CHAPTER 5:
GROUP PROBLEM SOLVING

The purpose of this chapter is to present practical information about group problem solving, thus enabling the reader to contribute more effectively to group decision-making.

CHAPTER OUTLINE AND LECTURE NOTES

Groups solve many key problems in organizations. Part of having high-level interpersonal skills is the ability to work closely with others in solving problems and making decisions.

I. RATIONAL VERSUS POLITICAL DECISION MAKING IN GROUPS

Group decision-making is the process of reaching a judgment based on feedback from more than one individual. Two different approaches to group decision-making are the rational model and the political model.

The rational decision-making model is the traditional, logical approach to decision making, based on the scientific method. The search for optimum results is based on an economic view of decision-making; people hope to maximize gain and minimize loss. Each alternative is evaluated in terms of how well it contributes to the goals involved in making the decision.

The political decision-making model assumes that people bring preconceived notions and biases into the decision-making situation. Self-interest may block people from making the most rational choice. People who use the political model may operate on the basis of incomplete information.

Sometimes it is difficult to determine if a decision maker is being rational or political, such as the example about the lack of a 13th floor in most hotels.

II. GUIDELINES FOR USING GENERAL PROBLEM-SOLVING GROUPS

A. The Group Problem-Solving Steps

When team members get together to solve a problem, they typically hold a discussion rather than rely on a formal problem-solving technique. A more systematic approach would be to use the following steps:

1. Identify the problem. (What is the underlying problem?)

2. Clarify the problem. (Group members should see the problem in the same way.)

3. Analyze the cause. (The group must understand the cause of the problem and
find ways to overcome the cause.)

4. Search for alternative solutions. (The alternative solutions chosen will depend on the analysis of the causes.)

5. Select alternatives. (Identify the criteria that solutions should meet, and then discuss the pros and cons of the proposed alternatives.)

6. Plan for implementation. (Decide what actions are necessary to carry out the chosen solution to the problem.)

7. Clarify the contract. (Restate agreements on what to do and deadlines for accomplishment.)

8. Develop an action plan. (Who does what and when to carry out the contract.)

9. Provide for evaluation and accountability. (After the plan is implemented, reconvene to discuss progress and hold people accountable for results that have not been achieved.)

B. Managing Disagreement About Group Decision Making
The idea is to manage disagreement so the decision-making process does not break down, and dissenters are not squelched. A study of 43 product development teams found that disagreement about major issues led to positive outcomes for team performance under two conditions: The dissenters have to feel they have the freedom to express doubt, and doubts were expressed collaboratively rather than contentiously.

C. Inquiry versus Advocacy in Group Decision Making
Inquiry involves looking for the best alternative. Advocacy is fighting for one position. Decision makers who care more about the good of the firm are the most likely to engage inquiry. An inquiry-focused group carefully considers a variety of alternatives and collaborates to discover the best solution.

III. GUIDELINES FOR BRAINSTORMING
When the organization is seeking a large number of alternatives to the problem, brainstorming is often the technique of choice. Brainstorming is a group problem-solving technique that promotes creativity by encouraging idea generation through non-critical discussion. Brainstorming is used both as a method for finding alternatives to real-life problems and for creativity training.

Eight rules for brainstorming are worth considering:
1. Group size should be about five to seven people.
2. Everybody is given the chance to suggest alternative solutions.
3. No criticism is allowed.
4. Freewheeling is encouraged.
5. Quantity and variety are very important.
6. Combinations and improvements are encouraged.
7. Notes must be taken during the session by a person who serves as the recording secretary.
8. Invite outsiders to the brainstorming session.
9. Do not over-structure by following any of the ideas too rigidly.

IV. GUIDELINES FOR ELECTRONIC BRAINSTORMING
Some of the problems inherent in conventional brainstorming have led to an electronic version.

A. Limitations to Verbal Brainstorming
Being aware of production-blocking mechanisms can help people improve their skill in brainstorming. Evaluation apprehension means that many people are unwilling to come forth with some of their ideas because they fear being critically evaluated.

Free-riding is just about the same behavior as social loafing. Free riders do not work as hard in a group as they would if they worked alone. An inhibiting procedure in verbal brainstorming is that only one person can speak at a time. This limits the idea generation and production time available to group members.

B. The Electronic Brainstorming Procedure
A recent development designed to overcome the problem of production blocking in brainstorming is electronic brainstorming. Using this method, group members simultaneously enter their suggestions into a computer, and the ideas are distributed to the screens to other group members. (Electronic brainstorming is really the same thing as brainstorming with e-mail.) Group members can build on each other’s ideas and combine ideas.

During electronic brainstorming, individuals work in face-to-face groups, typically seated around a U-shaped table. Every time an individual enters an idea, a random set of the group’s ideas is entered on the individual’s monitor. Individuals can access the random set.

An experiment with electronic brainstorming indicated that, with large groups, the method produces more useful ideas than with verbal (the usual type) of
brainstorming. Brainstorming via e-mail can increase both the quantity and quality of ideas.

V. GUIDELINES FOR THE NOMINAL GROUP TECHNIQUE
A leader sometimes need to know what alternative solutions are available to a problem and how people would react to them. The nominal group technique (NGT) has been developed to fit the situation. The NGT is a group problem-solving technique that calls people together in a structured meeting with limited interaction. Group discussion, however, does take place at a later stage in the process. The nominal group technique uses a six-step decision process.

1. Work team members are assembled to work on the problem.
2. The team leader presents a specific question.
3. Individual team members write down their ideas independently, without speaking to other members.
4. Each team member, in turn, presents one idea to the group, but the group does not discuss the ideas.
5. After each team member has presented his or her idea, the group clarifies and evaluates the suggestions.
6. The meeting ends with a silent, independent rating of the alternatives on a 1-to-10 scale. Ratings are then pooled to select the best alternative.

VI. USING STAND-UP MEETINGS TO FACILITATE PROBLEM SOLVING
Problem solving and decision making can sometimes be improved by conducting meetings while standing up instead of sitting down. Some people are more alert when standing, and most people do not want to stand for too long so they reach a decision quickly. A study with the Lost on the Moon exercise suggested that people make decisions more quickly when standing up, without sacrificing decision quality.

VII. USING E-MAIL TO FACILITATE GROUP DECISION MAKING
Appropriate use of e-mail and groupware can facilitate interaction among team members and group decision making, while at the same time minimize the number of meetings. (Groupware is technology designed to facilitate the work of groups.) Such use of e-mail and groupware makes virtual teams possible.

A. Using E-Mail to Facilitate Meetings
By using e-mail, team members can feed important information to all other members of the team without the ritual of entering a meeting and passing around handouts. An advanced use of e-mail is to distribute word processing documents as well as spreadsheets and graphics.

Using e-mail, a group can cut down substantially on the amount of time they would
have to spend in a group meeting. They might even be able to eliminate a group meeting. Much of the nominal group technique can be conducted through e-mail. For example, team members could send their ratings and explanations to each other electronically.

A caution is that the use of e-mail too far can inhibit rather than enhance group decision-making and teamwork. If people communicate with each other almost exclusively by e-mail, the warmth of human interaction and facial expressions is lost. Winks, shared laughter, and smiles all facilitate group effort.

B. Using Groupware to Facilitate Group Problem Solving
E-mail and electronic brainstorming rely on groupware. At its best, groupware offers certain advantages over single-user systems. For example, groupware can make communication faster, clearer, and more persuasive; enable telecommuting; reduce travel costs; and facilitate group problem solving. Another example of groupware is a shared whiteboard that allows two or more people to view and draw on a shared drawing surface even when they are at a distance.

Despite all the potential benefits of groupware, the system will break down unless all parties involved use the software successfully.

**ANSWERS TO DISCUSSION AND REVIEW QUESTIONS**

1. Why are group decisions more likely to lead to commitment than decisions made by a manager acting alone?

   Group members who participate in decision-making will typically experience a feeling of ownership in the decision. Because the decision is partly their responsibility, they will be more eager to help in implementation.

2. Based on any experience you have had at school or at work, what process or method is usually followed in making group decisions?

   The most frequent group decision-making experience is probably one of two types: general problem-solving groups, or brainstorming. The general problem-solving group is usually a straightforward discussion without following the decision-making steps.

3. Most textbook mentions of brainstorming are neutral to unfavorable. What do you suppose the textbook authors tend to dislike about brainstorming?

   Research-oriented textbook authors are concerned that brainstorming lacks rigor
because it does not follow a structured format.

4. Identify several problems on or off the job for which you think brainstorming would be effective.

Brainstorming is ideally suited to generating alternatives to problems not calling for complicated solutions, yet such problems should not be excluded. Problem situations especially suited for brainstorming include, identify new markets for a product, making product or service improvements, developing a theme for a party, or identifying new ways of meeting people for dating.

5. What is your opinion of the importance of the physical setting (such as sunlight and refreshments) for stimulating creative thinking during brainstorming?

Recent opinion suggests that sunlight, food, and beverages enhance brainstorming. Considering that brainstorming takes place so often in a windowless conference room, the observations about sunlight are important.

6. What, if any, accommodations should be made in electronic brainstorming for group members who have poor keyboarding skills?

A charitable view would be to ask members to hold back on their inputs while a slow-keyboarding member of the team is attempting to provide input. A more demanding viewpoint would be that people must improve their keyboarding skills to become successful at electronic brainstorming.

7. Identify two work-related problems for which the nominal group technique is particularly well-suited?

Complex problems involving many potential choices are good candidates for the nominal group technique. Among such scenarios are deciding on which plant or office to close, where to relocate a company facility, developing a fund raising campaign, or choosing which piece of capital equipment to purchase.

8. Companies have know about stand-up meetings for many years, and the results have been favorable in terms of productivity. Why then are stand-up meetings still not so popular?

Many people look forward to meetings as an opportunity to sit down, reflect, sip a beverage, and perhaps put their elbows on the table. All of these acts are impossible in a stand-up meeting. Also, some people do not have the physical stamina or foot strength to endure a long stand-up meeting.

9. How can a team leader apply groupware to help the group become more
productive?

The team leader can enhance group productivity with groupware through such means as collecting information quickly, and reducing the number of face-to-face meetings.

10. Which group decision-making technique described in this chapter do you think members of top management are the most likely to use? Why?

Top management is the most likely to use a general problem solving group, even if they do not go through all the steps. The reason is that executives may not be willing to invest the time to use structured problem-solving techniques. Also they might feel they are beyond using such techniques. An exception is that managers are likely to engage in brainstorming-like discussions--even if they do not use all the brainstorming rules.

ANSWERS TO CASE QUESTIONS

The Great Wiper Blade Mystery

This case illustrates the problem-solving capability of a cross-functional team in a concrete, useful way.

1. Which approach (or method of) group problem-solving did the plant team use?

The team appeared to use the general problem solving approach because they systematically explored possible solutions.

2. To what extent did management make the right move in assigning the flawed windshield wiper problem to a team instead of to one engineer or technician?

Given that this plant-threatening problem was resolved by the team, management receives credit for having made the right move (or decision).

3. Where would the windshield wiper problem fit on Table 5-1 of this chapter in terms of degree of empowerment?

Because the problem was of such importance, one could argue that it represented "product modification and development." However, since the solution involved repairing rather than modifying an existing product, one could argue for "making continuous improvement."

4. If by chance, you happen to have the right expertise, what would you guess was
the problem with the windshield wiper system?

The answer was in the serrations, or rough marks, on the motor’s drive shaft that are meant to hold the crank in place. When the serrations were put on wrongly, the crank joined the shaft at a slightly tilted 95-degree angle instead of a perfectly straight 90-degree angle. On the bad assemblies the crank swung in a circle whose diameter was less than a millimeter shy of the good wiper system. When the swing, or arc, was just a little bit off the wiper blade did not cover all of the required area.

**COMMENTS ABOUT QUIZZES AND EXERCISES**

*My Problem-Solving Tendencies*

An important feature of this exercise is that it sensitizes students to the importance of group decision making in organizations. At the same time it does not dismiss the relevance of individual decision making.

**A General Problem-Solving Group**

Students are likely to enjoy this exercise. Students may need a reminder, however, to pay attention to all the decision making steps, not simply begin to generate alternative solutions.

*1-800-INSIGHT*

Students can be counted on to find amusing and creative solutions to the telephone numbers challenge. Comparisons across groups are useful because the results demonstrate that many groups will recommend the same catchy names, such as 1-800 BURYYOU.

*Brainstorming versus Brainwriting*

The students who participate in this exercise will shed light on one of the most interesting research issues in brainstorming: the relative effectiveness of groups and individuals in generating creative alternatives. Several experiments have concluded that individuals are superior to groups, and the student demonstration can put this conclusion to a test.

*The Nominal Group Technique*
Well-traveled students will have more content to offer here, but all can enjoy the rigor of the nominal group technique. As with the other exercises in this chapter, attempting the nominal group technique is a valuable experience in group decision-making.
EXAMINATION QUESTIONS

Multiple Choice

(a) 1. An important connection between interpersonal relations and problem solving is that
   a. many key problems are solved by groups.
   b. interpersonal relations must be set aside during problem solving.
   c. most key problems are solved by two people at a time.
   d. interpersonal relations inhibit problem solving.

(d) 2. The political decision model assumes that when making a decision, people
   a. try to satisfy the demands of as many people as possible.
   b. follow the scientific model closely.
   c. inevitably make poor decisions.
   d. are trying to satisfy their self-interests.

(c) 3. A major problem noted with the political decision-making model is that people
   a. put too much effort into evaluating alternatives.
   b. place too much emphasis on the scientific method.
   c. block out information that conflicts with their personal biases.
   d. forget about the importance of personal biases in decision making.

(c) 4. The highest level of empowerment in a work team is reflected in solving problems dealing with
   a. training each other.
   b. production scheduling.
   c. compensation for team members.
   d. making continuous improvement.

(b) 5. The probability of a group solving a problem well increases when the group
   a. reduces the use of brainstorming.
   b. follows a systematic procedure.
   c. gives each member one vote.
   d. engages in groupthink.

(d) 6. The decision-making step in which the group comes to agreement on the nature of the problem is called
   a. identify the problem.
   b. analyze the cause.
   c. search for alternative solutions.
   d. clarify the problem.
7. The last step for effective group decision making is
   a. select alternatives.
   b. analyze the cause.
   c. provide for evaluation and accountability.
   d. develop an action plan.

8. Which one of the following is not a recommended step for effective group decision making?
   a. Assign blame for the cause of the problem.
   b. Analyze the cause.
   c. Plan for implementation.
   d. Provide for evaluation and accountability.

9. A study showed that disagreeing about major issues can lead to positive outcomes for the group when the
   a. team leader gives the dissenters only a few minutes to express their doubts.
   b. dissenters feel they have the freedom to express doubt.
   c. dissenters are paid a small bonus to keep quiet.
   d. the rest of the group pokes fun at the dissenters.

10. Dissension within the group tends not to lower group performance when
    a. the dissenters play the devil's advocate.
    b. rest of the group quickly votes on the best alternative.
    c. team leader instructs the dissenters to be quiet.
    d. the dissenters want to work collaboratively despite their disagreement.

11. Melissa takes an advocacy approach to group decision-making. During a problem-solving meeting she is likely to
    a. advocate whatever is best for the company.
    b. be extra courteous toward the other team members.
    c. do whatever she can to get her alternative selected by the group.
    d. be the first to offer constructive suggestions.

12. A distinguishing characteristic of brainstorming is that participation by group members
    a. takes place in a predetermined sequence.
    b. follows the decision-making steps.
    c. is spontaneous and unrestrained.
    d. is controlled by the group leader.
13. A recommended group size for brainstorming is about how many members?
   a. 2 to 4
   b. 5 to 7
   c. 8 to 14
   d. 15 to 20

14. In brainstorming, how should the group handle a seemingly outlandish idea?
   a. Quietly discourage its originator.
   b. Welcome it.
   c. Ask for clarification.
   d. Ask that it be put in writing.

15. One of the production-blocking mechanisms noted in brainstorming is
   a. synergy.
   b. groupthink.
   c. evaluation apprehension
   d. spontaneous expression

16. An inhibiting procedure in brainstorming is that
   a. only one person can speak at a time.
   b. several people can speak at a time.
   c. spontaneous comments are discouraged.
   d. the group leader tells each person when to speak.

17. A key feature of electronic brainstorming is that
   a. all members read the suggestions of the other members at the same time.
   b. group members search for electronic solutions to problems.
   c. members of the group communicate by electronic mail after the brainstorming session.
   d. the delete key is applied to worthless suggestions.

18. During electronic brainstorming, suggestions from group members are
   a. stored in a file for review at a later time.
   b. entered into the computer and seen by other group members.
   c. edited automatically for spelling and grammar.
   d. processed through a cellular telephone.

19. According to one experiment with electronic brainstorming with large groups, the procedure produced
a. useful ideas only with experienced members.
b. useful ideas primarily with inexperienced members.
c. more useful ideas than the traditional method.
d. fewer useful ideas than the traditional method.

(d) 20. Which one of the following techniques is particularly recommended when you need to know how people would react to the alternatives to the problem at hand?
   a. group brainstorming
   b. private brainstorming
   c. general problem-solving group
   d. nominal group technique

(c) 21. A key feature of the nominal group technique is that the members first present their ideas
   a. after engaging in group brainstorming.
   b. in private to the group leader.
   c. without interacting with group members.
   d. for evaluation by group members.

(d) 22. Alternative solutions developed by members in the nominal group technique are
   a. submitted to a brainstorming group.
   b. submitted to the leader who performs the evaluation.
   c. evaluated in group discussion.
   d. evaluated independently by group members.

(a) 23. A conclusion reached about stand-up meetings is that
   a. people can reach high-quality decisions in a short time period.
   b. these meetings should be at least 75 minutes for best results.
   c. decision quality suffers when these meetings are brief.
   d. they work more effectively when people wear athletic shoes rather than dress shoes.

(b) 24. E-mail facilitates group decision making because the group members
   a. can avoid interacting with each other.
   b. can send messages to each other without passing around handouts.
   c. can attack each other’s ideas simultaneously.
   d. log out when they want the meeting to end.

(b) 25. A common reason for using groupware is to
   a. minimize written and spoken contact among group members.
b. communicate when it would not otherwise be possible.
c. eliminate the need for team leaders.
d. create more travel opportunities for group members.

True/False

(T) 1. An important aspect of interpersonal relations in organizations is working closely with others in solving problems and making decisions.

(T) 2. The rational decision-making model would be well suited to discovering the cause of a technical problem.

(F) 3. People who use the political decision model are usually fully aware of their biases which allows them to make objective decisions.

(T) 4. A work team responsibility reflecting a high level of empowerment is handling discipline.

(F) 5. In the problem-solving process, the step following "provide for evaluation and accountability" is to "develop an action plan."

(F) 6. A problem with disagreement within a decision-making group is that the disagreement encourages groupthink.

(T) 7. A study showed that disagreement among members of cross-functional groups led to positive outcomes for the group when the dissenters felt they had the freedom to express doubt.

(F) 8. Using an advocacy approach, disagreement by group members tends to be positive and unify the group.

(T) 9. The brainstorming technique is well-suited to generating a large number of alternative solutions to problems.

(F) 10. An important feature of brainstorming is critical discussion of alternative solutions as they surface.

(F) 11. During brainwriting, group members pass along ideas to each other in silence.

(T) 12. Evaluation apprehension tends to be a much bigger problem when people are working in groups than alone.

(F) 13. Free-riding is a noted problem when people are engaged in electronic
brainstorming.

(T) 14. During electronic brainstorming group members do not talk to each other, yet they are still able to be stimulated by each other’s ideas and combine ideas.

(F) 15. A key rule of electronic brainstorming is that each group member knows who contributed which idea.

(F) 16. Continuous interaction among group members is a key feature of the nominal group technique.

(T) 17. In an early phase of the nominal group technique, group members write down their ideas independently without speaking to other members.

(F) 18. An essential part of the nominal group technique is that the source of each idea is kept anonymous.

(T) 19. In the nominal group technique, the idea chosen as the best idea is determined by a rating procedure.

(T) 20. The output from the nominal group technique is an alternative solution to a problem that is typically passed along as a recommendation to management.

(F) 21. An experiment with stand-up meetings indicated that they tend to be longer than sit-down meetings.

(F) 22. Conducting meetings through e-mail has made person-to-person contact almost superfluous for group tasks.

(F) 23. Meetings enhance the accomplishment of individual work.

(F) 24. A problem noted with groupware is that it makes telecommuting quite difficult.

(T) 25. An important purpose of using groupware is to bring together multiple perspectives and expertise.