

Topic 1: Solving problems

Objectives

After completing this chapter, you should be able to:-

- Define the problem.
- Define Guidelines for recognizing problems.
- Define Guidelines for formulating problems.
- Recognize the seven-steps for solving problems.

Introduction

- Creativity is the ability to exhibit imagination and originality as well as routine skills in problem solving. What do we mean when we state, "I have a problem!"? That's one of those sneaky questions which we assume we know the answer to until we actually start answering it.
- Here are a couple of common responses:
 - When something is broken
 - When something doesn't work
 - When things aren't going the way I want.
- Also, Using problem solving strategies will help you solve a real world problem.

What is a problem?

A problem

- Is an obstacle which makes it difficult to achieve a desired goal, objective or purpose. It refers to a situation, condition, or issue that is yet unresolved. In a broad sense, a problem exists when an individual becomes aware of a significant difference between what actually is and what is desired.
- Every problem asks for an answer or solution. Trying to find a solution to a problem is known as problem solving. The time it takes to solve

a problem is a way of measuring complexity. Many problems have no discovered solution and are therefore classified as an open problem.

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Guidelines for recognizing problems

1. Are you sure this is the problem you want to solve? Why do you want to solve it?
2. Are there related problems, perhaps easier ones, which should be solved first?
3. Does anyone need a solution? Are you sure you need a solution? Why?
4. What is a solution needed for?
5. What effect should a solution have?
6. How much will it cost to solve the problem? What resources are available?
7. How much benefit will be realized from a solution?
8. If the problem is ignored, will it go away over time?
9. Remove yourself from the problem and look at it. Is it significant? What is your vantage point for judgment?
10. Can a change in existing law or administrative policies eliminate the problem?
11. Who is the best person to describe the problem? Why?
12. Can this be viewed as someone else's problem? Perhaps you can get that person to solve it or help solve it.

Guidelines for formulating problems

1. Define the problem in a short statement.
2. Describe the history of the problem, concentrating on its causes.
3. State your objectives and the constraints on possible solutions.
4. What is the current solution?
5. What is wrong with the current solution?
6. What is the ideal? What would you really like?
7. Could you implement the ideal solution?
8. What are the minimum requirements for a satisfactory solution?
9. View the problem from the perspectives of others. How would an economist look at the problem? A lawyer? A clergyman? 1- List all the solutions you can imagine.

The seven-steps for solving problem

Process is an excellent tool that can guide you in solving problems and making those sound and timely decisions.

The seven steps are:

1. Identify (recognize/define) the problem.
2. Gather information (facts/assumptions).
3. Develop courses of action (solutions).
4. Analyze and compare courses of action (alternatives/solutions).
5. Make a decision; select the best course of action (solution).
6. Make a plan.
7. Implement the plan (assess the results).

Topic 2: Solving problems**Decision Making**

After completing this chapter, you should be able to:-

- Be acquaint with decision making.
- Recognize Decision Making Techniques.
- Realize Decision Making Procedure.
- Define Characteristics of Creative thinking.
- Realize the relation between Decision Making and Problem Solving.
- Define the Seven-Step Problem-Solving, Decision-Making Process.

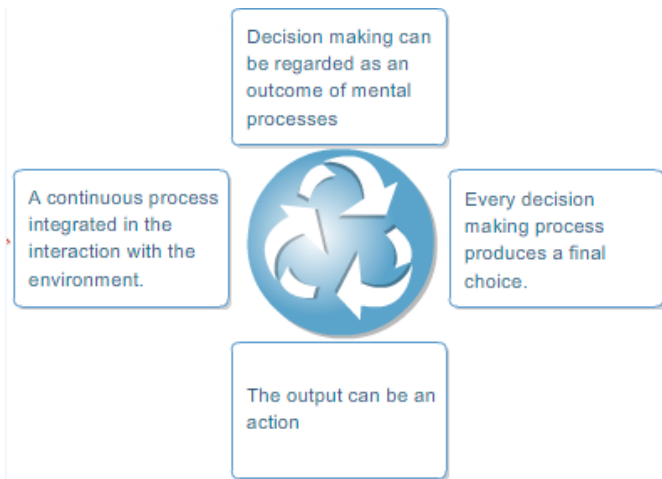
Introduction

- If you want to lead effectively, you need to be able to make good decisions.
- If you can learn to do this in a timely and well-considered way, then you can lead your team to well-deserved success.
- **However**, if you make poor decisions, your team risks failure and your time as a leader will probably be brutally short.

What do you mean with decision making?

- Decision making can be regarded as an outcome of mental processes (cognitive process) leading to the selection of a course of action among several alternatives.
- Every decision making process produces a final choice.

- The output can be an action or an opinion of choice.
- The decision making process must be regarded as a continuous process integrated in the interaction with the environment.



Decision Making Techniques

- The techniques in this section help you to make the best decisions possible with the information you have available.
- **With these tools you will be able to:**
 - Map out the likely consequences of decisions.
 - work out the importance of individual factors.
 - choose the best course of action to take.

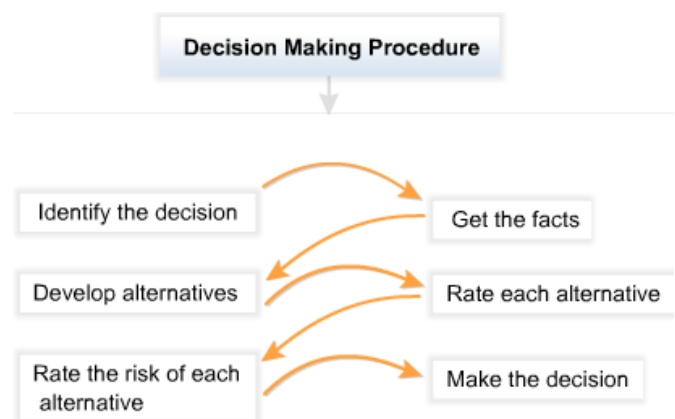
The techniques are:

1. Selecting the most important changes to make.
2. Evaluating the relative importance of different options.
3. Selecting between good options.
4. Choosing between options by projecting likely outcomes.
5. Weighing the pros and cons of a decision.

6. Analyzing the pressures for and against change.
7. Looking at a decision from all points of view.
8. Seeing whether a change is worth making.

Decision Making Procedure

- Identify the decision to be made together with the goals it should achieve.
- Get the facts.
- Develop alternatives.
- Rate each alternative.
- Rate the risk of each alternative.
- Make the decision.



1- Identify the decision to be made together with the goals it should achieve.

- Determine the scope and limitations of the decision.
- Is the new job to be permanent or temporary or is that not yet known (thus requiring another decision later)?
- Is the new package for the product to be put into all markets or just into a test market?
- How might the scope of the decision be changed that is, what are its possible parameters?

- When thinking about the decision, be sure to include a clarification of goals: We must decide whom to hire for our new secretary, one who will be able to create an efficient and organized office. Or, We must decide where to go on vacation, where we can relax and get some rest from the fast pace of society.

2- Get the facts.

- But remember that you cannot get all the facts. Get as many facts as possible about a decision within the limits of time imposed on you and your ability to process them, but remember that virtually every decision must be made in partial ignorance.
- Lack of complete information must not be allowed to paralyze your decision. A decision based on partial knowledge is usually better than not making the decision when a decision is really needed.
- The proverb that "any decision is better than no decision," while perhaps extreme, shows the importance of choosing. When you are racing toward a bridge support, you must decide to turn away to the right or to the left. Which way you turn is less important than the fact that you do indeed turn.
- As part of your collection of facts, list your feelings, hunches, and intuitive urges. Many decisions must ultimately rely on or be influenced by intuition because of the remaining degree of uncertainty involved in the situation.

3- Develop alternatives

- Make a list of all the possible choices you have, including the choice of doing nothing. Not choosing one of the candidates or one of the building sites is in itself a decision.
- Often a non decision is harmful as we mentioned above--not choosing to turn either right or left is to choose to drive into the bridge. But sometimes the decision to do nothing is useful or at least better than the alternatives, so it should always be consciously included in the decision making process.

4- Rate each alternative.

- This is the evaluation of the value of each alternative. Consider the negative of each alternative (cost, consequences, problems created, time needed, etc.) and the positive of each (money saved, time saved, added creativity or happiness to company or employees, etc.).
- Remember here that the alternative that you might like best or that would in the best of all possible worlds be an obvious choice will, however, not be functional in the real world because of too much cost, time, or lack of acceptance by others.
- Also don't forget to include indirect factors in the rating.

- If you are deciding between machines X, Y, and Z and you already have an employee who knows how to operate machine Z, that fact should be considered.
- If you are choosing an investigative team to send to Japan to look at plant sites and you have very qualified candidates A, B, and C, the fact that B is a very fast typist, a superior photographer or has some other side benefit in addition to being a qualified team member, should be considered.
- In fact, what you put on your hobbies and interests line on your resume can be quite important when you apply for a job just because employers are interested in getting people with a good collection of additional abilities.

5- Rate the risk of each alternative.

- In problem solving, you hunt around for a solution that best solves a particular problem, and by such a hunt you are pretty sure that the solution will work.
- In decision making, however, there is always some degree of uncertainty in any choice.
- Will Ann really work out as the new supervisor?
- If we decide to expand into Canada, will our sales and profits really increase?

- If we let Jane date Fred at age fifteen, will the experience be good?
- If you decide to marry person X or buy car Y or go to school Z, will that be the best or at least a successful choice?
- Risks can be rated as percentages, ratios, rankings, grades or in any other form that allows them to be compared. See the section on risk evaluation for more details on risking.

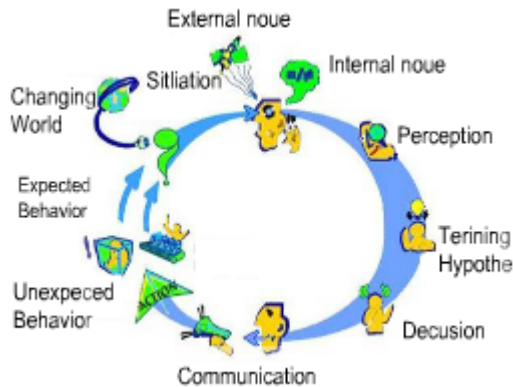
6. Make the decision.

- If you are making an individual decision, apply your preferences (which may take into account the preferences of others).
- Choose the path to follow, whether it includes one of the alternatives, more than one of them (a multiple decision) or the decision to choose none.
- And of course, don't forget to implement the decision and then evaluate the implementation, just as you would in a problem solving experience.

Characteristics of Creative thinking

- Creative thinking is often characterized as thinking “outside the box”.
- Etzioni (1968) offers a decision-making strategy that is a combination of reflective thinking and instrumentalism.

- The ability to maintain a balance between attention to the general and attention to the specific appears to be a major factor in successful problem solving.



- The decision-making process in most groups can be improved.
- The systems principle of equifinality is that several alternative methods may be used to reach the solution to the group's problem.
- The appropriateness of any method will depend on the demands of the specific situation. The rational problem-solving methods work well in most cases but seem particularly suited to an autonomous group trying to satisfy its own needs while being allowed to do so by a democratic leader.

Decision Making and Problem Solving

- Decision-making and problem-solving are basic ingredients of leadership. More than anything else, the ability to make sound, timely decisions separates a leader from a non-leader.
- It is the responsibility of leaders to make high quality decisions that are accepted and executed in a timely fashion.

- Leaders must be able to reason under the most critical conditions and decide quickly what action to take. If they delay or avoid making a decision, this indecisiveness may create hesitancy, loss of confidence, and confusion within the unit, and may cause the task to fail.

- As a leader, you will make decisions involving not only yourself, but the morale and welfare of others.

- Some decisions, such as when to take a break or where to hold a meeting, are simple decisions which have little effect on others. Other decisions are often more complex and may have a significant impact on many people. Therefore, having a decision making, problem-solving process can be a helpful tool. Such a process can help you to solve these different types of situations.

Seven-Step Problem-Solving, Decision-Making Process

- Decision making is making choices at each step of the problem-solving process.
- The Problem-Solving Model:
 - Identify the problem.
 - Explore alternatives.
 - Select an alternative.
 - Implement the solution.
 - Evaluate the solution.

Factors that affect decision making:

- Political
- Safety
- Financial
- Environmental
- Ethical

Decision-Making Styles

- Sensing (stability)
- Intuition (innovation)
- Thinking (effectiveness)
- Feeling (integrity)

Four ways to make a decision

- Individual
- Consultation
- Group
- Delegation

Attributes of good decision makers

- Knowledge
- Initiative
- Advice-seeking
- Selectivity
- Comprehensiveness
- Currency
- Flexibility
- Good judgment
- Calculated risk-taking
- Self-knowledge