COOPERATIVE EXTENSION
UNIVERSITY OF NEVADA •Reno
Bringing the University to You

Fact Sheet 97-26

EFFECTIVE PROBLEM-SOLVING TECHNIQUES FOR GROUPS

Marlene K. Rebori
Community and Organizational Development Specialist

Every group at one time or another has the task of problem solving (the gap between the current situation and a desired situation). Problem solving is an ongoing process that is an integral part of work and life. One of the reasons groups encounter difficulty in solving problems is that they fail to follow an organized procedure. For working groups to be effective, they should have an agreed-upon procedure for problem solving. Not all problems are equally important and their relative significance should be kept in perspective. Common sense about practicality and priorities are important ingredients in maximizing people's time, energy, and commitment level to solving problems. There are many different versions of problem solving models, but essentially they all contain the following key steps:

Problem Solving Method

1. Define the problem -- A good problem definition states the current situation and the desired situation. For example, "customer satisfaction has been rated below the 'acceptable' level", or "less than 5% of the targeted 20% of eligible historic structures are receiving historic preservation status." When defining the problem, the statement should not imply any solutions or causes. The current situation is defined by facts (e.g. customer satisfaction rated poor in the recent mail-out survey, or less than 5% of historic structures receive historic status). Use clear and concise language supported by gathered facts when defining the problem. The desired situation, or what we want to happen, is defined as an objective (e.g. to grant 20% of eligible historic structures preservation status). The desired situation should be stated in clear, concise, concrete language and be both realistic and worthwhile. A primary source of group *ineffectiveness* is rushing to solutions before properly defining the problem.

2. Identify and Define the root causes --To solve problems so they remain solved, the group must identify and define root causes (i.e., reasons for the problem) rather than symptoms (i.e., something that indicates the presence of the problem). A technique to use when considering all possible causes is brainstorming. Brainstorming is a technique that allows a large number of ideas to be generated. Prior to brainstorming, go over the ground rules with group members.

Ground Rules for Brainstorming

- No criticism of an idea is allowed.
- Strive for the longest list possible - "go for quantity."
- Strive for creativity - "wild and crazy ideas are encouraged."
- Build on the ideas of others - "piggyback on ideas presented by the group."

A helpful technique to structure discussion about root causes is the fishbone diagram or the cause and effect diagram. The name "fishbone" comes from what the diagram looks like (figure 1). It is madeup of a horizontal line (the spine) with a box at one end (the head) where the problem is stated. Several angled lines come off the horizontal line forming the ribs of the fish. Each rib will have a probable cause of the problem listed at the end of the rib. Contributors to the cause are usually put on small branches off the rib. If the group has defined the problem statement satisfactorily, the fishbone diagram builds naturally, simply by repeating the question, "what is a potential cause of…?

The best use of a fishbone is when you know that a specific area needs to be analyzed but you are not sure which portion of it is creating the problem. For example, customer satisfaction rated poorly but you are not sure why it was rated so poorly. Once all the root causes have been identified and organized on the fishbone, the group should discuss the potential causes to verify their relevancy and impact to the problem. Some groups may choose to verify potential causes by gathering data or some other form of analysis beyond group discussion.

3. Generate Alternative Solutions - Now that the group has identified and defined root causes, brainstorm alternative solutions. The focus of this step is to generate, *not* evaluate. Usually groups that generate and evaluate together often reduce the number of potentially viable solutions (i.e. when one member suggests a solution, other members offer reasons why it will not work). After the group has exhausted its ideas for alternative solutions, combine aspects of previously generated solutions. Some solutions are likely to integrate the best aspects of various ideas and also are more likely to find consensus in the group.

4. Evaluate the Alternatives - Before evaluating alternatives, the group needs to first establish criteria for judging solutions. The criteria should define general characteristics that a solution should have. One way to help members develop criteria is to ask them to complete sentences that naturally lead to identifying criteria. For example, "The solution should be one that...". Criteria should be objective and preferably measurable rather than emotional. Group members should focus only on those criteria that are needed or desired to solve the problem. Unnecessary criterion needlessly reduces the number of potential solutions.

Weighing the solutions against criteria can be done with various degrees of structure. For a highly structured approach, groups can develop a matrix (figure 2) with each of the criteria listed on one axis and each alternative solution on the other. The criteria can be weighted if some are more important than others. For each solution, each member assigns a score to each criterion based on the extent to which that solution meets the criterion. For example, use a scale of one to ten with ten the highest score. Ask team members to assign a value to each solution based on how closely it meets the criterion. Multiply the ratings for each solution by the weight given to each criterion. Add the products for each solution and write the sum in a total score column. The solution with the highest total score is the group's choice.

Figure 2. Matrix for Evaluating Alternative Solutions.

	Criteria									
	Criterion 1 x (weight)			Criterion 2 x (weight)			Criterion 3 x (weight)			
Solutions	Ann	Al	Jo	Ann	Al	Jo	Ann	Al	Jo	Solution Scores
Solution 1										
Solution 2										
Solution 3										

In a less structured approach, each group member gives an overall score to each alternative without scoring each criterion separately. The score for each alternative is determined by finding the average of the member's scores for that solution.

Another simple and time efficient method for evaluating solutions is to vote by using dots. Colored dots are self-adhesive and can be cheaply purchased at any local bookstore, computer, or office store. The dot method ensures that all members are actively involved and it presents a visual representation of areas of consensus. First, list all generated solutions on a large sheet of paper.

Give each team member an allotment of dots (approximately 3 to 5, depending on the amount of solutions). Instruct team members to vote for solutions by placing a colored dot next to the idea. Dots can be allocated in any manner. For example, if each person is given 5 dots, 2 dots may be placed next to their highest priority solution, thus reducing their vote to 4 options. After everyone has voted, tally the results. The solution receiving the greatest number of votes is selected for either further analysis or implementation.

It is important to remember that evaluation matrices and voting by dots are simple tools to help the group make better decisions. They should not be thought of as formulas that will automatically produce correct answers. Evaluation matrices or dots should take the place of valuable group discussion, or the group's collective judgment about the selected solution or idea.

5. Agree on the best solution - After completing step 4, the group is now left with the "best solution" either by evaluating criteria or voting by the dot method. Agreeing on the "best solution" requires that the group have some ground rules for making decisions, such as consensus or majority vote. If the group is having difficulty in reaching consensus, members or a facilitator should work to clarify specific areas of disagreement and then identify ways to integrate similar interests into the solution. Controversy and disagreement if used constructively can be effective tools in selecting the best solution. Sometimes, as a result of disagreement, the group may actually identify new solutions supported by group consensus.

6. Develop an Action Plan - Action planning is designed to involve people, build their commitment, and increase the likelihood that the solution will be implemented effectively and on time. To help structure the action plan, groups can choose from a variety of action plan types. Figure 3 gives an example of a basic action plan with the essential steps needed to identify and implement the solution. Questions that need to be answered during action planning include: (1) what they want to do (goal); (2) how each step is to be undertaken (strategy); (3) when they want to do it (timeframe); (4) who is responsible for each step; and (5) expected outcome of the completed step. Typically, a group's energy and attention may wane during this step if members think selecting the best solution is the culmination of the problem-solving process. As long as the group understands, up front, that action planning is part of the process of problem solving, members should accept this phase as part of the process.

Figure 3. Action-Planning Chart to help carry out the solution.

Goal (What)_____					
Critical Steps (How)	When		Who	Status	Expected Outcome
	Start Date	Completion Date			

7. Implement and Evaluate the Solution - Solution steps should be implemented according to the action plan. However, sometimes unintended consequences occur that require changing the implementation plan midstream. The group can adapt to unintended consequences by suggesting that project updates (status) be added to each meeting's agenda so that the group has a regular way to check its progress.

Evaluation is probably the step most groups underemphasize when problem solving. Reasons why groups do not conduct evaluations are time, cost, political climate, uneasiness in evaluation, and fear of being challenged in their decided upon solution. However, some evaluation is essential in determining the effectiveness of the solution. An evaluation can take many forms and be as simple as brief conversations with key individuals or as elaborate as sophisticated surveys and in-depth record analysis. The purpose of evaluation is to determine how well the solution is working or why the solution may not be working. The group should decide how comprehensive the evaluation should be based upon the complexity of the problem and the decided solution.

Depending on the severity of the problem and the quality of solution desired, objectives and approaches for problem solving will vary. For minor problems, a group may focus on quickly reaching a solution as the main objective. Groups concerned with finding a quality solution as the main objective may factor in more time for the problem solving process. To be effective, problem solving must arrive at a solution that gets the job done, efficiently uses the available resources, promotes cooperation, and fosters competence among those faced with solving the problem.

Problem solving is an ongoing process that is an integral part of everyday life either at home or at work. A problem must first be felt, understood, and alternative choices created before effective groups can consider its solution, implement the decision, and evaluate how well the solution is working.

References

Lippincott, Sharon. 1994. Meetings: Do's, Don'ts and Donuts. The Complete Handbook for Successful Meetings. Lighthouse Point Press. 203pp.

Moore, Carl. 1990. Group Techniques for Idea Building. Applied Social Research Methods Series Volume 9. Sage Publications. 143pp.

Schwarz, Roger. 1994. The Skilled Facilitator. Practical Wisdom for Developing Effective Groups. Jossey-Bass Publishers. 314pp.

Tagliere, Daniel. 1993. How to Meet, Think, and Work to Consensus. Pfeiffer and Company. 142pp.

Tjosvald, Dean. 1986. Working Together to Get Things Done: Managing For Organizational Productivity. Lexington Books. 207pp.

Vrooman, Rona. 1994. Group Process Tools. INFO-LINE Issue Number 9407. Practical Guidelines for Training and Development Professionals. American Society for Training and Devlopment. 15pp.