

Decision-Making Strategies

The following JETS competition resource is an excerpt from “Total Quality Learning® (TQL®): A Team Development Workbook for Thinking Skills Sports.” The techniques presented in this resource will enable a team of high school students to perform effectively in team competitions such as the Tests of Engineering Aptitude, Mathematics and Science (TEAMS) and The National Engineering Design Challenge (NEDC) competitions.

The logo for JETS is rendered in a bold, italicized, black sans-serif font. The letters are thick and slanted to the right, with a white outline or shadow effect that gives it a three-dimensional appearance. The 'J' and 'S' are particularly large and stylized.

**Promoting Interest in Engineering,
Science, Mathematics, and Technology®**

Decision-Making Strategies

Quality teams make decisions using a process called Consensus Decision-Making. Consensus Decision-Making is important to maintain an effective team.

Important Note:

Do not confuse Decision-Making with Problem-Solving.

Decision-Making strategies are used in the Problem-Solving process but are not the same as the logical stepwise progression necessary for effective Problem-Solving.

Decision-Making strategies involve the interpersonal skills used for a group to reach a decision. Some Decision-Making strategies involve only one or a few persons in a somewhat unilateral mode while others involve the entire team through discussion.

The Problem-Solving ([link to](#)) process is an impersonal, step-wise, methodical procedure by which the team will think through a problem, its sub-problems, methods of approach and possible solutions. Throughout the Problem-Solving progression, different Decision-Making strategies will be used.

There are four ways in which decisions are normally made. The first two, Authoritarian and Sub-Group, could potentially be used in preparing for or during the TEAMS competition. The third process, Majority, is less likely to be used for TEAMS or NEDC because of the small number of people on a TEAMS or NEDC team. The last process, Consensus, is likely to be used during the NEDC process. It should be noted that the Consensus process might be used to determine if, when and how the other methods might be employed by the team.

The Four Decision-Making Methods Are:

Authoritarian Here the Team Leader makes whatever decisions have to be made and those decisions are assumed to be final. An example of this would be a judge handing down a decision in a legal case.

In some instances, this authority may be given to the Team Leader by the team members when certain conditions apply (e.g., there are a few options from which to choose or the team cannot agree and the timeline is short).

Sub-Group A small part of the team or total group gains sufficient influence to force the Team Leader or the group to adopt a decision. An example of this in politics is when a vocal minority insists on certain rights and the majority goes along with those decisions.

The Sub-Group Method can be effective if the Sub-Group approaches the task to assist the full team, and if the team requested the Sub-Group to work as such.

Majority

This Decision-Making process is closely analogous to our democratic process. In this method, a vote is taken and the majority (51%, 67% or 75%) depending on what level of majority is previously agreed upon) decides the issue.

A specific weakness of majority Decision-Making is that some percentage of the group, sometimes as much as almost half, may disagree with the outcome. This means that almost half the group may be unhappy over a decision.

Consensus

Consensus Decision-Making is the most effective but most difficult method because every member of the group must agree to the decision before it can be adopted.

In a consensus decision, the level of agreement you have is often related not so much to the fact that everyone absolutely agrees, but that they have decided through sufficient debate that they can live with the decision. If a team Member cannot live with the decision, you do not have a consensus decision.

Can I Live With It?

All team members must determine individually whether they can live with a particular decision. To determine this, it is helpful to think of the decision in terms of the diagram below.

	Can Live With It	Can't Live With It
Agree	I Agree	Should not occur in consensus process.
Disagree	I agree but with reservations	I can't agree. Let's discuss more.

The box in which you place yourself with respect to the decision being considered will determine whether you must ask the group to continue discussion (i.e., Can't Agree) or whether you will agree with the decision and at what level of personal comfort you are agreeing--"I agree." or "I agree with reservations."

Obviously, reaching consensus decisions can involve a great deal of time because of the effort expended for reasoning, debate or consensus building. However, the decision reached using this method is usually the best possible decision and all team members will work together to support it.

ACTIVITY 1

DECISION-MAKING STRATEGIES

After reviewing the four Decision-Making methods, the students should use this worksheet to list examples of each of the four strategies that they have observed in their team or in other school group situations.

	<u>Strategy</u>	<u>Examples</u>
Authoritarian	_____	_____
	_____	_____
Sub-Group	_____	_____
	_____	_____
Majority	_____	_____
	_____	_____
Consensus	_____	_____
	_____	_____

Discussion

It is unusual for students to identify Consensus examples, particularly from school group situations. However, they are very likely to identify Authoritarian or Sub-Group examples.

As the team becomes more skilled in Decision-Making techniques, more examples of Consensus Decision-Making will emerge. When students reach the ADJOURN stage of group development, they are likely to mention how they are trying to use Consensus Decision-Making processes in other school and home situations.

ACTIVITY 2

SURVIVAL ON THE MOON

This exercise was originally designed by the National Aeronautics and Space Administration (NASA) to train astronauts prior to the first Moon landing. It will provide practice in Consensus Decision-Making.

The Situation:

You are a member of one of two space details assigned to the mission ship "Galaxy," which was originally scheduled to rendezvous with the mother ship "Angel" on the lighted surface of the Moon. Due to mechanical difficulties, however, the Galaxy was forced to land on the dark side of the Moon, some 200 miles from the rendezvous point. During piloting and landing, some of the crew and the Captain died. Much of the equipment aboard was damaged. No one knows for sure how long the ship's life support systems will last because all gauges broke. Survival is critical.

Listed on the following worksheet are the 15 items left intact and undamaged after landing.

Your task, first individually and then as a team, is to rank order the 15 items in terms of their importance to the survival of the remaining crew of the mission ship, Galaxy.

Procedure:

- First, each team Member should rank each item individually.
- Second, the full team should discuss and debate each team member's reasoning for his or her ranking.
- Third, the group should agree on a final ranking through consensus.

The official NASA ranking and a brief statement of reasoning for each decision is presented after the worksheet. These rankings were developed by a panel of experts and should be considered the "textbook" answers for this exercise. Based on more recent knowledge gained about the Moon, there can be viable arguments for changing some of the rankings of the less obvious items.

In nearly all instances, the group's agreed upon ranking is considerably closer to the NASA ranking than are most individual's rankings.

ACTIVITY 2 WORKSHEET

Rank Ordering Of Undamaged Survival Items:

My Personal Ranking	The Group's Ranking	Item
_____	_____	One box of matches
_____	_____	100 cartons of food concentrate (20-day ration for each crew member)
_____	_____	150 feet of nylon rope
_____	_____	Parachute silk (from 3 parachutes)
_____	_____	One portable heating unit
_____	_____	Two .45-calibre loaded pistols
_____	_____	One case dehydrated milk
_____	_____	Three 100 lb. tanks of oxygen (Each tank holds 20-day supply for each crew member)
_____	_____	One stellar map (of the moon's constellation)
_____	_____	One life raft
_____	_____	One magnetic compass
_____	_____	5 gallons of water (Normally a 10-day ration for each member of the crew)
_____	_____	Five light flares
_____	_____	First-aid kit containing injection needles
_____	_____	Battery-powered FM receiver-transmitter

ACTIVITY 2 ANSWERS

Rank	Item	Reason
14	One box of matches	No air
08	100 cartons of food concentrate (20-day ration for each crew member)	Nourishment
06	150 feet of nylon rope	Traverse ravines, carry supplies
09	Parachute silk (from 3 parachutes)	Easily spotted, carry supplies
13	One portable heating unit	Suits are self-contained
07	Two .45-calibre loaded pistols	Emergency propulsion
12	One case dehydrated milk	Can't mix it
01	Three 100-lb. tanks of oxygen (Each tank holds 20-day supply for each crew member)	Must breathe
03	One stellar map (of the moon's constellation)	Navigation
10	One life raft	Carry items
15	One magnetic compass	Stellar Map better
02	5 gallons of water (Normally a 10-day ration for each member of the crew)	Must drink
04	Five light flares	Others to find you
11	First-aid kit containing injection needles	Can't open suit
05	Battery-powered FM receiver- transmitter	Others to find you