Team Dynamics

No matter how much native talent someone has for a particular activity (swimming, chess, singing, . . . ), full development of that talent requires *study of the fundamentals* of the activity as well as *practice* of the activity. No matter how good the “people skills” of the members of a new team, the team’s performance will always be improved by practice of teaming skills, and by study of team dynamics.

**Team Dynamics: What do we mean by this?**

If you have never encountered the word “dynamics” before, take a few minutes and look it up. If you *have* encountered the word before, write down your best understanding of the word. How might this apply to *teams*?

Webster’s New World Dictionary gives the following definition of *dynamics*:

1. the science dealing with motions produced by given forces.
2. the forces operative in any field

It is easy to see how the interactions of team members are subject to many forces, both external and internal. For example, external forces might include pressure to complete a task by a deadline, or within a limited budget, while internal forces might include pressure by a team ‘faction’ to choose a certain course of action, or impatience of some team members with others’ modes of participation. (Can you think of any other “forces” that could influence the performance of a team?) Such “forces” can easily influence or change the “motion” of a team towards achievement of its tasks.

This purpose of the material in this chapter is to provide learning materials that describe some of what is known about how teams work. This field (or “science”, if you like) is very large, and we can only introduce you to some of what we believe are the more important topics. By studying the “science” of team dynamics, along with actual practice of team skills, you will greatly improve your team performance skills, and, we believe, the quality of the work your team produces. As in any activity (swimming, chess, singing, . . . ), expect to make mistakes and some frustration, but also expect that you will improve in these very valuable skills.

Much of the material in this chapter will be labeled “Expert Table #n” because it is designed to be presented in a “jigsaw” fashion. We include a description of the jigsaw approach, however, the information is just as productively read as in a standard textbook. We hope that with this knowledge and with teaming practice you have positive, productive and rewarding experiences in teams throughout your career!

Adapted from McNeill, Bellamy & Burrows, Introduction to Engineering Design, 2000
Team Dynamics

Team Dynamics Session Agenda and Goals

A typical agenda for the jigsaw exercise on team dynamics as given in ECE 100 is illustrated below. We usually show the video Meetings, Bloody Meetings as part of the team dynamics units, and so this is included in the agenda.

<table>
<thead>
<tr>
<th>Team Dynamics Jigsaw Exercise</th>
<th>90 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>10 minutes</td>
</tr>
<tr>
<td>View the Meetings, Bloody Meetings video</td>
<td>30 minutes</td>
</tr>
<tr>
<td>Prepare a tutorial</td>
<td>20 minutes</td>
</tr>
<tr>
<td>Break</td>
<td>10 minutes</td>
</tr>
<tr>
<td>Reconvene in teams and deliver tutorials</td>
<td>20 minutes</td>
</tr>
<tr>
<td>Creating &amp; Maintaining your Team</td>
<td>10 minutes</td>
</tr>
</tbody>
</table>

When the material in this chapter is presented as a jigsaw exercise, students must carefully read this material before class. The class period is used to review and increase student understanding of the material. Expecting students to come to class prepared is an example of the Individual Accountability facet of Active Learning, as described in Section B of this workbook.

The ECE 100 instructors have set specific learning goals for the material on Team Dynamics:

- Learn the essential elements of a functioning team.
- Learn some important aspects of Team building and Team functioning.
- Prepare and present a brief, informative presentation to a small group.
- Work as a group to accomplish a task.

(Defining the goals for the material is consistent with one of the attitudes we want students to adopt [Begin With The End In Mind, from Steven Covey’s 7 Habits of Highly Effective People]; thus, we try to practice it in the classroom. Knowing what the instructor intends to accomplish in a class can be useful to students, particularly if they are trying to make confusing situations into something worthwhile. If instructors want students to develop this attitude, we need to demonstrate that the instructors value and practice this attitude (e.g., present session goals. There is another reason for presenting the goals; evaluation of the success or weakness of a session must include the goals and to what extent the goals were achieved.).

Adapted from McNeill, Bellamy & Burrows, Introduction to Engineering Design, 2000
Team Dynamics Jigsaw Exercise

Functioning as a successful team requires the integration of many different activities. If any piece of the puzzle is missing, then the groups of people is not likely to functions as a true team. The figure above illustrates the main issues that will be covered in this material. It is laid out in the form of a jigsaw puzzle to illustrate the learning approach (Jigsaw exercise). A Jigsaw exercise is an active learning exercise in which:

- a general topic is divided into smaller, interrelated pieces (e.g., the puzzle is divided into pieces)
- each member of a team is assigned to read and become an expert on a different piece of the puzzle (e.g., one person is given the Team Building Issues puzzle piece, another the Team Composition & Roles piece, etc.)
- after each person has finished presenting their expert material to the rest of their team, the puzzle has been reassembled and everyone in the team knows something important about every piece of the puzzle.

The figure on the following page gives a process deployment flowchart that shows the structure of the suggested jigsaw process for this particular exercise. Some kind of process check at the end of the session is recommended, in order to make sure the exercise was successful and to identify ways to improve it. A suggested form for performing a process check is included at the end of this section.

**Becoming an Expert**

Expert groups are comprised of the representative from each team assigned to common reading. Expert groups discuss the reading material and help each other prepare a learning exercise (e.g., 5 minute tutorial) to use in educating their individual base or semester Team members later in the exercise.

**Educating The Semester Team**

One at a time, each team member presents the tutorial developed in their expert groups to the other members of their base or semester Team.

Adapted from McNeill, Bellamy & Burrows, Introduction to Engineering Design, 2000
Team Dynamics

Meetings Bloody Meetings

This video is one of the best resources we have seen for enabling students to learn about productive meetings. It is business-oriented (there appears to be no academic equivalent), but it is still very relevant to student teams. Although we have included material about productive meetings for use in the jigsaw exercise, we recommend that this video be shown if at all possible.

If this video is included as part of your team training, we suggest that as you watch the video, you:

- Assume that the people are a Team.
- Look for Examples of what you have read and studied about.
  - Composition and Roles in teams
  - Stages and Recurring Phases in teams
  - Effective Meetings

This video has many examples that can be used to help enhance the expert tutorials.

The expert material for each topic begins on the following page.

Five Issues to be Considered in Team Building

Team building exercises are very important in the development of task-oriented teams that will work together on a complex project for an extended period of time. Experiences designed to facilitate team development should be focused on some, if not all, of the following five issues:

1. **Interdependence**

   Each team member's outcomes are determined, at least in part, by the actions of the other members. The *structure* of the team task should be such that it requires cooperative *interdependence*. Functioning independently of other team members, or competing with them, will lead to less than optimal outcomes for the entire team. The team building task should also have a cooperative interdependent structure. Tasks that require the successful performance of sub tasks by all team members are called *divisible* and *conjunctive* tasks. The team building exercise should be structured such that the team members become aware of, and experience, their interdependence.

2. **Goal Specification**

   It is very important for team members to have common goals for team achievement; in addition, team members must communicate clearly about *individual* goals they may have. Some team building sessions consist entirely of goal clarification (*specification*) exercises. Shared goals is one of the definitional properties of the concept "team". A simple, but useful, team building exercise is to assign a newly formed team the task of producing a mission and goals statement.

3. **Cohesiveness**

   Teams are *cohesive* to the extent that membership in them is positively valued; members are drawn toward the team. Task oriented teams involve both *social cohesiveness* and *task cohesiveness*.

   **Social cohesiveness** refers to the bonds of interpersonal attraction that link team members. Although a high level of social cohesiveness may make team life more pleasant, it is not highly related to team performance. Nevertheless, the patterns of interpersonal attraction within a team are a very prominent concern. Team building exercises that have a component of fun or play are useful in encouraging attraction bonds to develop.

   **Task cohesiveness** refers to the way in which skills and abilities of the team members mesh to allow effective performance. Exercises that require the application of the skills that will be necessary for completion of the team assignment, but require them in a less demanding situation, allow the team members to assess one another's talents. Such experiences can lead to consideration of the next issue, the development of team member's roles and of the norms that govern role enactment.

Adapted from McNeill, Bellamy & Burrows, Introduction to Engineering Design, 2000
4. **Roles and Norms**

All teams develop a set of **roles** and **norms** over time. In task oriented teams, it is essential that the role structure enables the team to cope effectively with the requirements of the task. When the task is divisible and conjunctive (i.e., divisible into subtasks), as are most of the important team tasks, the assignment of roles to members who can perform them effectively is essential. Active consideration of the role structure can be an important part of a team building exercise. Task roles may be rotated so that all team members experience, and learn from, all roles. It is important that the norms governing the assignment of roles is understood and accepted by team members.

**Norms** are the rules governing the behavior of team members, and include the rewards for behaving in accordance with these rules (or **normative** requirements), as well as the sanctions for norm violations. Norms will develop in a team, whether or not they are actively discussed. There are common norms that govern most teams; however, a team building assignment in which those common norms, as well as some that are specific to a team, are discussed and accepted is useful.

5. **Communication**

Effective interpersonal **communication** is vital to the smooth functioning of any task team. There are many ways of facilitating the learning of effective communication skills. Active listening exercises, practice in giving and receiving feedback, practice in checking for comprehension of verbal messages, are all aimed at developing communication skills. It is also important for a team to develop an effective communication network; who communicates to whom; is there anybody "out of the loop?" Norms will develop governing communication. Do those norms encourage everyone to participate, or do they allow one or two dominant members to claim all the "air time?" Team building exercises can focus on skill development, network design, and norms, but even when the exercise is focused on another issue, communication is happening. Watch it! Shape it!

**Summary:**

These issues are not intended to present a series of team building exercises. Rather, they are intended to help you evaluate the potential effectiveness of an exercise. Team building is not a silver bullet for fixing dysfunctional teams, or assuring that all of your teams will work well. Team building exercises can be helpful in developing effective task-oriented teams, if they are selected to enable teams to explore the issues identified in this outline.
Team Composition and Roles

It is essential that the right people be assigned to a team. Each person should be selected based on his or her knowledge and expertise as well as other potential factors. For example, in ECE 100 gender and ethnic diversity and geographic location are also important considerations when assigning team members.

In addition to selecting the appropriate people, there are also key roles that are essential to the overall team's success. Key roles include: sponsor, leader, facilitator, member, gatekeeper, recorder, timekeeper, and devil’s advocate.

**Sponsor**

The sponsor oversees and supports the activities of the project teams. Typically, the sponsor is the manager (or instructor) who chose the projects and appointed the teams; however, other people may be involved. Sponsors must have a stake in the chosen process; authority to make changes in the process under study; and clout and courage.

Sponsors do not conduct the actual project; they guide the efforts of the project team. They appoint the project team and together with the team leader determine the project’s boundaries. They make certain the project team has whatever reasonable resources it needs to be successful. Sponsors must adjust workloads to make time for the project; team members must not take on the project work in addition to their normal workload.

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Adapted from McNeill, Bellamy & Burrows, Introduction to Engineering Design, 2000
The duties of the sponsor occur in two phases:

1. Before the project the sponsor should:
   - Identify the project to be studied.
   - Determine any boundaries or constraints.
   - Select the project team.
   - Assign the facilitator (if appropriate).

2. During the project, the sponsor should:
   - Meet regularly with the project team leader.
   - Develop and improve systems that allow team members to bring about change.
   - When necessary in the workplace, "run interference" for the project team, representing its interests to the rest of the organization.
   - Insures that changes made by the team are evaluated; implements changes the project team is not authorized to make (in the workplace).

The responsibilities of the sponsor are not finished until these changes are introduced, the improvements accomplished, or the new methods systematized and the project officially completed.

**Team Leader**

The team leader manages the team: calling and, if necessary, facilitating meetings, handling or assigning administrative details, organizing all team activities, and overseeing preparations for reports and presentations. The team leader should be interested in solving the problems that prompted the project, and be reasonably skilled at working with individuals and groups. Ultimately it is the leader's responsibility to create and maintain channels that enable team members to do their work.

Team leaders can be appointed by the sponsor or selected by the team itself. If the team leader is a supervisor or manager in the project area of the workplace, he or she must take extra precautions to avoid dominating the group during meetings. The leader leaves rank outside the meeting room, facilitating discussions and actively participating but as an equal member of the team.

The team leader:

- Is the contact point for communication between the team and the rest of the organization, including the sponsor.
- Is the official keeper of the team records including: copies of correspondence; records of meetings and presentations; meeting minutes and agendas; and charts, graphs, and other data related to the project.
- Is a full-fledged team member. As such, the team leader's duties also include attending meetings, carrying out assignments between meetings, and generally sharing in the team's work.
- Assists the team with immediately implementing changes that are within the bounds of the team. Changes beyond these bounds must be referred to the sponsor or other appropriate level of management.
Characteristics of a Good Team Leader
- Is energetic
- Is skilled at resolving conflict
- Is well organized
- Has experience as a group leader
- Is respected by group members
- Is reliable
- Is charismatic
- Is intelligent
- Is creative
- Possesses a sense of humor
- Is effective in achieving results

Facilitator
The ideal facilitator has a combination of people, technical, and training skills. In the workplace, facilitators should be chosen from outside the process area being studied so that they are neutral to the project.

Facilitators attend team meetings but are neither leaders nor team members. They are "outsiders" to the team, and maintain a neutral position. One of their most important jobs arising from this neutrality is to observe the team's progress, evaluate how the team functions, and use these observations to help the team improve its process (how members interact both inside and outside of meetings). The facilitator:
- Focuses on the team's process more than its product; is concerned more with how decisions are made rather than what decisions are reached.
- Works with the team leader between meetings to plan for upcoming meetings.
- Continually develops personal skills in facilitating, group processes, and planning. Learns a variety of techniques to control digressive, difficult, or dominating participants, to encourage reluctant participants, and to resolve conflict among participants. Learns when and how to employ these interventions and how to teach such skills to team members.
- Helps project teams design and rehearse management presentations.

The facilitator plays an important role in a team. It is this person’s responsibilities to ensure that the process runs smoothly. In many companies this role is assigned to a person who may not be familiar with or have a stake in the outcome (the product) of the process. Then the facilitator is only interested in the process.

Some organizations do not provide an unbiased facilitator for each team, in which case a regular team member must act as facilitator. However, it is sometimes difficult to both monitor the process and participate in it.

In classes (e.g., design courses) this role is often assumed by the instructor, at least for the “meetings” that take place in her/his presence.

Katzenbach and Smith (The Wisdom of Teams) state that although a true facilitator is often needed to get a team started or to get a “stuck” team moving again, most often a team member can offer effective facilitation.

Adapted from McNeill, Bellamy & Burrows, Introduction to Engineering Design, 2000
Team Dynamics - Topic for Expert Table #2

Team Member

Team members are the rest of the people involved in the project. Not everyone who could contribute something worthwhile need be on the team; project team members can always consult with experts or other staff as the project unfolds.

Team members are appointed by the sponsor. In the workplace team members are usually people who work closely with some aspect of the process under study; often representing different stages of the process and groups likely to be affected by the project. They can be of various ranks, professions, trades, classifications, shifts or work areas (if the project cuts across division boundaries, so should team membership). In ECE 100 team members are selected based on computing skills and geographic location. Gender and ethnicity are also considered in order to create diversity in class teams.

Team members

✓ Should remember that management has indicated their support for the project by setting up the project team. Therefore, team members should consider their participation as a priority responsibility, not an intrusion on their real jobs. Similarly, in ECE 100 team participation is a priority responsibility and should NOT be considered an intrusion on other class/course responsibilities.
✓ Are responsible for contributing as fully to the project as possible, sharing their knowledge and expertise, participating in all meetings and discussions, even on topics outside their areas.
✓ Carry out their assignments between meetings: interviewing other employees or customers, observing processes, gathering data, writing reports, and so on. These tasks will be selected and planned at the meetings.
✓ Should be open minded about others' ideas, share information, and contribute constructively to the team process.

Team members have more responsibilities than just showing up!

<table>
<thead>
<tr>
<th>Characteristics of a Good Team Member</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Works for consensus on decisions</td>
</tr>
<tr>
<td>✓ Shares openly and authentically with others regarding personal feelings, opinions, thoughts, and perceptions about problems and conditions</td>
</tr>
<tr>
<td>✓ Involves others in the decision-making process</td>
</tr>
<tr>
<td>✓ Trusts, supports, and has genuine concern for other team members.</td>
</tr>
<tr>
<td>✓ &quot;Owns&quot; problems rather than blaming them on others</td>
</tr>
<tr>
<td>✓ When listening, attempts to hear and interpret communication from other’s points of view</td>
</tr>
<tr>
<td>✓ Influences others by involving them in the issue(s)</td>
</tr>
<tr>
<td>✓ Encourages the development of other team members</td>
</tr>
<tr>
<td>✓ Respects and is tolerant of individual differences</td>
</tr>
<tr>
<td>✓ Acknowledges and works through conflict openly</td>
</tr>
<tr>
<td>✓ Considers and uses new ideas and suggestions from others</td>
</tr>
<tr>
<td>✓ Encourages feedback on own behavior</td>
</tr>
<tr>
<td>✓ Understands and is committed to team objectives.</td>
</tr>
<tr>
<td>✓ Does not engage in win/lose activities with other team members</td>
</tr>
<tr>
<td>✓ Has skills in understanding what’s going on in the group</td>
</tr>
</tbody>
</table>

Adapted from McNeill, Bellamy & Burrows, Introduction to Engineering Design, 2000
Miscellaneous Roles
There are a number of common cooperative learning roles that work well for teams in almost any situation. The roles should rotate with time. Assign as many as needed to cover all the members of the team. These are listed here in the order of decreasing importance to the team.

**Recorder:** The recorder is the team member who is responsible for assuring that the process(es) being used by the group is documented. This includes writing down all the important points of a discussion and preparing the minutes of a meeting. The recorder is also responsible for preparing slides and reports which the team needs.

**Time Keeper:** The time keeper has the responsibility of keeping the team moving so that the team finishes the task at hand.

**Encourager:** The encourager has the task of giving encouragement to all the other team members. When a team member makes a contribution, the encourager can comment “good idea” or “nice thought”, etc.

**Devil’s Advocate:** The devil’s advocate takes a position opposite to that held by the team to ensure that all sides of an issue are considered.

**Gatekeeper:** The gatekeeper (a role sometimes taken by the facilitator or team leader) has the responsibility of maintaining a balanced level of participation for all the members. The gatekeeper will encourage the silent members and try to hold back the verbose, dominant members. A team functions when all members ideas and thoughts are heard; the gatekeeper helps ensure this.

Adapted from McNeill, Bellamy & Burrows, Introduction to Engineering Design, 2000
**Stages of Team Development (adapted from Forsyth, 1990)**

Teams, like individuals, pass through predictable, sequential stages over time. Tuckman (1965) labeled the stages of team development as forming, storming, norming, performing, and adjourning.

**Forming (the orientation stage)**

Members of newly formed teams often feel anxious and uncomfortable. They must interact with other individuals whom they do not know well and begin to work on tasks which they may not yet completely understand. Their roles in the team and the procedures for interaction may be unclear as well. As members become better acquainted, some of the tension may dissipate. Members will begin to become more comfortable with their roles.

**Storming (the conflict stage)**

The polite interactions of the orientation stage may soon be replaced by conflict. False conflicts occur when members misunderstand or misinterpret each other's behaviors. Contingent conflicts develop over procedural or situational factors (such as meeting times, places, or formats). These two types of conflict are relatively easy to resolve, whereas escalating conflicts, a third variety, may cause more serious problems for the team. Escalating conflicts may begin as simple disagreements which then lead into the expression of more fundamental differences of opinion. Such conflicts may be characterized by venting personal hostilities and the expression of long suppressed emotions or ideas. Although conflict may damage or destroy a team, most researchers agree that conflict is a natural consequence of team membership, and that it may, in fact, strengthen the team as the members learn to accept and constructively resolve their differences.

**Norming (the cohesion stage)**

During the third stage, team conflict is replaced by a feeling of cohesiveness. Teams experience a sense of unity or team identity. Membership stability also characterizes this stage. Members are highly involved and turnover is low. An increase in member satisfaction also happens at this time. Not only are members pleased with the team, but they themselves may experience higher self-esteem and lower anxiety as a result of their participation in the team. The internal dynamics of cohesive teams change as well. Individual members are more likely to accept or be persuaded by team norms. One negative aspect of this is that, in some teams, dissent may not be tolerated during this stage.

**Performing (the task-performance stage)**

High productivity is most likely when teams have been together for some time. Whether the focus of the team is task-oriented or therapeutic, effective performance occurs late in the developmental life of the team. Although, as a rule, non-cohesive teams are less productive than cohesive teams, not all cohesive teams are productive. Some cohesive teams may have strong norms which encourage low productivity.

Adapted from McNeill, Bellamy & Burrows, Introduction to Engineering Design, 2000
Adjourning (the dissolution stage)

Teams may adjourn spontaneously or by design. Planned dissolution occurs when the team has completed its task or exhausted its resources. Spontaneous dissolution occurs when members are unable to resolve conflicts, its members grow dissatisfied and depart, or when repeated failure makes the team unable to continue. Either type of dissolution may be stressful. Members of successful teams may not want to end, and when the dissolution is unexpected, members may experience a great deal of conflict or anxiety.

### TABLE CHARTING THE FIVE STAGES OF GROUP DEVELOPMENT

<table>
<thead>
<tr>
<th>STAGE</th>
<th>MAJOR PROCESSES</th>
<th>CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Orientation (forming)</td>
<td>Exchange of Information; task exploration; identification of commonalities</td>
<td>Tentative interactions; polite discourse; concern over ambiguity; self-discourse</td>
</tr>
<tr>
<td>2. Conflict (storming)</td>
<td>Disagreement over procedures; expression of dissatisfaction; emotional responding; resistance</td>
<td>Criticism of ideas; poor attendance; hostility; polarization and coalition forming</td>
</tr>
<tr>
<td>3. Cohesion (norming)</td>
<td>Growth of cohesiveness and unity; establishment of roles, standards, and relationships</td>
<td>Agreement on procedures; reduction in role ambiguity; increased &quot;we feeling&quot;</td>
</tr>
<tr>
<td>4. Performance (performing)</td>
<td>Goal achievement; high task orientation; emphasis on performance and production</td>
<td>Decision making; problem solving; mutual cooperation</td>
</tr>
<tr>
<td>5. Dissolution (adjourning)</td>
<td>Termination or roles; completion of tasks; reduction of dependency</td>
<td>Disintegration and withdrawal; increased independence, emotionality, and regret</td>
</tr>
</tbody>
</table>

Recurring Phases in Task Performing Teams

As teams perform, even those that have reached the performing stage in Tuckman's (1965) model of team development, they must focus on both the task and team maintenance in order to be highly productive. When a team directs attention at its primary task, it is almost inevitable that fatigue, tension, and conflict will develop.

Fatigue will set in if the task is demanding, or boredom will develop if it is too easy. Tension and conflict will develop when alternative approaches to task performance are suggested, or when alternative solutions to a team problem are put forward and discussed. As these products of a task orientation develop and increase, team productivity suffers. It is then important for the team to shift to a team maintenance orientation. This is accomplished by setting the task aside and focusing on the

Adapted from McNeill, Bellamy & Burrows, Introduction to Engineering Design, 2000
relationships between members, resting, reducing tension, and resolving interpersonal conflicts.

In many teams there is a "rush to performance" in which the stages of team development are side-stepped or truncated. It is important to note that these stages of team development provide team members with the skills required during team maintenance activities. It is also important that members acknowledge the need to take time away from the task to deal with team maintenance issues. Two separate leadership roles may develop within a team, one person who directs task activities, and another who is the team maintenance specialist.

**Team Maintenance**

At various points in a team's history, there may be a need for team maintenance requiring various levels of intervention. There are three levels of intervention:

- **Prevention**
  - set the teams up for success
- **Mild Intervention**
  - impersonal, group time
  - private, non-meeting time conversation
- **Strong Intervention**
  - private, non-meeting time confrontation
  - personal, group time

<table>
<thead>
<tr>
<th>Some functions necessary for <strong>task performance</strong> are:</th>
<th>Some functions necessary for <strong>team maintenance</strong> are:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Analyzing the problem or task structure</td>
<td>• Telling a joke</td>
</tr>
<tr>
<td>• Suggesting solutions</td>
<td>• Mediating a conflict between team members</td>
</tr>
<tr>
<td>• Asking for information</td>
<td>• Encouraging all to participate</td>
</tr>
<tr>
<td>• Summarizing</td>
<td>• Showing approval</td>
</tr>
<tr>
<td>• Delegating</td>
<td>• Suggesting a break from work</td>
</tr>
<tr>
<td>• Refocusing team on task</td>
<td>• Reminding members of norms for cooperation</td>
</tr>
<tr>
<td>• Pushing for a team decision</td>
<td>• Encouraging and modeling positive affect for team members</td>
</tr>
</tbody>
</table>

**Those Unwelcome Group Members**

Many faculty who hesitate to use groups are reluctant because not all groups work well or efficiently. Even faculty who are committed to group work regularly search for ways to make students aware of processes that affect group productivity. Linda D. Lerner describes her strategy for making students aware of counterproductive behaviors in group situations. She has written short profiles designed to elicit very immediate and clear reaction from students.

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Adapted from McNeill, Bellamy & Burrows, Introduction to Engineering Design, 2000
Lerner has her students discuss these profiles in small groups. She asks them to consider questions like the following: “Do you see yourself in any of these descriptions? What about other group members with whom you have worked? What problems do they present to the group? And, what are some strategies for dealing with these problems?” Suggestions that groups offer for dealing with these behaviors can get compiled into a handout shared with all groups subsequently. This is an especially good preventive strategy.

**Nola No-Can-Meet.** Here’s the group member who can’t make the meeting, no matter when the others schedule it. She’s willing to contribute, but she has a busy schedule and lots to do. The group should carry on without her, and she will do her part, as long as somebody lets her know.

**Do-It-All Dottie.** Dottie doesn’t much trust other people and their ability to do things the way she thinks they ought to be done or up to her standards, so she does it all herself. If somebody offers to help, she puts them at ease: it’s no problem, everything is under control, and they shouldn’t worry. The less others in the group are involved, the happier Dottie is.

**Seldom-Seen Steve.** Nobody has seen hide nor hair of Steve. He isn’t coming to class, he hasn’t tried to contact anybody else in the group, and nobody knows how to get in touch with him. The project is just about due; what should the other members do about Steve?

**Always-Right Artie.** Artie definitely contributes to the group. His ideas are good and he’s always ready to offer them. The problem: he doesn’t listen very well to the ideas of others and he tends to force his solutions on the group. He takes charge and pushes the others in the direction that he thinks best, even though some in the group may not agree.

**Quiet Quentin.** Quentin is so quiet that the others often forget he’s there, although he comes to the meetings quite well prepared. His ideas would really help the group, but unless they call on him, Quentin is unlikely to speak up.

### Ten Common Team Problems

<table>
<thead>
<tr>
<th>1. Floundering</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Overbearing</td>
</tr>
<tr>
<td>participants</td>
</tr>
<tr>
<td>3. Dominating</td>
</tr>
<tr>
<td>participants</td>
</tr>
<tr>
<td>4. Reluctant</td>
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Adapted from McNeill, Bellamy & Burrows, Introduction to Engineering Design, 2000
Six Types of Team Decisions

As a team works at a task, or at team maintenance functions, decisions must be made. The quality of team decision making, and the extent to which a decision is accepted and implemented by team members, is greatly affected by the decision making process. The six most common team decision making patterns are:

Unilateral/Authoritarian

One person makes the decision and imposes it upon the team. Often, there is very little input from team members, and acceptance/commitment is low.

Handclasp

Two team members make a decision and impose it upon the team. This pattern sometimes looks participatory, but it still involves little input from the other members, who will have a low level of commitment to the decision.

Minority

Several members make a decision and impose it upon the majority, who have been disenfranchised. In the hands of skilled practitioners, this may appear to be participatory decision making, but it is only a handclasp among a few members. Decision quality suffers because of the lack of input from the majority, and commitment to the decision is low among those outside the minority.

Majority

This is the popular, "democratic" default option. When a team is unable to resolve a conflict, there is almost always a suggestion to "take a vote, majority wins." Majority rule has the illusion of fairness, but it cuts off discussion, thereby reducing decision quality. Furthermore there is no commitment to the decision from the losing minority. The "loyal opposition" is often a myth. Super-majorities of 2/3 or 3/4 do not solve the problems associated with voting.

Unanimity

Solves the problem of commitment, but is very cumbersome because now everyone has a veto. The U. N. Security Council is a classic example.

Consensus

Consensus can be defined as an agreed upon decision by all team members that reflects full exploration of a decision issue and does not compromise any strong convictions or needs. Consensus is difficult to achieve, but results in the best decision quality and the highest level of commitment to the team decision. A consensus decision often becomes new policy.

The search for consensus decisions is an important facet of teams. Consensus decisions are NOT based on the 'lowest common denominator'. The alternatives are discussed and refined until a consensus is attained. That may mean that no one gets exactly what he or she wanted, but everyone is able to say, "I might take a different course of action if it were entirely up to me, but I commit my support to the plan on which we have all agreed." Achieving consensus involves compromise on the part of all
members, but it is each member’s responsibility to present her/his position as effectively as possible. Only then does consensus lead to high quality decisions.

The EXPLICIT development and use of ‘social norms’ (See Section H – Team Norms and Communication) for a team is the essential ingredient that makes consensus decisions differ from the ‘lowest common denominator’. ‘Forced’ or ‘one time’ compromises which are common to the political process are NOT desirable and do NOT represent consensus decisions. Every team member (and the team sponsor) should be willing for the outcome of the consensus decision process to represent the future policy of the organization.

There are degrees of commitment to consensus just as there are degrees of internalization for affective behavior.

**Low Level Commitment (Passive Acceptance)** You are willing to accept the decision but you do not feel very good about the decision. You work to implement the decision but your heart is not really in the implementation. You do not actively support the decision with your colleagues and team members (but you also do not work to sandbag the decision).

**Moderate Level Commitment** You feel good about the decision and work to implement it. Your general sense is much more positive than at the lower level but you may still not actively support the decision with colleague.

**High Level of Commitment (Active Acceptance)** You feel good about the decision, even when it is not the one you initially started out with. You know that the decision is the best for the team and you actively work to get it implemented and accepted by other colleagues and team members.

One other thought: CONSENSUS is not about voting. If you are voting then you are not talking about consensus; you are talking about UNANIMITY. Consensus is an attitude and feeling and is something reached or achieved, never voted on. It sometimes happens that a decision is reached that is apparently a consensus decision – all team members appear to agree (at least, none are objecting), the issue appears to have been fully explored (at least, no one is introducing any new information or concerns), and there seems to be no one seems to be compromising their convictions or needs (at least, no one is complaining). Unfortunately, when a team is fatigued, the focus of the team is wandering, or team maintenance is overdue, a state of Group-NO-Think sometimes occurs (see Section G – recurring Phases in Teams). A NO-Think decision can appear to be a consensus decision simply because team members are too fatigued to speak up regarding their concerns, or wish not to give offence, or believe that everyone else already agrees and they should just go along.

The following strategies can help overcome Group-NO-Think:

- De-emphasize status and power differences between members.
- Welcome outside viewpoints.
- Encourage disagreement or clash of opinions.
- Assign one member the task of being a devil’s advocate.

Adapted from McNeill, Bellamy & Burrows, Introduction to Engineering Design, 2000
Sources of Power in Teams

The ability of an individual to influence others within the context of a small, task-oriented team is determined by the power of that individual. There are five sources of social power; some are more effective than others.

Legitimate Power. This power results from the position the person holds. A designated or elected leader, a military commander, a manager, all have legitimate power, power that is inherent in the position. Generally, influence based on legitimate power will be accepted by team members; however, it is important that they accept the legitimacy of the power hierarchy.

Reward Power. This power is based on the ability of the person to control important sources of reward and reinforcement. Salary, bonuses, time off, access to resources, are all rewards that can be used to influence behavior. Reward power is usually well accepted by team members if the rewards are administered within clear contingencies and guidelines.

Coercive Power. This is the power to administer punishment for noncompliance. Fines, suspensions, undesirable assignments, verbal abuse, ridicule, are all examples of punishment or coercive power. The application of coercive power usually leads to compliance, but also generates resentment, negative emotionality, and dislike for the person who uses it.

Expert Power. This form of power is based on the knowledge, special skill, training, or experience of the person. When a person’s expertise is known to the team, influence within that area of expertise is well accepted. The user of expert power must find a balance between being haughty and being too humble. Bragging about your skills does not establish useful expert power; however, expert power can not be used if no one knows about it.

Referent Power. This is power based on the person’s attractiveness and qualities as a human being. It is called "Referent" because teams members use this person as a point of reference in developing their own personalities. Referent power depends upon developing positive relationships with team members. It is not simply mutual attraction,
but a relationship that includes a kind of mentoring and guidance that is possible because one person wants to learn from the other.

The use of power in teams is an ongoing process. The sources of power that are most useful to leaders and facilitators are expert power and referent power. They produce influence and change in a positive way, and minimize resistance and negativity. Reward and legitimate power can also be used effectively and in a positive way. Coercive power can quickly produce the desired behavior, but leads to other, undesirable consequences.

Adapted from McNeill, Bellamy & Burrows, Introduction to Engineering Design, 2000
Guidelines for Productive Meetings

Although individual team members perform assignments between team meetings, much of the team's work gets done when all team members are together during meetings. Many people dislike meetings; however, productive meetings enhance the chance of having a successful project. Just like other processes, meetings can be studied and constantly improved.

It is difficult to have productive meetings because few people know the rules and skills needed for such meetings. In fact, the goal of having constantly improved meetings may be as hard for the team to reach as the improvement goals set for the project. The best way to have productive meetings is to follow the guidelines given below from the start of the project when the members expect to learn new ways of working together.

1. Use agendas

   Each meeting must have an agenda, preferably one drafted at the previous meeting and developed in detail by one or two members prior to the actual meeting. It should be sent to participants in advance, if possible. (If an agenda has not been developed before a meeting, spend the first five or ten minutes writing one on a flipchart.)

   Agendas should include the following information:
   - The agenda topics (including, perhaps, a sentence or two that defines each item and why it is being discussed), presented in a logical order so that items that need to be decided first are addressed first.
   - The process to be used in coming to a decision (e.g., brainstorming, affinity process, multi-voting, etc.) and not simply state “discuss…”
   - The presenters (usually the person who originated each item or the person most responsible or knowledgeable about it).
   - A time guideline (the estimated time in minutes needed to discuss each item).
   - The item types (does each item requires discussion or decision, or is just an announcement).

   Agendas usually list the following activities:
   - Warm-ups: short (five to ten minute) activities used to free people's minds from the outside world and get them focused on the meeting.
   - A quick review of the agenda: start each meeting by going over the agenda, adding or deleting items, and modifying time estimates.
   - Breaks for long meetings: if the meeting lasts more than two hours, schedule at least one short break.
   - Meeting evaluation: this is perhaps the most important item on the agenda.

Although some of these elements may be unfamiliar, we encourage team leaders to introduce them at the first meeting and include them in all subsequent meetings. Team members will probably feel awkward at the first meeting anyway, and a new activity will not add much to that awkwardness. As members become more comfortable with the group, they will feel less self-conscious about these activities.
2. Have a facilitator

Each meeting should have a facilitator who is responsible for keeping the meeting focused and moving. Ordinarily, this role is appropriate for the team facilitator; however, your ECE 100 team may rotate the responsibility among its members.

Among the facilitator’s chief responsibilities are:

- encourage compliance with the Code of Cooperation and other team norms;
- keep the discussion focused on the topic and moving along;
- intervene if the discussion fragments into multiple conversations;
- tactfully prevent anyone from dominating or being overlooked;
- bring discussions to a close.

The facilitator should also notify the group when the time allotted for an agenda item has expired or is about to expire. The team then decides whether to continue discussion at the expense of other agenda items or postpone further discussion until another meeting.

3. Take minutes

At each meeting one team member should record key subjects and main points raised, decisions made (including who has agreed to do what and by when), and items that the team has agreed to raise again later in this meeting or at a future meeting. Team members can refer to the minutes to reconstruct discussions, remind themselves of decisions made or actions that need to be taken, or to see what happened at a meeting they missed. **Rotate this duty among the team members.**

4. Draft next agenda

At the end of the meeting, draft an agenda for the next meeting.

5. Evaluate the meeting

Always review and evaluate each meeting, even if other agenda items go overtime. The evaluation should include decisions on what will be done to improve the meeting next time and helpful feedback to the team leader. You may want to experiment with mid-meeting evaluations.

6. Adhere to the "100-mile rule"

Once a meeting begins, everyone is expected to give it their full attention. No one should be called from the meeting unless it is so important that the disruption would occur even if the meeting was 100 miles away from the workplace. The "100-mile rule" will need to be communicated--perhaps repeatedly--to those who keep taking phone messages or would interrupt the team's work for other reasons.

Adapted from McNeill, Bellamy & Burrows, Introduction to Engineering Design, 2000
Summary: The Structure of an Effective Meeting

Have a Detailed AGENDA
- Issued in advance of meeting
- Preassigned meeting roles
- Agenda topics
  1. A sentence or two defining the item including a clearly articulated objective
  2. In logical order of action
- Presenters, Resources Required, Assignments, etc.
- Time guideline

Use Quality Tools
- Appropriate tool for the task at hand
- Team trained in use of tool

Perform a Post-meeting evaluation (Process Check)

Comply with Team Norms
- Is everyone participating?
- Is no one dominating?
- Are team roles being followed?
- Is the team staying on task?
- Is the team reaching consensus?
- Are team members coming prepared to work?
- Are team members arriving on time?
- Do the team members understand the decision tools being used?

Continually Check the Team’s Effectiveness
- Are we doing the right things?
- Are we asking the right questions?
- Are we tackling the right problems?

Continually Check the Team’s Efficiency
- Are we taking unnecessary steps?
- Are we reinventing the wheel?
- Are we spinning our wheels?
- Are we looking for process related problems?
- Are we using appropriate quality tools?
- Are we straying from the agenda?

Adapted from McNeill, Bellamy & Burrows, Introduction to Engineering Design, 2000