

1. Critical Thinking

“The definition of critical thinking has changed somewhat over the past decade. Originally the dominion of cognitive psychologists and philosophers, behaviourally- oriented psychologists and content specialists have recently joined the discussion. The following are some examples of attempts to define critical thinking:

- Active, persistent, and careful consideration of a belief or supposed form of knowledge in the light of the grounds which support it and the further conclusions to which it tends. (Dewey, 1909, p. 9)
- an attitude of being disposed to consider in a thoughtful way the problems and subjects that come within the range of one’s experience; (2) knowledge of the methods of logical enquiry and reasoning; and (3) some skill in applying those methods. Critical thinking calls for a persistent effort to examine any belief or supposed form of knowledge in the light of the evidence that supports it and the further conclusions to which it tends. (Glaser, 1941, p. 5)
- Critical thinking is reasonable, reflective thinking that is focused on deciding what to believe or do. (Cf. Norris and Ennis, 1989)
- Critical thinking is that mode of thinking – about any subject, content or problem – in which the thinker improves the quality of his or her thinking by skilfully taking charge of the structures inherent in thinking and imposing intellectual standards upon them. (Paul, Fisher and Nosich, 1993, p. 4)

1.1 Aspects of critical thinking:

1. Critical thinking is a productive and positive activity.
2. It is a process, not an outcome.
3. Manifestations of critical thinking vary according to the contexts in which it occurs.
4. Critical thinking is triggered by positive as well as negative events.
5. It is emotive as well as rational.
it stirs up emotions — it makes people feel something strongly, like happiness, sadness, anger, or sympathy

1.2 Components of critical thinking:

1. Identifying and challenging assumptions is central to critical thinking.
2. Challenging the importance of context is crucial to critical thinking.
3. Critical thinkers try to imagine and explore alternatives.
4. Imagining and exploring alternatives leads to reflective skepticism.
carefully questioning and thinking deeply before believing something.

1.3 Critical Thinking Abilities

critical thinking tradition has produced a list of thinking skills which they see as basic to critical thinking. For example, Edward Glaser listed the abilities:

1. to recognise problems
2. to find workable means for meeting those problems

3. to gather and marshal pertinent information
 4. to recognise unstated assumptions and values
 5. to comprehend and use language with accuracy, clarity and discrimination
 6. to interpret data
 7. to appraise evidence and evaluate statements
 8. to recognise the existence of logical relationships between propositions
 9. to draw warranted conclusions and generalisations
 10. to put to test the generalisations and conclusions at which one arrives
 11. to reconstruct one's patterns of beliefs on the basis of wider experience
 12. to render accurate judgements about specific things and qualities in everyday life.
- (Glaser, 1941, p. 6)

Fisher and Scriven (1997), have pointed out some of the fundamental critical thinking skills, in particular how to:

1. identify the elements in a reasoned case, especially reasons and conclusions;
2. identify and evaluate assumptions;
3. clarify and interpret expressions and ideas;
4. judge the acceptability, especially the credibility, of claims;
5. evaluate arguments of different kinds; analyse.
6. evaluate and produce explanations
7. evaluate and make decisions;
8. draw inferences;
9. produce arguments.

1.4 Critical Thinking Strategies

Six Critical Thinking Strategies

1. **Trends:** Learn new ideas and trends in your industry
2. **Industry Changes:** Gain insights how changes affect your organization and industry.
3. **Ask Questions:** Ask questions to solve problems: Who, What, When, Where, Why and How.
4. **Think Differently:** Challenge yourself and those you work with to think differently.
5. **Read:** Read as much as you can. Keep yourself updated on current affairs
6. **Problem Solve:** Seek new opinions from co-workers to trigger creativity and new innovative approaches to problem solve

2. Creative Thinking

Like critical thinking, creativity is viewed as a process rather than a product, and within the variety of theories, one defined creativity as needing to have an expert determine if something is creative, and another just holding the process as the creative portion.

Creativity is something that “deviates from past experiences and procedures,” (Michalko 2000). “Creativity usually has been defined as the production of novel ideas that are useful and appropriate to the situation.

Some speak of creativity as the process of discovery. It is more than cognitive functioning. Albert (1990, as quoted in Feldhusen and Goh, 1995) proposes six guiding ideas to “grasp the essence of creativity.”

1. Creativity is expressed through decisions, not products.
2. Knowledge of self and of one's world is the medium of creative behaviour.
3. Creative behaviour is highly intentional.
4. Creativeness and personal identity are emergent.
5. Creative behaviour engages individuals at the personal level of their identities and abilities.

Studies in cognitive psychology have tried to understand the process of creative thinking. Many researches assumed that creativity is just extraordinary results of ordinary processes (Smith, Ward & Finke 1995). The process of creativity is thought to have following four characteristics:

1. It is imaginative involving imagination, since it is the process of generating something original.
2. It is purposeful, that is, creativity is imagination put into action towards an end.
3. It produces something original in relation to one's own previous work, to their peer group or to anyone's previous output in a particular field.
4. It has value in respect to the objective it was applied for. Creativity involves not only the generation of ideas, but also evaluation of them, and deciding which one is the most adequate one.

2.1 investment and confluence theory

Sternberg (2006) has proposed investment and confluence theory to understand creativity. According to the investment theory, creativity requires a confluence of six distinct but interrelated resources: intellectual abilities, knowledge, styles of thinking, personality, motivation, and environment. Although levels of these resources are sources of individual differences, often the decision to use a resource is a more important source of individual differences.

Intellectual skills: Three intellectual skills are particularly important: (a) the synthetic skill to see problems in new ways and to escape the bounds of conventional thinking, (b) the analytic skill to recognise which of one's ideas are worth pursuing and which are not, and (c) the practical-contextual skill to know how to persuade others of—to sell other people on—the value of one's ideas.

Knowledge: One needs to know enough about a field to move it forward. One cannot move beyond the field if they don't know where it is. On the other hand, knowledge about a field can result in a closed and entrenched perspective, resulting in a person's not moving beyond the way in which he or she has seen problems in the past. Knowledge thus can help, or it can hinder creativity.

Thinking styles: Thinking styles are preferred ways of using one's skills. In essence, they are decisions about how to deploy the skills available to a person. With regard to thinking styles, a legislative style is particularly important for creativity, that is, a preference for thinking and a decision to think in new ways.

Personality: Numerous research investigations have supported the importance of certain personality attributes for creative functioning. These attributes include, but are not limited to, willingness to overcome obstacles, willingness to take sensible risks, willingness to tolerate ambiguity, and self-efficacy. Note that none of the attributes of creative thinking is fixed. One can decide to overcome obstacles, take sensible risks, and so forth.

Motivation: Intrinsic, task-focused motivation is also essential to creativity.

Environment: Finally, one needs an environment that is supportive and rewarding of creative ideas. One could have all of the internal resources needed to think creatively, but without some environmental support the creativity that a person has within him or her might never be displayed.

Confluence: Concerning the confluence of these six components, creativity is hypothesized to involve more than a simple sum of a person's level on each component. First, there may be thresholds for some components (e.g., knowledge) below which creativity is not possible regardless of the levels on other components. Second, partial compensation may occur in which strength on one component (e.g., motivation) counteracts a weakness on another component (e.g., environment). Third, interactions may occur between components, such as intelligence and motivation, in which high levels on both components could multiplicatively enhance creativity.

2.2 Aspects of Creativity

Fluency: The number of relevant ideas; shows an ability to produce a number of figural images.

Flexibility: Flexibility is the individual's ability to produce not only a large number of responses, ideas or solutions to a problem, but also a variety of responses, ideas or solutions to a problem.

Originality: The number of statistically infrequent ideas; shows an ability to produce uncommon or unique responses.

Elaboration: The number of added ideas; demonstrates the subject's ability to develop and elaborate on ideas.

Abstractness of Titles: The degree beyond labelling; based on the idea that creativity requires an abstraction of thought. It measures the degree a title moves beyond concrete labelling of the pictures drawn.

Resistance to Premature Closure: The degree of psychological openness; based on the belief that creative behaviour requires a person to consider a variety of information when processing information and to keep an "open mind."

Reference:

Dorch, Patricia. *What are Softskills? How to Master essential Skills to Achieve Workplace Success*, Execue Dress.2013.

Fisher, Alec. *Critical Thinking: AN Introduction*, Cambridge University Press. 2011.