

Collaborating with Others

Chapter Overview

Today's engineering problems are complex, involving both technical and human dimensions, and are beyond the capacities of any one individual. As such, the 21st-century engineer is expected to function as a part of a team, making collaboration skills vital to the engineer's success.

A team is a group of individuals working collectively to achieve a certain outcome. Successful teams share a number of characteristics regardless of their size, structure, and purpose. In a successful team, team members share a common goal and are held accountable for their work. Team members share resources willingly and easily, and act in an interdependent and co-ordinated fashion. A comfortable atmosphere and established procedures can contribute to the success of a team. In global virtual teams, additional factors such as telecommunication and unconventional trust building must be considered.

Like any social group, teams go through a developmental process. One enduring model for understanding this process identifies five stages: forming, storming, norming, performing, and adjourning. In the forming stage, team members become acquainted with each other and begin to learn to orient themselves personally. In the storming stage, conflicts and oppositions arise through the clash of differing perspectives. Through this natural and healthy phase of conflict, and after working through strong emotions, the team begins to coalesce into a cohesive group in the norming stage. Team members begin to care about the harmony and well-being of group. As this process of cohesion continues, the team enters the performing stage. In this stage, the team functions optimally; the energy directed previously to the interpersonal domain is now focused on achieving the team's purpose. Finally, the adjourning stage marks the end of a team's existence, and team members part ways. According to this model, a successful team will progress through all five of the stages, and dysfunction arises when a team gets stuck in a stage.

In many ways, the strength of a team lies in its diversity. A diverse team is able to access a broad range of knowledge, expertise, resources, and perspectives, enabling the team to tackle much more complex problems. A team can be diverse in terms of culture, ethnicity, gender, class, age, education, knowledge, and skills. We can improve the experience of a diverse team by creating trust through commonalities, and by being curious and accepting to the perspectives that are different of our own. It is also helpful for us to become aware of the personal and psychological leanings of others and ourselves. Two popular instrumentations for developing this awareness is the Myers-Briggs Type Indication (MBTI) and the “Big Five” personality inventory. It is important to recognize that the value of these instrumentations lies not in the pigeon-holing of individuals into “personality types”; rather, they help us strengthen interpersonal relations and team effectiveness through becoming aware of personality traits.

An important aspect of teamwork is the dynamics of the team. In addition to their project specific tasks, an individual can also enact roles that either contributes to or detracts from the team’s overall effectiveness. According to one theory, there are eight pairs of positive/negative roles. For example, an individual can take on the “co-ordinator” role to ensure the efficient operation of the team, or to exert excessive control of others as a “dominator.” Any team member can take on one or multiple roles, and the need for roles may shift as a team develops. For example, the “harmonizer” role may not be useful during the forming stage, but becomes critical during the storming stage. Conflicts arise naturally through team dynamics, and can be harmful but also beneficial. There is no one right approach to conflict resolution and team dynamics; armed with the awareness built in the chapter and with experience, you will build your own optimal approach.

Learning Objectives

In this chapter, you will:

- understand the necessity and benefit of teamwork;
- learn about characteristics of successful teams;
- learn about the stages of team development;
- explore different aspects of team dynamics, including team roles and conflict resolution strategies; and
- understand the benefits and challenges of diversity in teams, and learn about personality types using MBTI and Big Five theories.