Thinking and Learning Style

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Abstract

The mind has three basic functions: thinking, feeling, and wanting. The process of thinking creates meaning or making sense of the events of our lives thereby . The process of feeling monitors those meanings or evaluating how positive and negative the events of our lives are, given the meaning we are ascribing to them. The process of wanting drives us to act in keeping with our definitions of what is desirable and possible. What is more, there is an intimate interrelation between thinking, feeling and wanting. When for example, we THINK we are being threatened, we FEEL fear, and we inevitably WANT to flee from or attack that which we think is threatening us. When students THINK a subject they are required to study has no relationship to their lives and values, they FEEL bored by instruction in it, and it develop a negative MOTIVATION with respect to it. The article discuss about various types of thinking skills which could be implemented in the teaching and learning process. Teaching thinking skills does have a great deal to offer but it will be effective only if it excites teachers who are skilled enough to work in this way. Instruction that fails to address the affective side of students' lives can eventually turn students into inveterate "enemies" of education.

Concept of Thinking

Thinking is an active, purposeful, organized cognitive process that we use to make sense of our world.

- Becoming aware of our thinking process
- Carefully examining our thinking process, and that of others
- Practicing our thinking abilities

Thinking is the deliberating exploration of experience or knowledge for one of these mentioned purposes. Thinking on the other hand is a conscious process which uses knowledge or experience for a purpose.

(The Paragon Generation)

Thinking is a process by which a new mental representation is formed through the transformation by complex interaction of the mental attributes of judging, abstracting, reasoning, imagining and problem solving. Thinking is the most inclusive of the three elements of the thought process and is characterized by comprehensiveness rather than exclusion. When one person reads a book, imformation presumably passes through a sequence from a sensory store to a memory store.

Thinking is a process that involves some manipulation of knowledge in the cognitive system. While comtemplating her move, past memories combined with present information changed her knowledge of the situation. Thingking is directed and result in behaviour that ‘solves’ a problem or is directed toward a solution. The next chess move is, in the mind of the player, directed toward winning the game. Not all actions are successfully but generally, in the mind of the player, they are directed toward a solution.

(David Wood, 1988)

Edward de Bono (1970) has mentioned that:

“If one wants to dig a hole deeper, it is necessary to dig vertically, if however, the object is to dig hole in another place, then it is necessary to dig laterally.”

According to above statement, he divides thinking into two methods; Vertical and Lateral thinking.

Vertical Thinking

Vertical thinking is using the processes of logic, the traditional, historical methods. 90 percent of thinking that is promoted by the present education system comes from vertical thinking. It is widely used in mathematical proofs and in repeating scientific experiments. Furthermore, it is more dependent to YES/NO logic or in the other word; it uses logic and produces correct answers. Therefore, it consists of several logical dependent steps st which there is a correct and an incorrect solution in every step of the process. In fact, a mistake at any stage is considered fatal. However, the process leads inexorably to the same unique correct solution and infinitely repeatable.

Following is an example to demonstrate this type of vertical thinking:

a. Digging holes.

   Get the solution find buried treasure.

   Of course, you dig a hole in the ground to find it.

   The hole already represents ones logic.

b. Winbledon Tournament

   There are 165 men have been selected to play in the men singles tournament at Winbledon in 2003. imagine that you are the tournament planner; you need to know how many matches will be played so you can arrange with the television companies to televise the final on the final Sunday. Some of the players are seeded and will join the tournament after the first round (i.e. they are given a bye). Calculate how many matches will be played.

1

2

4

8

16

32

64

128

256

Firstly, calculate how many byes are needed? 165 are between 128 and 256. Therefore, you need to subtract 165 from 256 and you have 91 byes. Then, you deduct it from 165 to find how many players will be played in the first round, which is 74 players. If they played each other (37 matches), then there would be 37 players are ready to join the 91 byes for the second round. Therefore, there would be 37 + 91 = 128 players left. This means that there are 37 + 64 + 32 + 16 + 8 + 4 + 2 + 1 = 164 matches.

From this process, we can say that:

- It depends heavily on logic.
- A mistake in every step would spoil the process and that is why it known as YES/NO logic.
- This procedure is repeatable and it can be used or applied to any number of players.
- It is teachable.

From here, we can see why vertical thinking is so popular in educational circles. You can teach procedures and then all the students have to do is to apply the process to problems being given to them by the teacher.

Unfortunately, not all problems have acorrect solution because some problems might have no solution and the others can have many solutions depending on which criteria are adopted. Furthermore, in examinations, the problems are specially chosen so that the process is applicable but not in the real life. Therefore, what does a student do when the process is not applicable? Imagine the highway representing the solution

process (i. e. vertical thinking) leading towards the solution (solution city). We know that it is easy to speed along a highway and one soon reaches the destination. It shows that the vertical thinking is a good process.

However, what is going to happen if there is a traffic jam in the highway, maybe because of the accident. Now you are stuck there and how do you progress? You might just sit and wait or try to force to find way through. This illustrated one of the problems of vertical thinking that when the process breaks down, there is nothing to put in its place. Moreover, vertical thinking encourages a reductionist approach to education, because it divides thinking into artificial boxes in which discourages communication.

Lateral Thinking

A lateral thinking is a way of thinking that uses unorthodox methods or elements to seek a solution to an intractable problem. It would be normally be ignored by logical thinking. Furthermore, it involves disrupting an apparent thinking sequence and arriving at the solution from another angle. Following is the solution of the same example given vertical thinking for lateral thinking:

a. Dinging holes

   You can dig a hole, as deep as you like, however, how about if the treasure ids in another place which you will never find it then. Therefore, you must come out of your hole and dig a new hole somewhere else because the treasure maybe just below the surface. This is how lateral thinking works.

b. Winbledon Tournament

   At this time around, we are not concentrated on the winners or how many went through to the next round. We are concentrated on the losers and how many people lost? Of course, the answer is 164 because it takes one match to lose. Therefore, there were 164 matches played.

* As you have seen, the answer is the same, but it is much neater and easier. We are not relying on logical steps but we have looked at the problem in a different way and the answer seems to be more obvious. The point is that the way that one approaches a problem affects the ease of the solution. Dr. Edward de Bono has proven lateral thinking methods provide a deliberate, systematic process that will result in innovative thinking. Furthermore, he argues: “lateral thinking is a way of using the mind that lead to creative thinking and creative solution but it is not the same thing as creative thinking”.

The differend between vertical and lateral thinking

Vertical Thinking	**Lateral Thinking**
Looking for the right approach	Looking for as many approach as possible
Rightness	Richness
Is selective	Is generative
Proceeds if there is a direction	Proceeds to generate direction
Is analytical	Is provocative
Is sequential	Can skip or make jumps
One must be correct at every steps	One does not have to be correct at every steps
Uses negative to block off certain pathways	There is no negative
Excludes what is irrelevant	Welcomes chances intrusions
Fixed categories/ labels/ classifications	Labels may change
Explores most likely paths	Explores least likely paths
Is a finite process	Is aprobabilitistic process

Convergent Thinking

Convergent is a thinking that is directed towards one correct solution to problem. It is a thinking that narrows its focus in a particular direction, assuming that there is only one, or at most a limited number of right solutions. This process assumes that there is a single right answer and that it exists somewhere, usuallyin the text book or in the course of study.

Convergent type thinker retain from guessing and are anot inclined to answer a question if they are not certain of the answer. The example of question that requires a convergent thinking is “Why do people commonly read a newspaper?’ This is a convergent question because there are only a few reasons people commonly read a newspaper – for news, opinions or entertainment. Thought coverges on these few answers, rulling out alternatives.

Divergent Thinking

Divergent thinking is the ability to propose many different answers. It can only be assessed by test of the open – ended variety, that is, by tests that have no set right and wrong answers. Children are asked to think as many appropriate ways as they can for solving some particular problem.

Besides, divergent thinking; as we noted in our discussion of brainstorming techniques is concerning with approaches such as speculation, imagination, heuristics and invention, processes that are based on the assumption that there may be several good ways to solve a problem. Creativeness depends on an individual’s ability to innovate and to perceive new relationships and therefore demands some divergent thinking.

Since divergent thinking tests lay emphasis upon individuality of response, far less work has been done on standardization than is the case for intelligence tests and in consequence most commentators regard them as rather crude devides. For example; this

question is open –ended because there are many possible uses; such as newspaper is used to pack material, catch drops, strat fires, clean windows, wrap fish, insulate against the cold and to generate cash as a recyclables, to mention just a few uses.

So divergent thinking is the thinking that meets the criteria of ariginality, inventiveness and flexibility or in other words, thinking that involves generating many different ideas, suited to problems that have no one right solution and require an intentive approach.

Creative Thinking

Creative is not intuitive; it is something that everyone can learn. Moreover, you can learn creativity in a logical and systematic way. Becoming creative is largely a matter of letting go of overly rigid habits and practicing creative techniques. Creative thinking is fun. It is inherently playful. That's why children usually have a much greater capacity for creativity than adults. They take time for mental play and they enjoy being creative.

Creative thinking is an abilityto imagine or invent something new. It is not the ability to create out of nothing (only God can do that) but the ability to generate new ideas by combining, changing or reapplying existing ideas. It is also an attitude to accept change and newness and willingness to play with ideas and possibilities, flexibility of outlook, the habit of enjoying the good, while looking for ways to improve it. Actually creative people work hard and continually to improve ideas and solutions, by making gradual alterations and refinements to their work. (Robert Harris, 1998)

Several methods have been identified for producing creative results. Here are the five classic ones:

1. Evolution

Method of incremental improvement. New ideas stem from other ideas, new solution from previous ones, the new ones slightly improved over the old ones. Every problem that has been solved can be solved again in a better way.

2. Synthesis

With this method, two or more existing ideas are combined into third new idea.

3. Revolution

Sometimes the best new idea is a completely different one, a marked change from the previous ones.

4. Reapplications

Look at something old in anew way. Go beyong labels. Unfixate, remove prejudices, expectations and assumptions and discover how something can be reapplied.

5. Changing Direction

Many creative breakthrourghs occur when attention is shifted from one angle of a problem to another. This sometimes called creative insight. When one solution path is not working, shift to another. There is no commitment to a particular goal. Path fixation can sometimes be a problem for those who do not understand this, they overcommitted to a path that does not work and only frustration results.

Critical Thinking

Critical thinking is the thinking that you do when you have to evaluate a claim/ simply learning to "think for yourself". Where problem solving requires creative thinking, evaluating claims requires critical thingking.

There is four aspects explain the process of critical thingking;

1. Defining & Clarifying the problem
    a. Identify central issues or problem
    b. Compare similarities & differences.
    c. Define which information is relevant.
    d. Formalute appropriate questions.
2. Judging information related to the question
3. Judging Information related to the problem
    a. Distinguish among fact, opinion and reasoned problem.
    b. Check consistency
    c. Identify instated assumptions.
    d. Recognize bias, emotional factors propaganda, and semantic slanting.
    e. Recognize different value systems and ideologies.
4. Solving problems/ drawing conclusions
    a. Recognize the adequacy of data.
    b. Predict probable consequence.

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