towerofhanoi.html>

<https://condor.depaul.edu/dallbrt/extra/360/water-jar-solution.htm>