



Team Science Challenges

Derived in part from factors identified that hinder attaining the benefits of team science (Cooke et al., 2015).

1. **Diverse Backgrounds and Experience:** Different disciplines, research institutions, or nations have to come together. Inclusion will lead to scientific breakthroughs not achieved by a more homogenous group, but the diversity impacts group process and decision making as well as conflict management and communication.
2. **Communicating Across Disciplines:** Knowledge needs to be integrated across a broad set of disciplinary perspectives. Researchers from different disciplines will have different cultures, languages, and research practices and may struggle with a loss of disciplinary identity when working in an interdisciplinary setting.
3. **Large Group Size:** Collaborative projects are highly labor intensive, prone to conflict, and can require substantial preparation and trust. The division of labor can become more inequitable as the size of the group increases, and time must be spent troubleshooting task interdependence.
4. **Coordinating Between Multiple Teams:** In an interdisciplinary project, multiple science teams are often engaged, and each may have their own distinct goals. Cohesion within the smaller team that allows it to be productive may then discourage the teams from sharing information with other teams.
5. **Competing Commitments to Other Teams:** There are likely to be changes in project goals and needs over time as well as changes to the career stage, training needs, and research goals of individual team members. Teams and team members must navigate juggling conflicting time demands.
6. **Physical and Temporal Separation:** In this case, teams may have a limited number of overlapping work hours and differences in incentive structures in their work settings.
7. **Coordinating Shared Tasks:** Researchers are dependent on each other to accomplish a shared task. The coordination and communication efforts required to design and conduct interdependent tasks that draw on and integrate unique talents of individual members effectively is challenging. Despite these challenges, the benefits associated with effective collaboration make team science a worthwhile and necessary endeavor.
8. **Member Well-Being:** The well-being of a team is affected by the well-being of the team members. If individual team members are not thriving or do not feel like they can thrive within the team it affects the health and productivity of the overall team as well.
9. **Changing Membership Over Time:** Team members may join or leave the project at various times. This can disrupt the community and working relationships established within the team which may affect productivity. If too many people change over a short period of time it can inhibit completion of the project.
10. **Individual Motivations:** Individual members should seek to do excellent work that is recognized. However, if the motivating factor becomes only personal recognition, it can become toxic for the team as a whole. Motivations can be different for different people and can compete with each other. Common motivations include things like building a strong resume, learning skills, or project success.