

Problem Solving

CAP Officer Basic Course

Introduction

There are many approaches to problem solving, depending on the nature of the problem, and the people involved in the problem. Every problem is unique.

It is important leaders understand the issues surrounding problem solving, and how they can utilize certain principles and techniques for problem solving in the CAP setting. "Problem Solving" is defined by the American Management Association "as identifying work-related problems, analyzing problems in a systematic but timely manner, drawing correct and realistic conclusions based on data and information, and accurately assessing root causes before moving to solutions".

WHAT IS PROBLEM SOLVING?

Webster's New World Dictionary defines Conflict as follows:

Problem:

1. a question proposed for solution or consideration
2. a question, matter, situation, or person that is perplexing or difficult

Solving:

1. to find or provide a satisfactory answer or explanation for; make clear; explain
2. to find or provide the correct or a satisfactory solution to (a problem)

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For the purpose of this lesson, a problem is defined as the difference between an actual, and a desired state of affairs.

Most of us are very good at identifying the problem. We say things like "I want to _____ but I can't because _____." But we seldom take the time to clearly identify what the ideal solution would be. Without knowing what exact "desired state of affairs" is, it is much harder to select the proper solution to the problem and you may spend a lot of resources on a "solution" that does not bring about the real "desired state of affairs." For example a cadet might say "I want to learn to fly, but I don't have the money." The cadet could get a job on nights and weekends to earn the money but then would not have the time to learn to fly or stay active in CAP. Had the cadet said, "I would like to have enough money so that I could learn to fly without giving up everything else I enjoy doing." the solution here might be a CAP Flight Scholarship. A descriptive statement of " the desired state of affairs" will prove valuable in the end.

In problem solving, we are always looking for the facts. A statement is a **fact** if it can be verified by checking its source. What we often look at and try to solve are **inferences**. A statement is an inference if it is a statement about the unknown based on what is known. This means that we are always looking for "**what IS Actual and what IS NOT Actual.**"

While each problem and resolution process will be different, leaders can use a standardized sequential process for both assessing and resolving any problem.

Tobin and Petingell suggest you employ the **6-Step Sequence Process** (Tobin, 2008). What follows is a description of the different stages of the process, and the questions that individuals/ leaders need to ask during each stage of problem solving.

The **6-Stage sequence** provides the member with four (4) distinct processes:

1. **Problem Identification:** A general understanding of the concerns, and some depth of appreciation of those concerns.
2. **Problem Clarification:** Looking at the probable cause of each issue (through use of the "WHY?" process - in the form of questions).
3. **Decision Analysis:** Taking the Concerns/Causes, and then deciding how to solve them through the use of alternatives.
4. **Potential Problem Analysis:** Taking the Best Balanced Alternatives, and developing an Action Plan and Timetables.

1. Clarify a description of the problem and its causes.

Let's apply the Six Step Process to a common problem. "We want our cadets to participate in wing encampments, but aren't sure if we can afford it."

Stage 1: Define the problem

The first part of the process involves clearly defining the problem, the nature of the problem, and the fundamental issues on the table.

Problem Identification: A general understanding of the concerns, and some depth of appreciation of those concerns.

For Example: We want our cadets to participate in wing encampments, but aren't sure if we can afford it.

Problem Clarification: Looking at the probable cause of each issue (through use of the "WHY?" process - in the form of questions).

We generally deal with symptoms and not the actual cause when we try to solve problems. Only by asking a series of why-type questions do we get to the cause. Keeping with the aforementioned example: We believe that we can't afford to send several cadets to an encampment. WHY.... we don't have the funds. Why.....We haven't had a fund raising event to support the activity. WHY.....No one has agreed to plan and organize such an event. WHY.....We haven't taken the time to discuss the issue and select someone.....This is the possible cause, and what should be dealt with in the decision analysis phase.

In order to define the problem, you must ask yourself the following questions:

1. Why is change or action necessary? What could be the consequences if no action is taken? (see problem identification above)
2. What is the triggering event that set off the problem?
3. Are the issues on the table real fundamental issues, or are they an indication of some other issue that has not been raised? (see problem clarification above)
4. Will this be a recurring problem?

5. How would each individual like things to be?
6. What are the differences of perceptions among the members?
7. How do people relate differently (as a result of the problem)? How will these actions/feelings affect the overall characteristic of culture, norms, values, philosophies, rules, and climate?

2. Identify alternatives and select and implement the best alternative.

Stage 2: Clarify the needs

After defining the problem, you must clearly identify the needs of everyone involved. Then, taking everyone's perspective into account, you'll be more likely to develop solutions that are beneficial for all. In order to identify needs, you will need to ask the following:

1. What is each member's statement, or interpretation, of what he or she wants most as a group goal?
2. Do all the statements reflect an understanding of the nature of the problem?

Stage 3: Generate possible options

Generating a range of possible solutions will help everyone involved analyze the plausibility of different options, and their possible effectiveness. In order to identify possible options, ask the following:

1. What are the possible solutions?
2. How would each member prioritize the solution?

Stage 4: Evaluate proposed options

Decision Analysis: Taking the Concerns/Causes, and then deciding how to solve them through the use of alternatives.

We should be able to meet, and select someone who is capable of planning and organizing to the event for the squadron. We also should empower them to utilize any resources that the squadron has. They will, with the help of a committee, be able to generate viable solutions, and come up with a best balanced alternative.

After identifying possible solutions, develop criteria that can be used to examine and evaluate each option. In order to test proposed options, asked these questions for each option:

1. Is there a common understanding of the solution?
2. Is it realistic (for example does the program have the resources, which are money, personnel and time necessary for implementation)?
3. Are all members of the team committed to the idea?
4. What could go wrong?
5. What are the possible benefits?

Stage 5: Develop an action plan

Once you have evaluated the different options based on possible benefits and barriers, you are now in a good position to choose an effective solution. Once a solution is agreed upon, ask these questions to develop an action plan:

1. What are the small steps that the team can take to achieve the best results?
2. Who will take the lead for each step? Who else will be involved?
3. What is a time frame for each step?
4. What criteria will be used to evaluate the plan's effectiveness?

Stage 6: Develop a contingency plan

Potential Problem Analysis: Taking the Best Balanced Alternatives, and developing an Action Plan and Timetables.

What could go wrong is always an outcome that must be dealt with, and a contingency plan for their best balanced alternative should be in place.

Even when a plan is developed, situations may arise which make it difficult to carry out the plan. It is important to develop well thought out and organized written contingency plans in advance. In order to develop a contingency plan, ask the following questions:

1. What will be the backup plan if the first plan does not work?
2. Is it realistic? Does the program have the resources, money, personnel, and time, necessary to implementation?
3. Are all members of the team committed to the idea?
4. What could go wrong?
5. What are the possible benefits?

3. Evaluate whether a problem is solved or not.

After identifying and clarifying the problem, identifying and implementing the best alternative (and the contingency plan if needed) we can evaluate our solution to see if the problem was solved. We do that by asking the following questions:

1. Did we achieve the "desired state of affairs"? (see the introduction)
2. Did we find a permanent or temporary solution? (see the problem clarification)

We can evaluate the quality of our solution by asking a few more questions.

1. Did the solution cause problems of its own?
2. What is the likelihood that the same or similar problem will occur again?
3. Would I use the same solution, modify the solution or do something completely different if I was in the same situation again?

PRACTICE

Below are two problems you can apply the 6 step method to. You can do them by yourself, with other members of the course or with the members of your unit.

Problem 1: The squadron had quite a successful fund raiser last weekend. The officers of the squadron got to clean out the junk from their basement and the squadron received half of the money raised from the yard sale (\$315). The cadets raised \$321 at the car wash and sale of the "hurricane preparedness kits" raised \$250. Now it is time to decide what to do with the \$886. The cadet commander tells you the cadets are asking for each cadet get a \$50 scholarship to the encampment for a total of \$800. The pilots would like the squadron to pay for 5 of them to attend the ARCHER training and 2 hours of practice flying with the ARCHER equipment. The total cost is \$825. The communications officer is saying the money should be used to pay for the conversion of the squadron's 12 radios to the "new frequencies" before the deadline in 6 months. He claims it will only cost \$780. The Logistics Officer is saying it is time to replace the contents of the first aid kit and the fire extinguisher in the van, he also suggests you set aside \$300 for gas for the upcoming squadron activities. Then he would like to place an order for \$326 for uniform items for both cadets and seniors. When you ask the finance officer for some advice, she said "Leave me out of this. You make the decisions, I just request the checks."

Problem 2: NASA created a widely published problem solving scenario called "Lost-On-The-Moon". The scenario below allows a group of individuals to work collaboratively together toward a common and shared problem solving goal. Stop and think (without reading beyond the scenario) about how you would solve this scenario as the leader of a group.

Lost on the Moon			
<p>You are in a space crew originally scheduled to rendezvous with the Command Module on the lighted surface of the moon. Mechanical difficulties, however, have forced your ship to crash-land at a spot some 200 miles from the rendezvous point.</p> <p><i>The rough landing damaged much of the equipment aboard. Since survival depends on reaching the Command Module, the most critical items available must be chosen for the 200 mile trip. The Command Module cannot come after you, and will depart in 48 hours (with or without your group). Below are 15 items left intact after landing.</i></p>			
Nbr	Items	Nbr	Items
	Box of matches		Solar-powered FM receiver-transmitter
	Food concentrate		Rubber Life-Raft
	50 feet of nylon rope		Magnetic compass
	Two .45 caliber pistols		5 gallons of water
	One case of dehydrated milk		Signal flares
	Two 100-pounds tanks of oxygen		First aid kit (containing injection needles)
	Stellar Map of the moon's		Portable Heating Unit

	constellations		
	Parachute Silk		
<p>Your task is to rank them in terms of their "importance to you", "the group's priorities, and ultimately your group's attempt to reach the rendezvous point.</p>			

How did you do yourself? If you had to problem-solve with a group, what do you think would happen? What could have made the process of solving the problem easier?

Primarily, the exercise is intended to help define the needs, clarify the problem, generate proposed options, evaluate possible options, develop an action plan, develop a contingency plan. An individual can do the problem solving alone, but diversity and input from others is essential to have a balanced outcome to any problem. Ultimately, the group will be able to agree on a solution, but there will be both revelations and awareness to completely solve the problem at hand. Input from others is always a viable course of action in problem solving. These examples should provide an understanding of the concept of problem solving by allowing members to analyze both causes and alternatives to problem solving. Try using it at a meeting sometime.

Lesson Summary and Closure

There are many approaches to problem solving, depending on the nature of the problem, and the people involved in the problem. This lesson introduced members to a sequential process for both assessing and being successful in resolving problems.

Taken together, the sequence described in this lesson represents a comprehensive process that will allow you to determine the nature of any problem, propose a range of possible solutions that takes into account everyone's needs, identify criteria for evaluating the benefit and barriers of proposed solutions, and develop both an action plan and a backup plan.

Works Cited

The AMA Guide to Management Development, AMACOM Publications, Tobin and Petingell, www.amacombooks.org/go/AMAGuideMgmtDevelop, 2008.

NASA has published the order of importance of the objects, and the rationale for each can be found at many websites by typing in "Lost on the Moon exercise" a few such listed sites are:

- www.nasa.perbang.dk.
- www.uiowa.edu/~c034220/lostmoon.html
- www.kathimitchell.com/moonans.htm