

Critical and Creative Thinking In Business

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Objectives

After studying this lecture, you should:

- 1) better understand critical thinking (be able to say what it is)
- 2) better understand creative problem solving (be able to say what it is and how it is related to critical thinking)
- 3) be able to apply ideas about critical thinking and creative problem solving to help you think more effectively in solving the business problem you are assigned.

Critical Thinking Is Involved in:

- Persuasive Writing (Justifying Conclusions)
- Making Reasoned Judgments
- Making Good Decisions
- Drawing Sound Conclusions
- Solving Problems
- Creative Thinking (Creative Problem Solving)
- *When do people in business do these?*

Critical Thinking & Creative Problem Solving

- Both involve:
 - analysis (or breaking down problems and questions into meaningful components.
 - evaluating the quality of ideas.

What Is Critical Thinking?

- “Critical Thinking is reasonable, reflective thinking focused on deciding what to believe or do.” (Ennis, p. 10, 1987)
- Thinking that is reasonable is thinking supported by good reasons or high-quality evidence

To think critically, we use criteria to reason well.

- Criteria are standards for making good judgments and decisions and evaluating the quality of evidence.
- Examples of criteria used in business
 - Using the rules of logic as criteria
 - Using market survey research to decide
 - Basing judgments on what action minimizes risk
 - Selecting options that maximize profit
 - Finding the most practical solution to a problem.

"Critical Thinking Is Reflective.

- It is thinking about the quality of thinking,
- such as asking yourself:
 - "How well am I thinking about this question?"
 - "Do I understand what the problem is?"
 - "Am I moving towards a solution?"
 - "Have I solved the problem?"

Critical Thinkers Are Disposed To Use Their Reasoning Skills and To Be Reflective

- Critical thinkers are:
 - intellectually engaged
 - willing to apply the effort required to be reflective and apply reasoning skills.
 - open-minded to new ideas.
 - but are skeptical of unsupported claims.

They do not just rely on their feelings, intuitions, or what they want to be true.

Critical Thinking is required to solve problems. Try this one.

- A bat and ball cost \$1.10. If the bat costs \$1 more than the ball, how much does the ball cost? (From Frederick, 2005)
- Most people say, “10 cents.”
- Answer: The bat costs \$1.05, and the ball costs \$.05 = \$1.10. Why do people usually get this wrong?
- They rely on their intuition, rapidly replying and not carefully reflecting on the question. They do not seem disposed to engage in the effortful reasoning required.

Let's examine a costly problem requiring creative thinking to solve.

- **Anthropogenic Global warming:** Produces climate change which costs (\$16 million/hour) and the loss of 4 million lives since 2000.
- How can it be solved?
- How would you know if you had solved this problem?
- In the next slide, let's analyze a problem using a diagram and global warming as an example.

Why Are Problems Like This One So Hard?

- They are ill-defined, i.e., they lack clear definition of the initial state, the goal state, or both.
- They are complex, i.e., having multiple aspects). It could be defined:
 - in *physical* terms (energy) such as temperature, e.g., the initial state could be more precisely defined as increase in global temperature from when first recorded.
 - In *economic* terms (costs of doing business), e.g., total costs including loss of lives, property and environmental damage
- How might we better define the goal state?

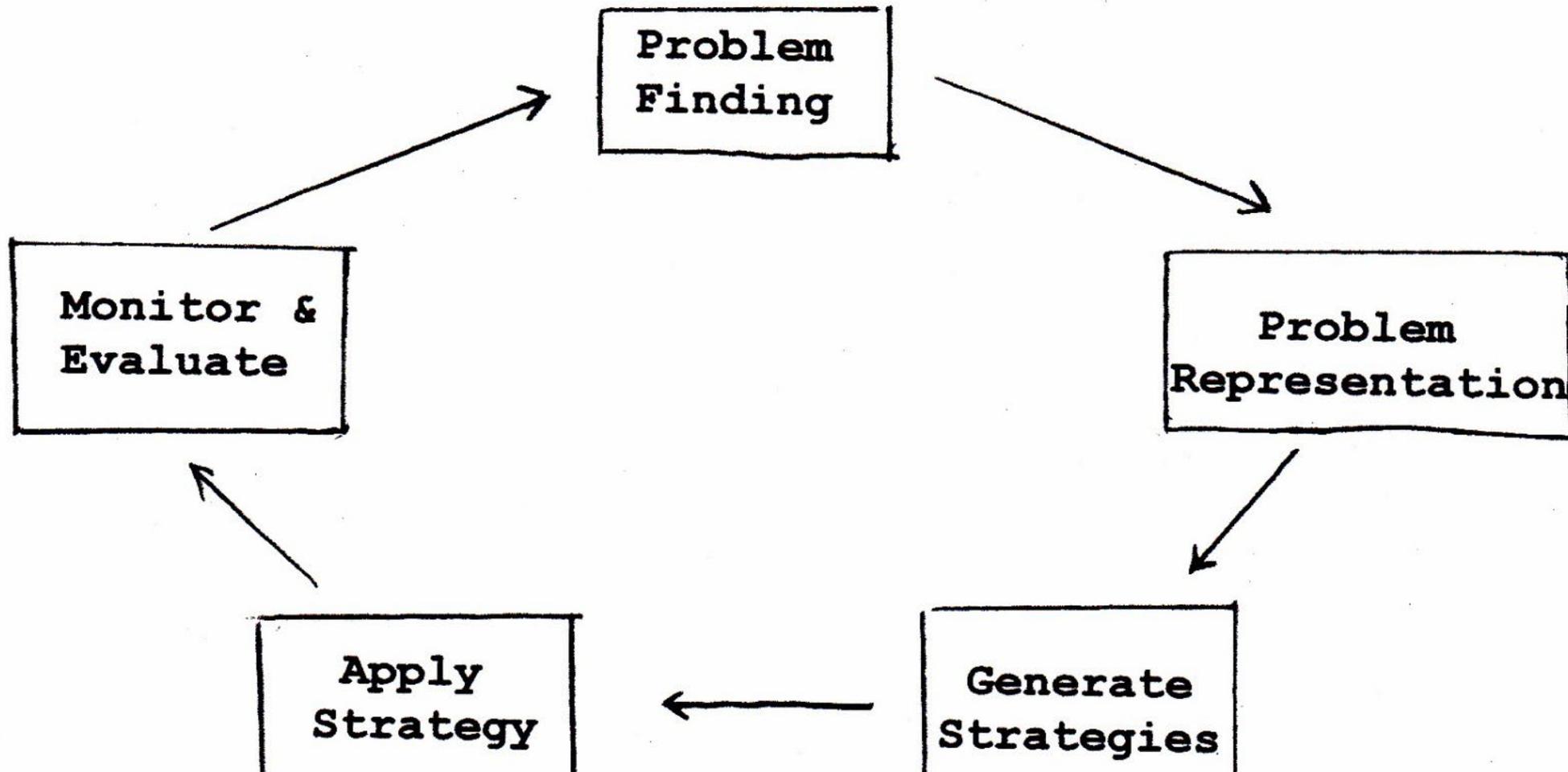
How Do We Approach This Kind of Problem?

- For ill-defined and complex problems, we often need to use *creative problem solving*.
- So, it is important that we adequately define a problem after it has been identified. For example, the initial state could be more precisely defined as the increase in global temperature from when it was first recorded.
- How might we better define the goal state?

What is creative problem solving?

- A kind of problem solving in which a person comes up with a novel and socially-valued solution for what is usually an ill-defined problem.
- **Novel solution:** One that is new (but not just any unusual or different idea you might think of).
- A **socially-valued solution** is one that people recognize as solving the problem. Often, experts recognize it as creative, and other people adopt the solution.

Steps in the Problem Solving Cycle



Apply the Problem Solving Cycle to Think about the Critical Thinking and Problem Solving Rubric

- The first two steps (Problem Finding and Problem Representation) go with ‘Definition of Issue, context of problem’
- The third step (Generating strategies) goes with ‘Identify strategy to solve the problem’.
- The fourth step (Apply strategy) goes with ‘Explain how the strategy would be implemented’.
- The fifth step (Monitor and evaluate) goes with ‘Identify barriers to implementation of strategy and/or resolution of problem’.

Definition of Issue, context of problem

- State clearly what is the problem (Finding the problem).
- To better understand or represent the problem, analyze it into component parts.
 - What is/are the goals?
 - What is the initial state? What is the situation?
 - What are obstacles to reaching the goals?
 - What are constraints on solving the problem (limitations on resources, rules that must be followed, etc.)
 - What is known about solving such problems?

Rubric: Identify strategy to solve the problem

- To generate and possibly identify strategies to solve the problem, ask yourself the following questions.
 - What do experts say are the most effective ways to solve such problems?
 - What does research suggest are the most effective strategies for solving problems like this one?
 - Could a similar strategy be applied to solve this new problem?
 - If not, think of a new strategy that could plausibly work.

Rubric: Explain how strategy would be implemented

- Using your analysis of the problem and a clear description of the strategy you selected, explain how you would implement the strategy to reach the specific goal(s) identified. For example, more specific questions to be answered:
 - Who would supervise implementation?
 - What employees would act to implement it?
 - How much would implementation cost?

Note that explaining involves not only telling how but also ‘telling why,’ that is, providing reasons.

Rubric: Identify barriers to implementation of strategy and/or resolution of problem

- Identify any difficulties you can foresee in implementing the strategy. Relevant questions include:
 - Might implementing the strategy incur other unexpected problems to operations?
 - As you monitor the implementation, could conditions change that would hinder further implementation?
 - Does implementation solve the problem entirely? If not, what further action would be necessary? (Note that if the strategy is not successful, that brings you back to the “Problem finding” step, and you may need to represent the problem in new ways.

End of Slides