Introduction to Teams

What is a team anyway?

Take a few moments and write down some examples of teams. While you are doing this, list features that would distinguish a team from an ordinary group of people.

Most people have encountered teams in various forms - whether as amateur or professional sports teams, the 'sales team' at a local car dealership, or the 'rapid response team' on a television medical drama. Do you agree that these are valid examples of "teams?" Did you come up with better ones?

As with the term "quality," a universal definition of "team" would be difficult to devise. Here is one that we believe is useful:

A team is a small number of people with complementary skills who are committed to a common purpose, performance goals, and approach for which they hold themselves mutually accountable.

On first reading, this sounds reasonable to most people. To better understand the implications, however, answer the following questions for yourself:

What is meant by "a small number"? Is two too few? Is nine (e.g., baseball) too many? Is there something important about how a team works that can't happen with a "large number" of people? Why should team members (e.g., a sports team) have complementary skills rather than identical skills? Does every member of a team really need to have common goals? Will significantly overlapping goals serve just as well? What is the difference between purpose and performance goals? If team members have complementary (i.e., different) skills, isn't that inconsistent with a "common approach?"

How is "mutual accountability" handled? Shouldn't there be one "boss" to set the team's goals, to define the rules of interaction, to evaluate the performance, and to give rewards or punishments?

The material in this and following sections of the Workbook are designed to introduce students to a set of 'tools' that will facilitate a team's 'common approach developing the 'common approach'

Making Teams Out of Groups

We have introduced the idea of a team and begun with a definition of what a team is. Through the rest of this section we will discuss why and how teams are important in both the academic and work environments, learn what to expect during the formation and working life of a team, and learn strategies for maximizing a team's success.


Adapted from McNeill, Bellamy & Burrows, Introduction to Engineering Design, 2000
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What kinds of teams are there?

This lists some of the places teams are found and gives a rationale for studying how to become a team (It doesn’t just ‘happen’!).

In Industry / Business:
- Management teams (Team Xerox, San Diego Zoo)
- Continuous Quality Improvement teams (CQI)
- Design/Build teams (Chrysler H-car, Boeing 777)

In Academia:
- Cooperative learning
  - Short-term groups
  - Long-term groups
  - Base groups
- Project-based courses
  - Single-discipline teams
  - Multi-disciplinary teams
- Design Courses
  - Technical multi-disciplinary teams
  - Cross-functional teams (marketing, engineering, law, etc.)
- Other
  - A Department’s Faculty

"The task for us at Boeing is to provide a massive change in thinking throughout the company - this is a cultural shift, and it isn't easy!"

Phil Condit, Executive Vice President Boeing Commercial Airplanes

You will be hired for your technical knowledge (or your ability to learn).
You will be promoted based on the quality of your communication skills.
You will be fired because of your lack of ‘people skills.’

-An ‘old saw’

Recent numbers being quoted indicate that as many as 90% of the employee dismissals in large corporations are because the dismissed employee lacks interpersonal skills - they have a hard time working with fellow employees.

How Teams Handle Tasks (and why students are wary of working in teams)

Most of the problems facing society today consist of divisible, optimizing, conjunctive tasks that will be solved only by teams of people, working together. [If these terms are unfamiliar to you, you should look them up in a dictionary before proceeding.] While it is true that there are disjunctive efforts (one person discovers a concept and all may share the insight) and additive efforts (e.g., brainstorming) that are a part of these major problems, full solutions will require the expertise of a number of people, all of whom possess different pieces of the solution initially (i.e., they are primarily conjunctive efforts).
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Classification of Tasks:

1. Can the task be **SUBDIVIDED**?
   - Is it Divisible, or
   - Unitary (Indivisible)?

2. What is the **GOAL** of the task?
   - Is it to Optimize quality, or
   - Maximize quantity?

3. How are **INDIVIDUAL EFFORTS** related to the team’s performance?
   - Is it Conjunctive - All team members must contribute to the task
   - Disjunctive - If one gets it, then all get it (eureka/non-eureka)
   - Additive - Rope tug, stuffing envelopes
   - Compensatory - One person’s extra effort makes up for another’s reduced effort
   - Discretionary - Team decides how individual efforts relate to team performance

If you have ever worked in a group before, try to recall if you have ever worked in any or all of the styles listed under #3. Most students have experienced ‘compensatory’ effort in group work. If you have ever worked in a group exhibiting ‘compensatory effort’ was it your reduced effort that someone else made up for, or was it someone else’s reduced effort that you made up for? How did this make you feel about working in this group? The experience of having to make up for someone who doesn’t ‘pull their weight’ in group work makes most students are hesitant about group activity - in fact they may strenuously object to being asked to work in groups again.

For successful team operation in academia, it is the responsibility of the instructors to structure the team’s objective so that it requires the effort of everyone on the team. In cooperative learning, this is called building group interdependence.

**Do Employers Want Team Skills in their Employees? How Do We Know?**

*What do you think industry expects of its new hires? Do you think that employers expect new hires to have team skills, or do you think they prefer to “train them up right’ internally? Write a list of expectations you would have for new hires if you were managing a team effort in a local technology firm.*

The United States Department of Labor surveyed employers to find out what they were looking for in their employees\(^2\). The study addressed their needs for all employees, not

just for engineers or technologists. The list below summarizes the results. You should note that the study was completed in 1988 and the emphasis on interpersonal skills and self evaluation has definitely increased.

**What employers want in their employees**:  
- Learning to Learn
- Listening and Oral Communication
- Competence in Reading, Writing, and Computation
- Adaptability: Creative Thinking and Problem Solving
- Personal Management: Self-Esteem, Goal Setting/Motivation and Personal/Career Development
- Group Effectiveness: Interpersonal Skills, Negotiation, and Teamwork
- Organizational Effectiveness and Leadership

Which of the items in the list most agree with your expectations? Which item most surprised you? Do you think that answers given today would be very different from those given in 1988? How do you think they would differ?

For a more specific example, a Georgia-based company that employs engineers uses the form below during employment interviews:

<table>
<thead>
<tr>
<th>POSITION ______________________________________________________</th>
<th>DATE: ______________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPLICANT ____________________________</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The Performance Skills to be evaluated</th>
<th>Evidence of Skill</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NOT Present</td>
</tr>
<tr>
<td>(1) RISK-TAKING/INNOVATION</td>
<td></td>
</tr>
<tr>
<td>(2) TEAM SKILLS</td>
<td></td>
</tr>
<tr>
<td>(3) LEADERSHIP</td>
<td></td>
</tr>
<tr>
<td>(4) PROBLEM-SOLVING SKILL</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

Finally, the table on the next page shows another example of what industry expects of its employees.
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<table>
<thead>
<tr>
<th>Rating</th>
<th>Description of performance at this level</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Has demonstrated superior technical competence in a wide range of skills; <em>has displayed outstanding leadership and team skills at every opportunity</em>; learns &amp; adapts to changing circumstances quickly; achieves more than expected through consistently hard work &amp; dedication; finds innovative solutions to problems; demonstrates a passion for exceeding the expectations of customers; communicates exceptionally well spontaneously with little or no preparation.</td>
</tr>
<tr>
<td>90</td>
<td>Has consistently applied acceptable technical competence within several skill areas; <em>has occasionally demonstrated strong leadership and team skills when conditions were favorable</em>; adapts to changing circumstances and learns new skills when necessary; gets acceptable results and puts in &quot;a good day's work for a good day's pay;&quot; occasionally develops innovative solutions to problems; shows a modest interest in meeting the needs of customers; communicates well with certain groups and on familiar topics.</td>
</tr>
<tr>
<td>80</td>
<td>Has marginal technical competence with certain skill areas; <em>displays little interest in assuming leadership; tends to cause dissension among team members; works best in isolation</em>; resists change; shows pattern of absence from work suggestive of lack of dependability; when faced with problems, seeks out others to solve them; demonstrates little concern for anticipating the needs of customers; awkward in communicating ideas to others.</td>
</tr>
</tbody>
</table>

**Factors to be considered in making overall rating:**
- Attitude
- Ability to Learn
- Results
- Work Ethic
- Technical Competence
- Innovation
- Leadership
- Teamwork
- Communication
- Customer Orientation

*Actual rating form used by an employer of engineers*
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What fraction of the overall rating made using these forms do you estimate would result directly or indirectly from team skills (or lack of team skills)? What fraction of the overall rating made using this form do you think would result directly or indirectly from technical skills (or lack of technical skills)?

Does this help convince you that employers of engineers expect their employees to have team skills on joining the company, and to use those team skills while employed with them? If not, what kind of evidence would you need to be convinced of this?

Effective Teaming

How would you recognize an effective team? Take a few moments and write down as many attributes of a effective team that you can think of.

Effective teaming involves a number of interrelated issues. Some of the most important issues are presented in the illustration below, demonstrating their interdependence. ALL of these are necessary for effective teaming; really superb achievement in only area will not make up for poor achievement in another. This ‘jigsaw’ diagram will be used to help motivate an important ‘jigsaw’ exercise on teams during the semester.
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Stages in team Development.

Can any group of people become a team? Can any group of willing people become a team? A good amount of research shows that teams don’t just spontaneously form, and that expecting people to become a team without training can lead to disaster! Most students who have had negative past experiences with “teamwork” have really experienced somewhat poorly-organized “groupwork”. The figure on the next page illustrates some of the common stages that a group will undergo on its way to becoming a team. It also illustrates that there can and likely will be downs before there are significant ups in the progress from group to team. The process starts with a Working Group – a group of people who have a range of levels at which they ordinarily perform. They begin with little or no teams skills. Follow along on the diagram and consider what happens as the team’s skills grow . . .

1. Working group: This is a group for which there is no significant incremental performance need or opportunity that would require it to become a team. The members interact primarily to share information, best practices, or perspectives and to make decisions to help each individual perform within his or her area of responsibility. Beyond that, there is no realistic or truly desired ‘small group’ common purpose, incremental performance goals, or joint work products that call for either a team approach or mutual accountability. Note the varying levels of individual performance represented on the diagram.

2. Pseudo-team: This is a group for which there could be a significant, incremental performance need or opportunity, but it has not focused on collective performance and is not really trying to achieve it. It has no interest in shaping a common purpose or set of performance goals, even though it may call itself a team. Pseudo-teams are the weakest of all groups in terms of performance impact. They almost always contribute less to company performance needs than working groups because their interactions detract from each members’ individual performance without delivering any joint benefit. In pseudo-teams, the sum of the whole is less than the potential of the individual parts. As Working Groups move toward becoming teams they all pass through this Pseudo-team stage and are less productive than when they were just a working group. The drop in productivity is caused by the team having to spend some (up to a significant amount of) effort at team building and not working directly on the project at hand. Learning how to make teams function takes time away from the task. If everyone in the Working group understands the issues of team dynamics (team building) the period of time spent as a Pseudo-team may be quite small but will not be zero.

3. Potential team: This is a group for which there is a significant, incremental performance need, and that really is trying to improve its performance impact. Typically, however, it requires more clarity about purpose, goals, or work-products and more discipline in hammering out a common working approach. It has not yet established collective accountability. Potential teams abound in organizations. As our performance curve illustrates, when a team approach makes sense, the performance impact can be high. We believe the steepest performance gain comes between a potential team and a

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Used with permission.

[Diagram showing Performance vs. Team Skills Development]

- **Performance**
  - **Working Group**
  - **Potential Team**
  - **Real Team**
  - **High-Performance Team**
- **Team Skills Development**

**Types of Teams**
- **Pseudo-Team**
- **Real Team**
- **Potential Team**
- **High-Performance Team**
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real team; but any movement up the slope is worth pursuing. Note that this increase in performance requires an increase in team skills!

4. Real team: This is a small number of people with complementary skills who are equally committed to a common purpose, goals, and working approach for which they hold themselves mutually accountable...

5. High-performance team: This is a group that meets all the conditions of real teams, and has members who are also deeply committed to one another’s personal growth and success. That commitment usually transcends the team. The high-performance team significantly outperforms all other like teams, and outperforms all reasonable expectations given its membership. It is a powerful possibility and an excellent model for all real and potential teams.

Other authors have looked at the team formation process and described it in slightly different terms. For example, one source gives this table:

<table>
<thead>
<tr>
<th>STAGE</th>
<th>MAJOR PROCESSES</th>
<th>CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Orientation <em>(forming)</em></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 <em>(storming)</em></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 <em>(norming)</em></td>
<td>Growth of cohesiveness and unity; establishment of roles, standards, and relationships</td>
<td>Agreement on procedures; reduction in role ambiguity; increased “we feeling”</td>
</tr>
<tr>
<td>4. Performance <em>(performing)</em></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 <em>(adjourning)</em></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>

Do you see any commonality with the figure on the previous page?

This section was intended to stimulate students to think about teams – what they are and are not, their importance to the modern work environment, and a bit about how they form. The two following sections will describe:

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4 Extracted from Group Dynamics, by Donelson Forsyth, adapted by Darwyn Linder, Dept. of Psychology, Arizona State University
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- team dynamics - how teams actually operate (as well as some suggestions for handling common team difficulties)

- communication – a very large topic that we will review briefly in order to help teams become aware of their approaches to communication, and to help teams approach some common communication difficulties.

A final word about teams: it takes time, effort and energy to make them work well. They almost never work perfectly, but anyone who has been a member of a true, ‘performing’ team can tell you – the rewards are more than worth the trouble!
WASHINGTON—Scientists are beginning to question the idea that nice guys are doomed to finish last.

For many years, biologists and anthropologists have regarded human beings as basically selfish creatures, driven by their genes to compete aggressively for property, sex and power.

In the 19th century, Charles Darwin described life as a tooth-and-claw struggle for "the survival of the fittest." Later, business tycoon John D. Rockefeller said his success was "merely the working-out of a law of nature and a law of God."

Even now, anthropologist Colin Trumbull dismisses morality as "a luxury that we find convenient and agreeable and that has become conventional when we can afford it."

It's a theory popular with macho politicians, businessmen, generals and stock-car racers.

But recent studies of chimpanzees and other higher animals show that unselfish, cooperative behavior goes way back in evolutionary history. Mother Nature apparently taught "family values" long before men and apes went their separate ways 6 million years ago.

This school of researchers contends that sharing, caring and peacemaking can contribute to the survival of a species, because creatures that get along with each other are more likely to reproduce and pass their genes on to future generations.

"There is always tension between taking care of oneself and taking care of others," said Sue Carter, a biologist at the University of Maryland. "But every mammal has to engage in some degree of positive social behavior. Previously, that has pretty much been ignored by science in favor of the study of aggression and antisocial behavior."

Frans de Waal, a zoologist who has studied chimpanzee behavior at the Yerkes primate Research Center in Atlanta for 20 years, disputes the traditional notion that people and other animals are hopelessly self-centered.

Instead, humans and higher mammals are biologically "endowed with a capacity for genuine love, sympathy and care," he writes in his new book, Good Natured: The Origins of Right and Wrong in Humans and Other Animals, published by Harvard University Press.

For example, de Waal says, whales and dolphins come to the rescue of injured companions. Elephants mourn their dead. Horses form a protective ring against attacking wolves. Beavers work cooperatively to dam a stream.

Chimpanzees, mankind's closest animal kin, show remarkable empathy - the ability to put oneself in another's shoes. Chimps share food, comfort the injured, protect the weak, celebrate births, grieve at deaths.
"Aiding others at a cost or risk to oneself is widespread in the animal world," de Waal said. "No doubt these capacities evolved because they served a purpose in the lives of our ancestors."

This new breed of biologists asserts that unselfishness has "survival value." Creatures that assist each other in their struggle for existence usually do better in finding food or warding off enemies than those that only look out for themselves. Consequently, they are more likely to reproduce successfully.

"Social individuals leave more progeny than do solitary individuals," de Waal said. Carter, de Waal and like-minded biologists trace the origin of unselfish conduct to the maternal instinct that developed in mammals since they appeared on Earth 65 million years.