RIT | AWARE-AI NSF Research Traineeship Program

Collaborative Research Workshop

Teamwork and Leadership

October 24, 2022
2:30-4:30 PM

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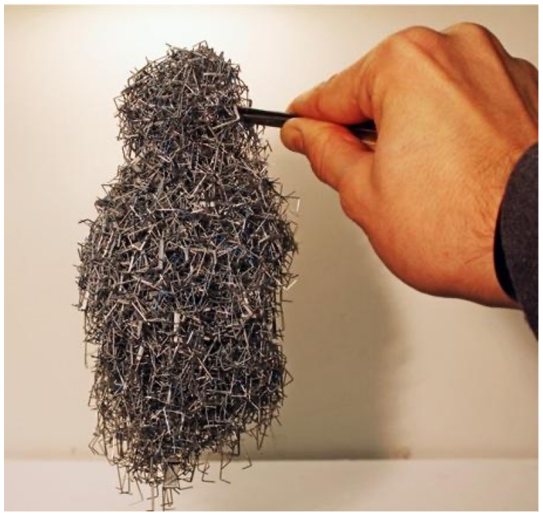
Join us to learn principles of inclusive collaborative research!

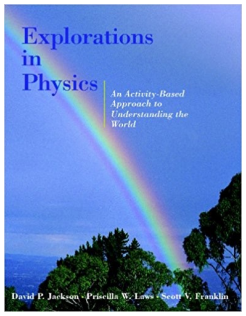
Workshop registration and questions: Please email awareainrt@rit.edu

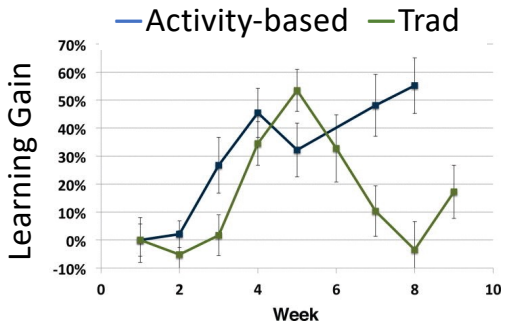
Agenda

- **2:30** Introduction
- **2:35** Collaboration and leadership
- **2:40** What Google Learned From Its Quest to Build the Perfect Team
- **3:00** Collaboration and authorship
  - Authorship models
  - Case study/role playing
- **3:35** Break
- **3:45** Leadership and *consensus decision making*
  - Consensus-fostering/inhibiting behaviors
  - Lost-at-Sea leadership activity
- **4:30** Workshop ends

Scott Franklin (physics)







TEXAS
The University of Texas at Austin

1998

2000

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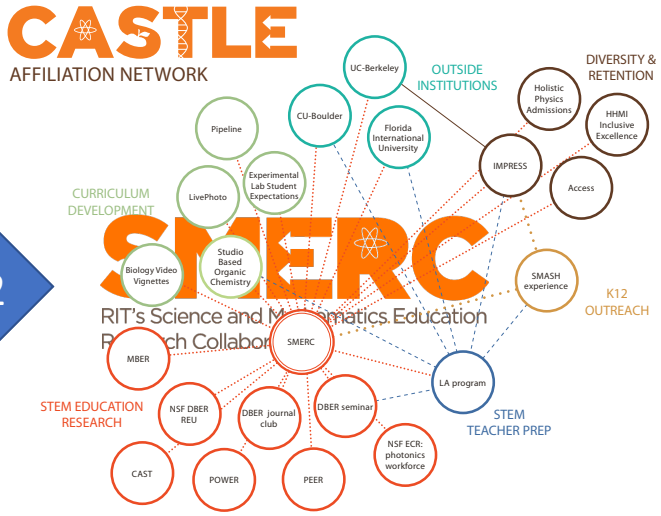

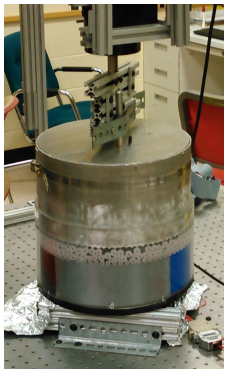

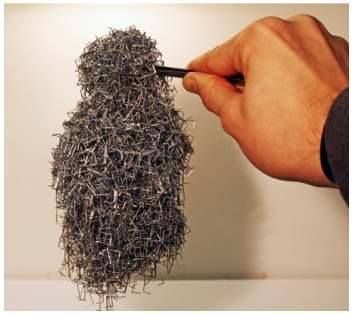

The need for collaboration

- Research is fundamentally collaborative (Wenger, 1998): People do research together, in communities
- NSF funding is increasingly collaborative; single-Investigator grants increasingly rare
- Working together is *more fun* (as well as more productive)

What is productive collaboration?

- **C*ollaborative,* not *competitive***: the goal is not to say the "correct" thing. Work together to deepen everyone's understanding.

- ***Be a good listener*:** Listen carefully, open-mindedly and *actively*.

- ***Broaden participation*:** Don't dominate discussion. **Do whatever you can to draw your partners in to the conversation.**

- ***Tolerate silence*:** People need time to think and reflect. Silence can be productive; **don't rush to fill silence with talk.**

- ***Own your words*: *You are responsible for how your words are heard***. If someone reacts negatively, try to understand where they are coming from and why your words caused that reaction.

Active listening for leaders

- Prepare to listen
- Listen holistically
- Convey attention
- Talk sparingly
- Be patient
- Empathize.
- Ask questions appropriately

Constructive and Destructive Leadership Behaviors

Constructive Group Behaviors

- Cooperating, Clarifying, Inspiring, Harmonizing, Risk Taking, Process Checking

Destructive Group Behaviors

- Dominating, Rushing, Withdrawing, Discounting, Digressing, Blocking

Signs of good leadership

1. Everyone participates/speaks to whatever extent they are comfortable
2. Everyone has clear idea of what purpose is, group and individual expectations
3. Everyone feels they have made a personal impact on the group's progress: they feel they are head and respected

What Google Learned From Its Quest to Build the Perfect Team

- Different backgrounds, willingness to engage in off-task discussion
- “We all felt like we could say anything to each other”
- what distinguishes ‘‘good’’ teams from dysfunctional groups was how teammates treat one another. On good teams:
  - members speak in roughly the same proportion
  - high ‘‘social sensitivity’’ —intuiting how others feel based on tone of voice, expressions and other nonverbal cues. People on the more successful teams seem to know when someone is feeling upset or left out.

Psychological safety: ‘‘a sense of confidence that the team will not embarrass, reject or punish someone for speaking up’’

Small group (4) discussion

Talk to your neighbors about a working group you were recently in. Did it display high “social sensitivity” and create psychological safety?

Authorship: Contributor models

- Everyone who worked in the lab
- Everyone who worked on either the project or the paper
- Everyone who made a substantial intellectual contribution to the project or the paper
- Everyone who contributed writing / figures to the paper
- Everyone who made a substantial intellectual contribution to the paper
- Only senior people

Kinds of authors

- First author
- Last author
- Corresponding author
- Principle author

- Middle author(s)

- (not authors) Acknowledgements

Author order models

- Simple models
  - Strict Alphabetical
  - Contribution (first = most, last = least)
  - Seniority (first = most, last = least)
  - Reverse seniority (first = least, last = most)
- Hybrid models
  - Contribution + alpha (first = most contributed, remainder: alpha)
  - Contribution + reverse senior (most authors by contribution, last is PI)
  - Senior + contribution (first is PI, rest are by contribution)
  - Contribution + alpha + reverse senior (first = most contributed, middle by alpha, last is PI)
- ad hoc
  - Discuss whatever matters most to the people on the paper

Norms

- There is no dominant order model
- There is no dominant contributor model
- *Usually* the PI is the corresponding author
- All authors must sign off on a paper before submission and again before publication

Case study

Lea and Arthur are in the same working group, which is preparing a paper for publication. Lea is the more senior member of the group, while Arthur joined it later. Lea says that Arthur mostly just analyzed data and she organized it for the paper; Arthur says that Lea's writing is terrible and he had to rewrite everything she wrote. They both want to be first authors.

Role play this scenario. (Lea + Arthur + observer). Be prepared to share observations with the group.

Break

Consensus decision-making

Everyone *consents* to a position or decision. All do not have to completely agree with the decision but can live with and support the proposed course of action. *Nobody feels ignored or overlooked.*

Voting/majority-rule is ***not*** consensus decision making!

Consensus decision making takes time and patience, but the benefit is that everyone feels heard and invested in the outcome.

Consensus-driving behaviors

1. *Listen*
2. *Define* issue or problem
3. *Outline* options
4. ***Check to test agreement***
5. Work to create consensus

Consenus-inhibiting behaviors

- Showing up with a solution
- Arguing debating or staking out turf
- Block out what others say
- Stop listening to those who see it differently
- Stop encouraging participation.

Strategies for achieving consensus decisions

1. Turn-taking, time-keeping
   - Each person gets a chance to speak
   - Forces people to reflect and think about what is being said instead of just reacting
2. Structured conversations (gets ideas out in a non-challenging environment)
   1. List issues, questions, resources, methods but don't compare, answer or problem solve
   2. List characteristics that will determine better/worse ideas, questions, methods, etc. but don't apply them to specific idea/question/method
   3. Only after 1-3, explicitly enter a comparative discussion
3. Roles: Facilitator (*not* leader), Scribe, Agenda/timer, Ideator
   - Roles are not confining. (e.g. scribes can ideate)
4. Keep track of conversation *frame* (Debating? Understanding? Learning? Finding common ground? Instructing?)

Lost at Sea exercise

You have chartered a yacht with three friends, for the holiday trip of a lifetime across the Atlantic Ocean. Because none of you have any previous sailing experience, you have hired an experienced skipper and two-person crew. Unfortunately in mid Atlantic a fierce fire breaks out in the ships galley and the skipper and crew have been lost whilst trying to fight the blaze. Much of the yacht is destroyed and is slowly sinking. Your location is unclear because vital navigational and radio equipment have been damaged in the fire. Your best estimate is that you are many hundreds of miles from the nearest landfall. You and your friends have managed to save 15 items, undamaged and intact after the fire. In addition, you have salvaged a four man rubber life craft and a box of matches. Your task is to **rank the 15 items in terms of their importance** for you, as you wait to be rescued. Place the number 1 by the most important item, the number 2 by the second most important and so forth until you have ranked all 15 items.

Item	Coast Guard	Reasoning
Sextant	15	Useless w/o tables & chronometer.
Mirror	1	Most powerful tool for communicating.
Netting	14	No mosquitos in ocean.
25L H20	3	Vital. 25L is sufficient for several days.
Rations	4	Basic food.
Maps	13	Worthless w/o navigation.
Cushion	9	Useful as life preserver if fall overboard.
10L oil/gas	2	2nd most critical for signaling.
Radio	12	Out of range of most stations.
Sheeting	5	Can collect water and provide shelter.
Shark repellent	10	Sharks unlikely, but possible.
Rum	11	Could be antiseptic, but otherwise useless.
Rope	8	Could tie people/together if weather bad.
Chocolate	6	Basic food.
Fishing kit	7	Slightly lower than chocolate bc no guarantee of success.

Conclusions

- Leadership, consensus-decision making and collaboration are skills to be practiced and developed
- Social sensitivity and psychological safety are key to productive collaborations
  - Leadership is fostering psychological safety and developing social sensitivity
- Group dynamics in STEM research labs are no different from other contexts