



# **SHREE H.N.SHUKLA GROUP OF COLLEGES** **(Affiliated to Saurashtra University and G.T.U)**

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## **SUBJECT: CRITICAL THINKING AND PROBLEM SOLVING**

# **CHAPTER-2:**

### **Introduction to Critical Thinking and Problem Solving**

<b>Sr No.</b>	<b>Topic</b>
<b>1.</b>	<b>Definition of critical thinking and problem solving</b>
<b>2.</b>	<b>Importance of critical thinking and problem solving in personal and professional life</b>
<b>3.</b>	<b>Approaches to critical thinking and problem solving</b>
<b>4.</b>	<b>Techniques of problem solving</b>

**“Critical Thinking and Problem Solving”**



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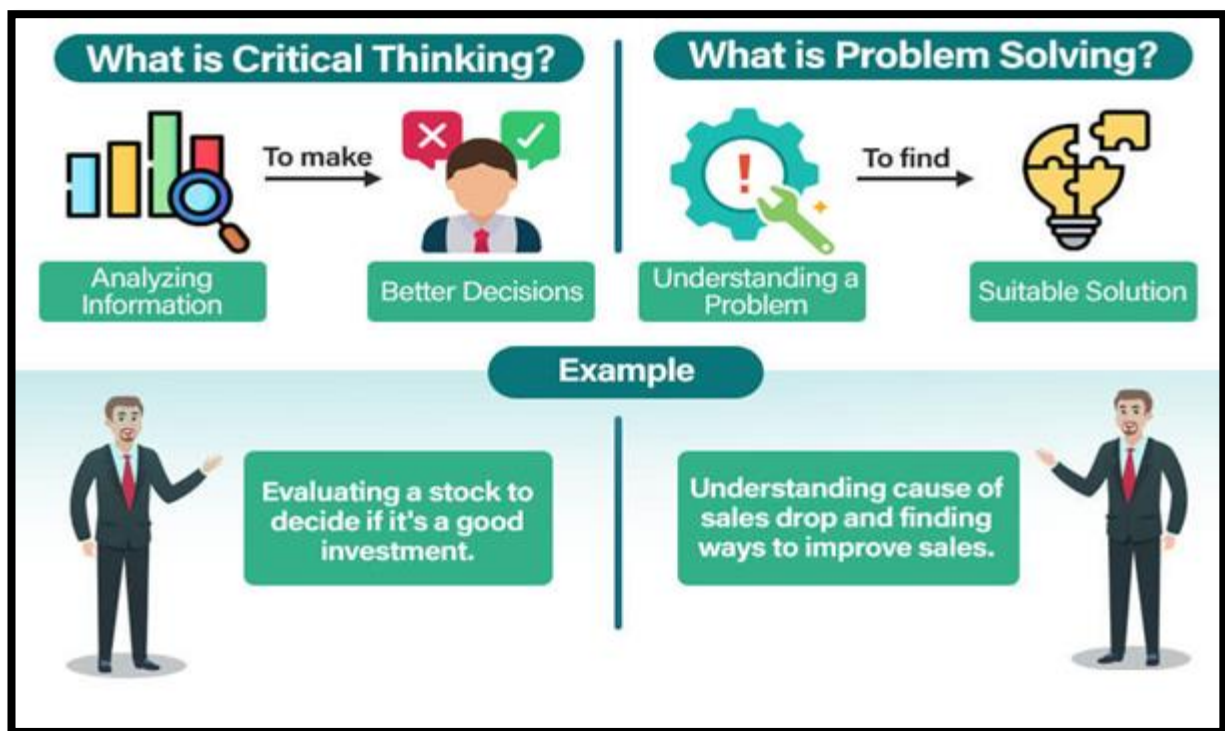
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## Q-1: Definition of critical thinking and problem solving

Ans:

- Critical thinking and problem solving refers to the ability to use knowledge, facts, and data to effectively solve problems.
- This doesn't mean you need to have an immediate answer, it means you have to be able to think on your feet, assess problems and find solutions.





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## **Critical Thinking:**

- It is a self-directed thinking that produces new and innovative ideas and solves problems.
- It assumes reflecting critically on learning experiences and processes, and making effective decisions by avoiding common pitfalls, for example seeing only one side of an issue, discounting new evidence that disconfirms your ideas, reasoning from passion rather than logic, and failing to support statements with evidence.
- It is based on: clarity, consistency, accuracy, good reasons etc.

## **Problem Solving:**

- Problem Solving is a mental process involving the ability to analyze and find the solution that best resolves the problem.
- It describes the process where there is a goal that is blocked for any reason – lack of resources, lack of information and so on – that presents a problem.
- Whatever is done in order to achieve the set goal is problem solving.
- There are routine problems and non-routine problems.
- Routine problems can be solved using methods familiar to students by replicating previously learned methods in a step-by-step fashion.
- Non-routine problems are problems for ‘which there is not a predictable, well-rehearsed approach or pathway explicitly suggested by the task, task instructions or a worked-out example’.

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## **Q-2: Write a short note on importance of critical thinking and problem solving in personal and professional life**

**Ans:**

- Critical thinking and problem solving skills are important in personal and professional life because they help people make informed decisions, solve problems, and adapt to challenges:

### **Critical thinking and problem solving in:**

#### **Personal life**

- Critical thinking can help people make better decisions by weighing pros and cons, considering alternatives, and anticipating consequences. It can also help people become more self-aware by recognizing their own biases and limitations.
- Critical thinking skills can also help people build confidence and self-empowerment, and enable them to gather knowledge, process information, and analyse data efficiently.
- Example includes: smart shopping, smart health care, smart budget profiling etc.

### **Critical thinking and problem solving in:**

#### **Professional life**

- Critical thinking can help people tackle complex challenges by analyzing problems from multiple angles and considering different perspectives. It can also help people identify innovative solutions and overcome obstacles. Critical thinking skills can also be useful in the workplace for self-evaluation, such as analyzing performance reviews and contributions to a team or organization.

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➤ Example of critical thinking and problem solving:

- 1) **Analyzing Market trends:** A marketing professional employs critical thinking skills to assess market trends, consumer behavior, and competitor strategies before devising a successful marketing campaign that aligns with the target audience's needs.
- 2) **Problem-Solving in Project Management:** A project manager utilizes critical thinking to identify potential roadblocks, consider alternative approaches, and ensure projects are executed efficiently and within budget.

## Benefits of critical thinking and problem solving:

### 1) Better decision making

Critical thinkers excel at weighing pros and cons, considering alternatives, and anticipating potential consequences. This leads to more informed and effective decision-making processes, both in personal and professional realms.

### 2) Better self-reflection

Critical thinkers become more self-aware, recognizing their own biases and limitations. This heightened self-awareness allows them to continually improve and adapt their thinking patterns.

### 3) Being well-informed

Critical thinkers actively seek out diverse sources of information, ensuring they have a comprehensive understanding of complex issues. This empowers them to engage in meaningful discussions and contribute constructively to their communities.

### 4) The ability to identify misinformation

In a world filled with misinformation, critical thinkers possess the skills to discern fact from fiction. They scrutinize sources, verify information, and avoid being misled by deceptive content.

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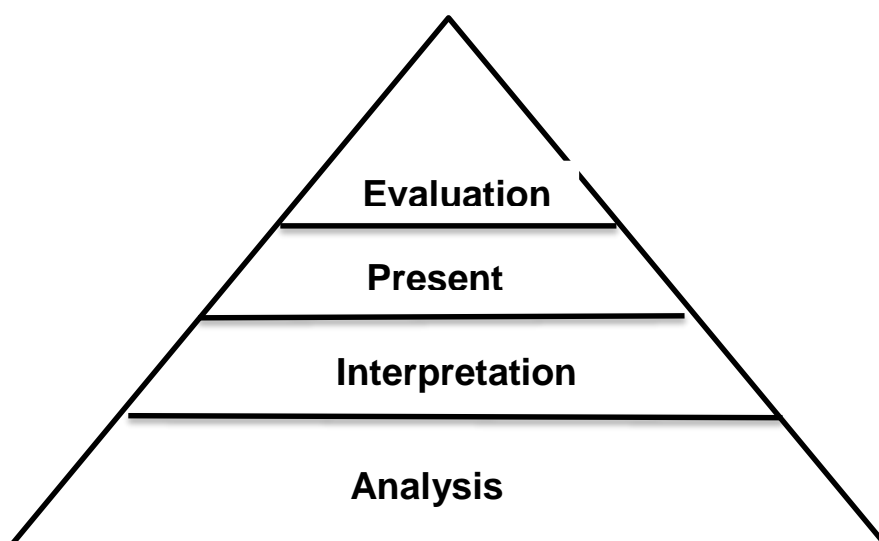
## 5) Building creative problem solving skills

Critical thinking encourages innovative and outside-the-box problem-solving approaches. By considering multiple angles and challenging conventional ideas, critical thinkers arrive at inventive solutions to complex challenges.

### Q-3: Write a short note on Approaches to critical thinking and problem solving

#### Ans:

- Critical thinking is a process by which anyone can consistently and accurately solve problems.
- To improve critical thinking, follow the same four-step process many of the world's top consultants follow: analyze the most relevant data, interpret that data to create actionable solutions, present the findings in a compelling manner, and thoughtfully evaluate the success of the solutions involved



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- Four different approaches of critical thinking and problem solving are:

## 1. Analysis

- When any problem is faced, too many professionals fail to analysis the problem. With all the data available today, information gathering can go on forever, extending to cranking through formulas and formatting reports and dashboards.

Instead, as a professional, the initial task is to identify and frame the real problem. Steps for analysis to be followed:

- 1) Scan available data
- 2) Develop an initial hypothesis
- 3) Then use that to guide a narrower, deeper collection of relevant data.
- 4) Prioritize what's needed and test it for validity. If it holds, double down on that path of reasoning. If not, try again.

## 2. Interpretation

- Once the relevant data is identified and collected, the goal is to make connections between ideas and convert them to actionable insights.
- Frameworks and mental models are great tools to evaluate abstract ideas and translate them to the real world.
- Since most business problems are complicated and too complex to be comprehended in their entirety, a model contains only those features that are of primary importance to the purpose at hand.



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## 3. Presentation

- Once the data is analysed and interpreted, it's time to present the findings. But the work of critical thinking isn't done yet.
- Time is the most precious commodity for executives, so present the results so that they anticipate and answer the reader's most likely questions, in a sequence that supports a natural storyline.
- Think deductively (in sequence), but communicate inductively (answer first, then support with details).

## 4. Evaluation

- Critical thinking importance is in measuring the results (Evaluation). Determine the correct metrics, accurately measure what worked and what did not.
- Critical thinking is not a linear, one-time activity. The beauty of critical thinking and a well-crafted message is that even if initially wrong, recommendations can be explained and then refined. This naturally follows an agile, iterative approach that loops back upon itself until a sufficiently accurate answer can be reached, and other interested parties can understand and accept the result.





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**Q-4: Write a short note on techniques of problem solving**

**Ans:**

- Problem solving is the act of defining a problem; determining the cause of the problem; identifying, prioritizing, and selecting alternatives for a solution; and implementing a solution.



**Problem Solving Process:**

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Step	Characteristics
1) Define the problem	<ul style="list-style-type: none"> <li>• Differentiate fact from opinion</li> <li>• Specify underlying causes</li> <li>• Consult each factor involved for information</li> <li>• State problem specifically</li> <li>• Identify what standard or expectation is violated</li> <li>• Determine in which process the problem lies</li> <li>• Avoid trying to solve the problem without data</li> </ul>
2) Generate alternative solutions	<ul style="list-style-type: none"> <li>• Postpone evaluating alternatives initially</li> <li>• Include all involved individuals in the generating of alternatives</li> <li>• Specify alternatives consistent with organizational goals</li> <li>• Specify short- and long-term alternatives</li> <li>• Brainstorm on others' ideas</li> <li>• Seek alternatives that may solve the problem</li> </ul>
3) Evaluate and select the alternative	<ul style="list-style-type: none"> <li>• Evaluate alternatives relative to a target standard</li> <li>• Evaluate alternatives relative to established goals</li> <li>• Evaluate both proven and possible outcomes</li> <li>• State the selected alternative explicitly</li> </ul>
4) Implement and follow up on the solution	<ul style="list-style-type: none"> <li>• Plan and implement a pilot test of the chosen alternative</li> <li>• Gather feedback from all affected parties</li> <li>• Seek acceptance by all those affected</li> <li>• Establish ongoing measures and monitoring</li> <li>• Evaluate long-term results based on final solution</li> </ul>

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## **1) Define the problem:**

- Diagnose the situation
- Reviewing and documenting how processes currently work (i.e., who does what, with what information, using what tools, communicating with what organizations and individuals, in what time frame, using what format).
- Evaluating the possible impact of new tools and revised policies in the development of your "what should be" model.

## **2) Generate Alternative solutions:**

- Postpone the selection of one solution until several problem-solving alternatives have been proposed
- Considering multiple alternatives can significantly enhance the value of your ideal solution. Once you have decided on the "what should be" model, this target standard becomes the basis for developing a road map for investigating alternatives.
- Many alternative solutions to the problem should be generated before final evaluation.

## **3) Evaluate and select an alternative:**

Skilled problem solvers use a series of considerations when selecting the best alternative. They consider the extent to which:

- A particular alternative will solve the problem without causing other unanticipated problems.
- All the individuals involved will accept the alternative.
- Implementation of the alternative is likely.
- The alternative fits within the organizational constraints.

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**4) Implement and follow up on the solution:**

- Leaders may be called upon to direct others to implement the solution, "sell" the solution, or facilitate the implementation with the help of others.
- Involving others in the implementation is an effective way to gain buy-in and support and minimize resistance to subsequent changes.