Managing Collaboration in Team Science:

Practical Steps
Why I’m here

Why are you here

Team Science become the model for breakthrough research

• Publications – more multi-author and more disciplines

• NAS
Agenda

SESSION 2:

PRACTICAL STEPS TO MANAGE COLLABORATION

Systems and Structures of Collaboration
Forming and Managing Teams
Practical Project Management
Systems & Structures of Collaboration
Evolution of Collaboration

Explain axes
Build quadrants from bottom right, up, left, down
Devolution of Collaboration

Explain axes
Build quadrants from bottom right, up, left, down
Required Systems & Structures

Collaboration

Homogeneity

Heterogeneity

Competition

Explain axes
Build quadrants from bottom right, up, left, down
Forming and Managing Teams
Meredith Belbin, Management
1981

We usually focus on having complementary knowledge in our team – but this doesn’t guarantee that the work will get done. Experiments showed that intellect is less important than behavior.

Each role has positive and negative behaviors

https://en.wikipedia.org/wiki/Team_Role_Inventories

Plant: free idea person – good for innovation, has to be limited after a course is set
Resource Investigator: outward focused, will bring in good ideas, but loses momentum as project advances
Shaper: Task-focused, driven, but can become aggressive
Team Worker: diplomatic, helps resolve conflict, but may not be able to take decisive action

And of course, the Coordinator – usually the team leader
Brokers of interactional experts
Leadership roles in team science:

- **Cognitive**
  Manage the creation of shared meaning

- **Structural**
  Coordinate information exchange

- **Processual**
  Enforce ground rules, manage conflict

- **Transdisciplinary** – Focus more on building a new culture
- **Multidisciplinary** – Focus more on advisory, conflict management
- Act as both leader and catalyst for the collaborators
Tuckman
Psychologist
(1965) ‘Developmental sequence in small groups’, Psychological Bulletin
Bruce Tuckman, 1963

Eventually added a fifth stage – adjourning, sometimes called “mourning”
- Let down – what do we do now?
Bruce Tuckman, 1963

This is where personality type meets role

Tyrant – Belbin’s Shaper might become a tyrant if his/her personality

Peacemaker – Belbin’s Teamworker is the classic case, but his Implementer might also fill this role because he/she is motivated by loyalty to the team and often takes on jobs that others eschew
Most common: Play Date
Dean or VP of Research: Shotgun Marriage
Yenta the Matchmaker
Computer Dating
Practical Project Management
Budget
Oversight
Training
Incentives
Infrastructure
Evaluation
Top Down:

Budget by function, not by person

Common problem in the play date:
Your collaborators say I need this or I need that, and you promise them that – but there’s not enough money left for the collaborative infrastructure

Evaluation will be more expensive than a research project, team building and acculturation are costly – if you don’t have these things, you won’t win.

Flexible:

Build in a reallocation process

It’s unreasonable to think that what you thought you’d do when you wrote the proposal is what you should be doing 3 years out.
Start with the structures
   Key Personnel Roles and Responsibilities
       Strategic (large and incharge) vs tactical (budgeting, etc)
   Committees

Systems
   Annual Planning Process

Key Graphics
   Org charts, tables, milestones, etc
Matrix Management Org Chart

Figure 2-4. Strong Matrix Organization

(Grey boxes represent staff engaged in project activities)
Mention NASA problem
Mention NASA problem
Budget
Oversight
Training
Incentives
Infrastructure
Evaluation

Compliance Team Learning Laddering
Systems
Annual Planning Process
Functions of Committees
Timing of activities
dean’s letter of support acknowledging that this will be considered (NSF ADVANCE)
### Comparison of notable software

#### General information

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Budget
Oversight
Training
Incentives
Infrastructure
Evaluation

Project Management
Data Management
Research Cores
Telescience

Budget
Oversight
Training
Incentives
Infra-structure
Evaluation
Wrap up