

Chapter 3

Teamwork on Cases

While cases can be done on an individual student basis, often they are done by teams. The basic approach to solving the case remains the same as presented in Chapters 1 and 2:

- Reading
- Identifying and modeling the problem
- Creating or identifying alternatives
- Evaluating the alternatives
- Fitting the model to the real world

The difference is in the team's interactions as they accomplish the assignment.

Why Teams

Project analysis and justification in the real world is usually the result of a team effort. The different team members represent the project's different stakeholders and/or provide needed expertise on the project's different impacts on the organization—financial, production, people, market, and technological just to name a few. The quality of the final project and the extent of organizational agreement and commitment are often directly related to the variety of viewpoints considered in developing the project.

For example, if a new product is being considered, then marketing will need to estimate demand at various price levels and investigate the new product's impact on current products as well as how the new product fits into long-term marketing strategies.

If the project under consideration involves a cost reduction strategy such as automation, both human resources and production supervision are concerned. Production supervision needs to agree that the new staffing levels proposed will meet requirements and achieve projected savings. Human resources must develop a plan to reduce the number of departmental employees and ensure that all agreements (union contract and past-practice) are properly followed. If a new technology is involved, a group of technical experts may also need to be involved or developed.

If the product involves changes in the materials or in the way materials are supplied (for lean manufacturing or just-in-time production), material planning or purchasing needs to be involved. In automation projects, there are often material issues that need to be addressed. These issues may be as simple as which side of a box has the lap joint (which impacts how an automatic box erector functions) or as complicated as reduced tolerances on parts for automatic assembly.

Teams are a way of life in the practice of engineering. The ability to work productively in a team environment is a skill that all engineers are expected to develop. No single person will have all the skills and time to plan and implement a significant project. Almost all projects are done by teams of employees or even teams of employees, customers, and suppliers. In addition to the diverse skills required to develop, plan, and execute most projects, organizations have found that the decisions made by a team tend to be “better.” With multiple inputs from diverse points of view, more alternatives are examined, while more potential benefits and costs (problems) are identified and addressed. From diversity comes a more holistic approach and solution.

The Case Team

Teams are groups of people working on a common problem with a common goal. The case is the common problem, and the common goal is its successful analysis. For the cases in this text, the recommended team is fairly small—three or four students (although teams of two to six are viable).

While teams can be for a single case, for a series of cases, or for the entire course, it takes time for a team’s members to build a relationship with each other. If the team members already know each other, then the length of the “forming” period may be short. If some team members are unknown to each other, then we recommend spending some time just getting to know each other. If the team is to be successful, it must develop three key characteristics:

- A results orientation

- A focus on the efficient achievement of the desired result
- Trust and mutual support

Although listed last, trust and mutual support are of paramount importance in successful teams. The team members must be able to trust each other to complete assignments in a timely manner—at the time agreed to by the team and of a quality that the team can accept. The team must be able to trust its members to put forth their best individual efforts and to be working to complete the team assignment in a spirit of cooperation and fairness.

A results orientation is key for a successful team. The team is created to accomplish some specific goal. The achievement of this goal is the measure of team success. In practice and in the classroom, the team is successful only if it accomplishes its assignment. This is often emphasized with the aphorism, “there is no I in team.” The team succeeds or fails as a team, and if it fails then no one succeeds.

This is the external measure of success. In solving cases, the desired result is fairly well defined although there is typically an open-ended aspect to cases. The required output or deliverable is typically a written report of “x” pages and an oral presentation of “y” minutes. What is needed to prepare these deliverables is the team’s task. Developing and executing a plan to accomplish this task is the team’s assignment.

If the external measure of success is achieved then (and only then) the internal measures of success come into consideration. These include: (a) Was the result achieved in an efficient manner? (b) Did the team stay on task while working on the assignment? (c) Did all the members contribute equitably to the deliverable?

To achieve both internal and external success, the team must organize itself to succeed. Each team needs to assign its members to the four roles needed for success. While each member may be assigned to multiple roles in any given team, each member’s role needs to be clearly defined, and every team member must know who wears what hat on each case. If the team is going to exist for multiple cases, then the roles should rotate with each new case. The four fundamental roles in the team are:

- Team leader—This person coordinates the team, acts as the facilitator, and keeps the team on mission. Typically in the real world, this role is assigned or emerges as the team’s activities progress. In this instance, selecting its leader is one of the team’s first activities. It is important to note that this role is one of service to the team—not of one of authority. The team leader must facilitate the accomplishment of the team’s assignment rather than simply direct the work of other members.

- Team scribe—This person records the team's plan of action, distributes it to the team members, and ensures that there is an agenda prepared for all team meetings.
- Team member—This includes everyone on the team, and the team members are tasked with accomplishing the task at hand.
- Team editor—This person takes the inputs from the team members (either as data or different sections written by different team members) and creates the final deliverable as a seamless artifact (report or presentation) for submittal.

Each member of the team may wear more than one hat. The team leader is also a team member. The team leader may also be the team scribe, although it is strongly suggested that these roles not be combined.

Two traits expected of each team member, regardless of role, are the ability to listen and the ability to contribute. Each team member must realize that the project is a team effort. To this end, each member must listen to the points offered by the other team members. Each member must also contribute their thoughts on the problem definition, the solution process (appropriate model), the possible alternatives, and the plan to accomplish the desired result. By balancing the trait of actively listening to the thoughts of others and the trait of presenting thoughts in a clear non-judgmental manner, each member can contribute to accomplishing the team's assignment effectively.

Team Activities

Each team is unique. Each case is different. This means that there is not one way for a team to interact or one way to structure a team's interaction. However, there are some general guidelines that will make the team activities less stressful and time consuming.

Team members must be prepared for each team activity. Whether the team meets face to face, in some virtual meeting format (conference calls, emails, bulletin board), or in a combination of formats, the key is to be prepared. To this end prior to team meetings there should be a formal agenda prepared and distributed beforehand. The team's first meeting should assign roles, set an agenda for the meeting, and agree to an approach to addressing the case. To be effective at this first meeting each member should have read the case multiple times.

Each meeting should result in a list of action items. Each action item should include the following detail:

- Who—the member (or members) responsible for this action item

- What—a description of what the action item is—preferably a tangible item or deliverable (an idea if articulated is a tangible output)
- By when—the latest date (and time on that date) that the promised “what” will be made available to the team by the “who” doing it

Each and every action item should have these three parts. Each action item must be agreed to by the team member to whom it is assigned. This buy-in is central to performance. It then becomes critical that the action be completed in a timely manner and to the level of quality expected—the best effort of the team member. Each team member must understand the significance of their action items to the project’s successful completion. Each team member needs to be able to trust the others to meet the time committed to and to deliver a quality product as each item impacts the project’s successful completion.

The product produced by the team should be homogeneous. While different parts can be produced by the individual team members, these parts must be blended into a single consistent report. The pronoun “we” not “I” should be used throughout. The style for the entire document should be consistent. The final product should then be read by each team member for correctness. It should be noted that everyone’s style is a little different and the team members must keep this in mind when reading the final document—errors of fact and grammar must be corrected. However, avoid tinkering with the words just to achieve your version of perfection.

If the team needs to make an oral presentation, there are a few simple points to remember:

- Follow the same logical flow of a single speaker
- Let each speaker speak once during the presentation (do not have the same speaker bounce up and down in different portions of the presentation)
- Have each speaker present their contribution to the case analysis

By having each team member speak on their contribution, each team member is speaking on their area of expertise and it shows. By having each member speak once, each member’s contribution to the whole is highlighted. By following the same flow as an individual speaker would in presenting the case, the team is presented as a unified entity, which reflects well on the members of the team.

Team Conflicts

It seems that conflict is inevitable in teams. Conflict can usually be traced back to one of several causes. The three most common causes of conflict in case teams are (1) failure to

perform—not completing assignments on time, (2) failure to listen—insisting that one’s way is the only way, and (3) a feeling that working in teams is not needed.

Each cause of conflict has two elements—the individual and team. The team must realize that each member is different and as such has different expectations and needs. The team member must realize that they must find a way to function in a team environment—most of their working career as an engineer will be spent working in teams, and their worth and often their salary will to a large extent be based on this ability.

When conflicts arise, and they will arise, the team should try to resolve the conflict internally. If this fails, the team (as a team) needs to request outside assistance from the instructor.

The abilities to compromise (not on principles but on opinions or approaches), to find win-win solutions, to persuade others to follow our lead, and to allow others to take the lead when appropriate are skills that will pay big dividends in your career. Conversely, the ability to know when help is needed is an important skill also. Remember—the *measure* of success is a deliverable that meets the need of the project (case).

Conclusion

In the workplace, teams are a common occurrence. The bigger and more important the project is; the higher the likelihood that a team will be used to do the project. Each team is unique, but successful teams are focused on results, and the members of a successful team have built a high degree of trust by meeting commitments, listening to the ideas of others, contributing their best ideas and efforts, and concentrating on the goal—a good product (be it a paper, a presentation, or leading a classroom discussion).