GENERAL PSYCHOLOGY II

Unit IV

THINKING

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During most of our walking hours we are thinking. It is very hard not to think. We are thinking even when we are asleep and dreaming.

When we think we mentally or cognitively process information.

THINKING DEFINED

We can think define thinking as cognitive rearrangement or manipulation of both information from the environment and the symbols stored in long-term memory.

VARITIES OF THINKING
The general definition of thinking encompasses many different varieties of thinking.

1. AUTISTIC THINKING
Thinking of some people is highly private and they may use symbols with very personal meanings. This kind of thinking is called AUTISTIC THINKING.

2. DIRECTED THINKING
Thinking aimed at solving problems or creating something new is called directed thinking. It is type of thought we value so much in great human thinkers.

INFORMATION PROCESSING MODEL OF THINKING

Thinking is a form of information processing. This goes on during the point between a stimulus event and the response to it. A set of cognitive processes that mediate or go between stimulus and response.

THINKING PROCESS

EXAMPLE

You are to purchase a T. V. the sales person presents several brands in your price range and finally you purchase one of them.

Before buying, however you weight the advantages and disadvantages. You process the information you have about them. Thus information processing mediates between the T. V. as stimuli and your final response of buying one of them.

DEVELOPMENT OF THINKING

Both thinking and language go through regular stages of development as a child grows.

1. SENSORY MOTOR STAGE - birth to 2 years.
2. PREOPERATIONAL STAGE- 2 to 7 years.
3. CONCRETE OPERATIONAL STAGE - 7 to 12 years
4. FORMAL OPERATIONAL STAGE - 12 years onwards.

(PAGET'S cognitive development stage)

In the formal operational stage abstract thinking, hypothetical thinking, deduction and induction. Inter prepositional logic and reflective thinking are also develop.

ELEMEMTS OF THOUGHT

THE THINKING PROCESS

In thinkingprocess we use symbols i. e. , words and languages. Therefore thinking and language are closely related. Images are another important type of symbol used in thinking.

ROLE OF IMAGES IN THINKING

1. People vary in how much they use images in their thinking. A few report that they almost never use mental pictures. They are doing their thinking with words or verbally. Others report that most of their thinking is done in image form.

2. When we use images to think, they are not usually "complete pictures in the head" they are usually incomplete. In general the images are abstractions of certain features from previous experience.

3. Images used in thinking are constructed from elements stored in long- term memory. The constructive processes have been studied by experiments in which people are asked to form images of various sizes. For example an elephant might be imaged as the sized of the mouse, or a mouse imaged as the sized of an elephant. The ease with which information is found in image depends on the size (and other aspects) of the image constructed.

ROLE OF LANGUAGE IN THINKING

1. A language makes available hundreds of thousands of potential symbol and gives us rules for using them.
To a large degree, the availability of language is what human thinking so much more sophisticated then the thinking of the other animals. A language is a powerful tool in human thought, as when we "talk to ourselves" internally.

2. LINGUSTIC – RELATIVITY HYPOTHESIS- some theorists assume that languages can determine the thoughts. We are found of having. However in recent years it is found out that there are universals in thinking. The basic thought processes are similar even through languages differ widely.

3. Thinking is a kind of inner-speech. According to this idea people make small movements of the vocal apparatus when they think and carry on their thinking by talking themselves. But experiments have proved that vocal movements are not necessary for thinking.

CONCEPT FORMATION

CONCEPT-DEFINITION

The term concept refers to a general idea or unit of knowledge which is the result of many experiences.
 Therefore concept is a symbolic means of both integrating and differentiating our experiences. Concepts are fundamental steps in higher forms of thinking.
A concept defines the properties that all objects or events of given category have in common.

CONDITIONS FOR CONCEPT FORMATION

1. Complex concepts are usually acquired slowly over a period of years. Simpler concepts are acquired rapidly.
2. According to the viewpoint of the realists, the concept exists "our there" and is acquired through an accumulations of experiences.
3. In the philosophy of science, it is viewed that the concept is an individual creation. Out of a large variety of possibilities. The individual eventually develop his own concepts. In this process abstracting and generalizing are essential.

CONCEPT FORMATION- PROCESS

In the growing child, concepts are formed on the basis of his learning experiences. In this process two simultaneously and diametrically opposing processes play important roles. They are
1. Generalisation and
2. Abstraction.

1. GENERALISATION

 Generalization refers of the concept, abstracting is observing essential features of an event. The individual who formulate the concept of something must observe the same class of objects and take the essential features. Once it has been done, the individual can identify an object of quite different appearance having similar aspects.

Generalization occurs from varied experiences. But generalization cannot be achieved without abstracting. Both generalization and abstraction are involved through often in a cyclical fashion. They cannot be separated from one another.

STRATEGIES IN CONCEPT FORMATION

The most common strategies in concept formation are the holistic and artist approaches.

HOLISTIC APPROACH

In this approach, the individual is not selective at the outset. He consider all characteristics of the stimulus as part of the concept to be discovered an proceeds in slow but systematic fashion.

PARTIST APPROACH

In this approach, the subject focuses only one or a few aspects at the outset. This procedure is inefficient whenever the stimulus is composed of several characteristics. In this way incorrect hypothesis are discarded, yet they may include some of the dimensions of the concept. If the concept is simple one artist method is more apt than holistic method.

CONCEPT IN ANIMALS

Various experimental studies show that animals have developed a basic geometric concept. They responded to different aspects of stimuli. Such as different sizes, colors and brightness.

CONCEPTS IN CHILDREN

Children learn simple concept first and as they grow attain the higher level of conceptual ability.

CONCEPTS IN ADULTS

Adults are usually concerned with complex concepts such as conjunctive concepts, which have several dimensions, and disjunctive concepts, which also have several dimensions. But any one of them by itself constitutes an instance of the concept.

PROBLEM SOLVING

PROBLEM DEFINED

A problem can be defined as any conflict or differences between an existing situation and a goal.

In a problem, the differences between the initial state and the goal constitute the problem.

The thinking that we do in problem solving is thus goal directed and motivated by the need to reduce the discrepancy between one state of affair and another.

NATURE OF PROBLEM SOLVING

In trying to reach the goal of problem situation, we use information available to us from long-term memory.

We also use information from our "HERE – AND – NOW" PERCEPTION OF THE PROBLEM SITUATION.

We process this information according to the rules that tell us what we can or cannot do. Many instances of problem solving can be considered a form of rule- guided, motivated information processing.

RULES IN PROBLEM SOLVING

Many of the rules used in solving problems concern the changes that are permissible in going from one situation to another. Two major types of such are ALGORITHMS and HEURISTICS.

1. ALGORITHM (STEP – BY – STEP)

An algorithm it a set of rules which, if followed correctly, will guarantee a solution to a problem.

For example, if you are given two numbers to multiply, you immediately start thinking of all the rules for multiplication you have learned, and you apply these algorithms to the problem. If you follow the rules correctly you will solve the problem.

However, because we do not have algorithms for most of the problems we encounter, we must use heuristics.

2. HERUSTICS (FINDING – OUT)

Heuristics are strategies usually based on our past experience with problems that are likely to lead to a solution but do not guarantee success.
One common strategy or heuristic is to break the problem down into smaller sub-problems, each a little closer to the end goal. The sub-goal heuristic might be called a means – end analysis.

In programming computers to solve problem heuristic and means – end-analysis are often used.

Obviously, the heuristic do not guarantee a solution. However they do provide rules of thumb for approaching a solution.

HABIT AND SET PROBLEM SOLVING

What is set?

Practice in solving problems in a particular way leads people to use the same rules on another problems. This is known as set.

Set can be quite helpful in solving problems. However in some problems set can hinder solution of a problem.

Set that hinder is the idea behind a number of parrot jokes and puzzles. In one such trick the joker spells words and ask another person to pronounce them. The joke uses names beginning with Mac like MacDonald to see Mac Ravish. Then, the word "machinery" is

spelled to see if the person pronounces it"Mac Hennery" with set for names. The person often falls into the trap.

Set may be induced by immediately proceeding experiences by long-established practices or by instructions that revive old habits.

Set biases thinkers at the start of the problem directing them away from certain thoughts and towards others. It acts as an implied assumption and it can be positive or negative in its effects.

If it is helpful we say, what a sharp cookie I am if it is a hindrance, we say "How stupid of me"

REDUCING THE EFFECT OF SET

The hindering effects of stem can be reduced by-

Warning the subject, just before the critical problem (for example "look sharp now")
1. Reducing the number of practice trials.
2. Separating practice and critical trials by days or weeks.

FUNCTIONAL FIXEDNESS

A particular kind of set that can point thought in the wrong direction has been called FUNCTIONAL FIXEDNESS. It is a set to use objects in the way we are accustomed to use them even if a different use might solve a problem.

AN ILLUSTRATION OF FUNCTIONAL FIXEDNESS

The problem was to mount a candle on a vertical screen. The subjects were provided with candles, small paste- board boxes, thumbtacks and matches. The solution is to stick the candle on the box with melted wax and then use the thumbtacks to attach the box to the screen.

Boxes are usually containers and not platforms. Fixation on this function was established for the experimental group by placing the tacks, candle and matches in the box before giving it to them. The empty box, together materials was simply placed on the table for control group.

Members of the experimental group had difficulty with this problem. On the other hand most of the subject in the control group solved the problem (Adamson 1952)

OVERCOMING FUNCTIONAL FIXEDNESS;

Temporarily quitting a problem that cannot be solved and coming back to it with a fresh approach is a way to break functional fixedness.

TYPES OF THINKING

Thinking can be classified into two broad categories. Viz. convergent thinking and divergent thinking.

CONVERGENT THINKING

Convergent thinking is concerned with a particular end result. The thinker gathers information relevant to the problem and then proceeds by using problem solving rules to work out the right solution.

The result of the convergent thinking is a solution that has been previously arrived at by someone else.

DIVERGENT THINKING

Divergent thinking involves variety of thoughts such as Divergent thinking, creative thinking and autistic thinking.

Creative thinking can be defined as the ability to create something new and solve problems in a novel way.

The autistic thinking consists of symbols and thoughts, which have private meanings. In the process of autistic thinking some useful ideas that would have been missed by concentrating strictly on the problem may occur.

STEPS IN CREATIVE THINKING

STAGE 1. PREPARATION

In this stage the thinker formulates the problem and collects the facts and materials considered necessary for the new solution.

STAGE 2. INCUBATION

During this period some of the ideas that were interfering with the solution tend to fade the creative thinker may have experiences that provide clues to the solution. The unconscious thought processes involved in creative thinking are also at work during this period of incubation.

STAGE 3. ILLUMINATION

In this stage an idea for the solution suddenly wells up into consciousness with an "aha" insight experience.

STAGE 4. VERIFICATION

In this stage the apparent solution tested to see if it satisfactorily solves the problem.

STAGE 5. REVISION

When the insight in unsatisfactorily the thinker is back at the beginning of the creation process.

CHARACTERISTICS OF CREATIVE PEOPLE

Many creative people are talented in some way. They have certain specific abilities that they can use in their search for new ideas. The following are some of the special characteristics of creative people.

1. INTELLIGENCE
Several studies have indicated that intelligence is important to creativity. However some other factors are also involved in creativity.

2. INDEPENDENCE
This is a willingness to be independent in both thinking and action. Creative people are less interested in traits favored by others. They were not interested in becoming model citizen they want to be more inventive, more independent and more individualistic.

3. SENSE OF HUMOR
In creative people, high regard for a sense of humor is apparent. Creative people view this sense of humor as a desirable trait than other.

4. INTEREST IN NOVELTY AND COMPLEXITY
Creative people have grater interest in novel complex tasks. When given a choice, creative persons prefer more complex and irregular things and they introduce the same qualities in their own qualities.

5. They are more complex psycho-dynamically and have grater personal scope.
6. They are more self- assertive and dominant.
7. They reject suppression as a mechanism for the control of impulse.
8. They are more risk taking.
9. They have more tolerance level.
10. Creative people do their own thing even if it is unpopular or seems to be rebellious or non- conforming.
11. A personality dimension "ORIGENCE" is related to creativity. A person high on this dimension resists conventional approaches that have been determined by others and would rather do his or her own thing. Such a person is more interested in artistic, literary and aesthetic matters and allow a more individualized interpretation an expression.