

Arkansas EPSCoR DART Workshop Report

This report summarizes the workshop conducted by Anne Heberger Marino of Lean-to Collaborations, LLC for the Arkansas EPSCoR DART project Annual Conference on September 14, 2021. The report also summarizes the content developed by workshop participants during the conference.

Workshop Content

Anne Heberger Marino of Lean-to Collaborations, LLC designed and facilitated a workshop on the science of team science and collaboration skills for approximately 40 conference participants via Zoom. (It is difficult to gauge attendance accurately as participation fluctuated over the course of the workshop). The workshop introduced several key aspects interdisciplinary collaboration and highlighted robust findings from the research literature on teams. Increased awareness of the research from the science of team science may assist the project in identifying opportunities for more in-depth training or targeted workshops in the future.

Topics covered include:

- Recognition of the changing ways science is conducted and the unique context of the DART project.
- References to readily accessible team science and collaboration reports available as PDFs from the National Academies of Sciences, Engineering and Medicine
- Acknowledgement of the institutional barriers to interdisciplinary and cross-sector research
- Overview of the Six Team Conditions Framework developed by Harvard researchers J. Richard Hackman and Ruth Wageman as way to think about, discuss, and monitor team effectiveness.
- Assertion of leadership as a capacity that exists vertically and horizontally within teams and organizations rather than as a role held only by a “heroic leader”.
- Presentation of Sam Kaner’s model of participatory decision-making which closely resembles the process interdisciplinary research teams experience throughout their work together.
- Exploration of comprehensive collaboration plans to create shared understanding for how teams will work together on the project. Provided the Alaska EPSCoR Fire & Ice collaboration agreement as an example.

- Introduction to the importance of psychological safety and trust in teams and how a person might experience each.
- Listening as a key aspect of effective communication and presentation of a framework to help participants develop their ability to listen well to others.
- Zoom polls with Toolbox Dialogue Initiative, Collaborative Readiness, and Transdisciplinary Orientation Questions were interspersed throughout the workshop content to encourage engagement.

Pre-Conference Obstacle Course

The number of conference participants made it impossible to give each person time to introduce themselves. As an alternative, participants were asked to complete an online “Introduction Obstacle Course”. This activity also served as a way for participants to become familiar with the online collaboration tool, MURAL. Two “obstacle courses” were created: one for faculty and stakeholder partners and another for students. Thirty-three (33) faculty and stakeholders completed the obstacle course exercise as did 22 students.

The items included in the obstacle course provided a way for participants to learn about each other’s professional experiences and personal interests.

The obstacle course asked participants to:

- Identify themselves by name by typing onto a sticky note
- Identify their title and research theme using a specific-colored sticky note. Students had the option to select “Don’t know/Not sure”. The faculty and stakeholder board included a separate-colored sticky note for stakeholders as they are not connected to a research theme.
- Write their field or disciplines
- Add an icon or image for what their work might look like to others.
- Place a star on a map of Arkansas to identify where they live/work. Those from outside Arkansas were asked to add an icon for their state.
- Find an image or icon corresponding to an activity they enjoy in their free time.
- Provide a sentence about what they wanted to learn or accomplish during the conference.



Interactive Components

Day 1 [Worksheet](#) Identifying the Project's Purpose and Jargon Words

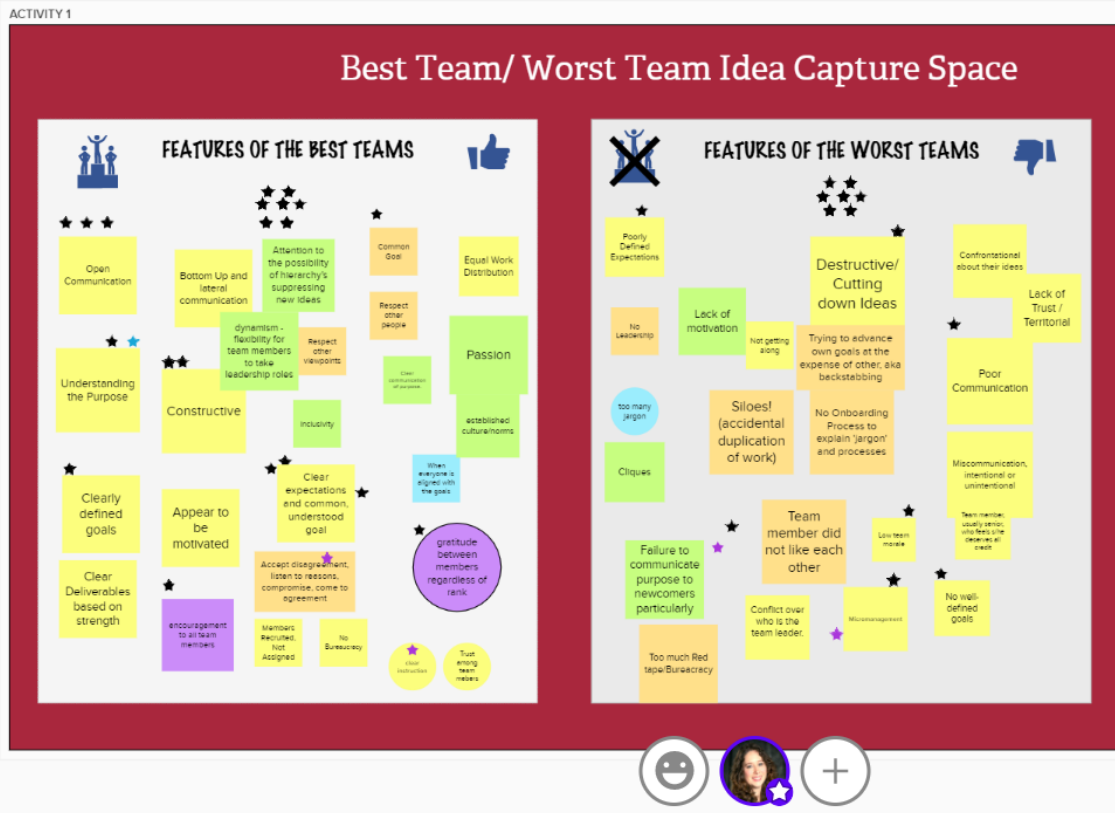
- Having a clear and compelling purpose that is understood by everyone involved in the team is a critical component of effective teamwork.
- Jargon and words that may have different meanings for some groups than others pose a challenge in interdisciplinary research teams. This exercise asked participants to listen in the Day 1 talks for their own discipline's jargon, or any term they didn't understand clearly.

Best Team / Worst Team Exercise

While there is extensive research on what constitutes an effective team, most people have a direct experience with teams that have worked well and not so well. This exercise taps into that experience and opens conversations among participants about what good teamwork looks and feels like. In most circumstances, the lists participants generate on their own align well with what research tells us.

- First, participants reflected on previous experiences in teams and were asked to privately write down their best and worst team experiences.
- Later, they shared their story with another participant and looked for common features and themes.
- In a third round, the stories were shared in a small group setting. Again, groups identified common features and themes.
- These features of best and worst teams were posted in a shared MURAL board. Participants used a star icon to "upvote" ideas that they agreed with, or thought were important.

Arkansas DART Conference Collaborative Workspace

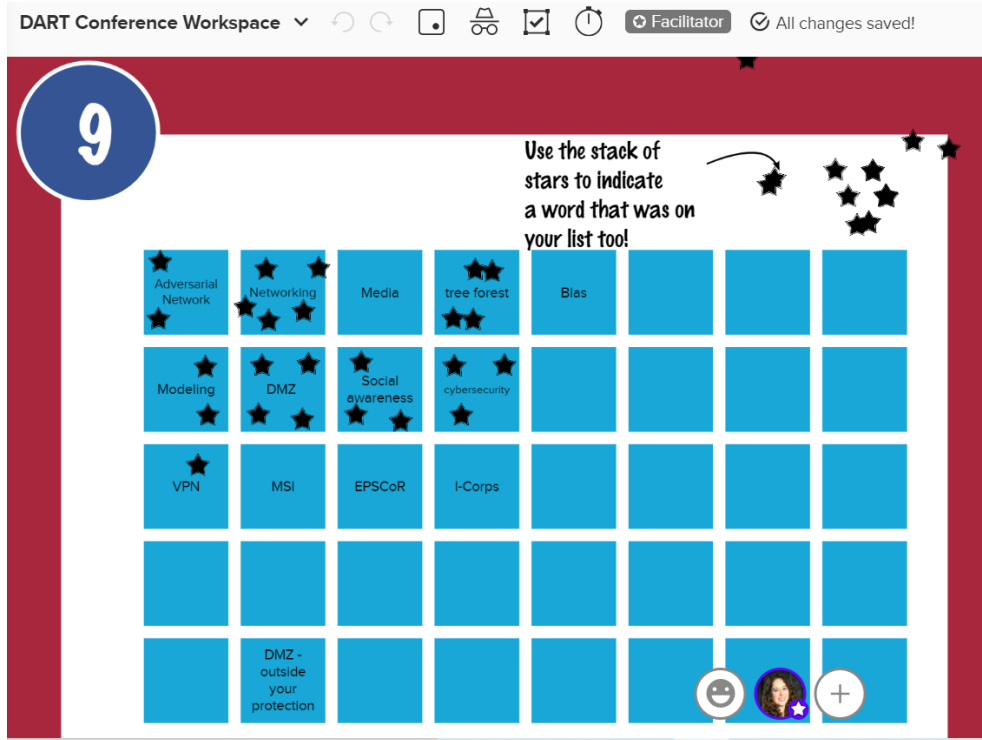


This exercise prompted a discussion about how hierarchy or bureaucratic structures within a project can stifle some ideas and preference others. Leadership supported working on how to address this dynamic so that more ideas from more people are available to the project.

“Detaching” an idea from the person who proposed it is a tested facilitation strategy. Placing ideas on a whiteboard, Jamboard, or other collaborative space moves ideas from the abstract to a tangible space. From there, a group can sort, group, build upon, and interact with the ideas based on their merits rather than who suggested them.

Jargon Audit Breakout Groups

Participants were assigned to 10 groups to share the jargon words they identified and engage in a conversation about one or two words identified by their group. A screen capture from one workspace is included below.



Groups identified 89 unique potential jargon words (see Appendix 1 for full list sorted by frequency). The top words identified were:

Word	Upvotes
DMZ	10
adversarial learning	6
adversarial network	5
data life cycle	5
Networking	5
Object Store	5
data governance	4
tree forest	4

The process used for the breakout groups is included in the workshop MURAL and reproduced here:

- Participants completed a short round of introductions.
- Then they independently added potential jargon words and concepts that to the group’s workspace in MURAL.
- Any words that were identified by two or more people were given a star.

- Participants then looked at the board to identify a word with several stars to use as the focus of a conversation.
- Using even turn taking, participants discussed the word your group chose. Suggested questions for the conversation included:
 - “What does this word mean in your discipline?”
 - How has this word been used so far in the DART project? Is it similar, different?
 - Do you think this word would be used the same way across the research themes?

There was time during the workshop to clarify the meaning of several words.

Leaders and project participants can use the jargon exercise to create shared understanding of what these terms mean in the context of the DART project. Some of this work is already underway through the project’s acronym list. The jargon exercise can also serve as a reference for participants and encourage them to check for others’ understanding or ask for more details when a term is unclear. Over time, a project might develop a dictionary containing project-specific definitions of various key terms.

Listening Exercise

Following an introduction to the importance of listening and a brief explanation of a listening framework, participants were put into group to practice speaking, listening, observing, and notetaking. Composition of the groups was random to encourage interaction across levels of experience and locations. Often in meetings and conversations we listen while taking notes, prepare our next comment while listening and perhaps forget to observe body language or tone of voice entirely. This activity was designed to give participants an opportunity to focus their attention on each skill separately.

In groups of four participants rotated through each role. Speakers were asked to answer one of three questions:

- What do you bring to this project?
- What do you need to be successful on a team?
- What are you curious to learn more about?

Listeners were invited to ask a curious question of the speaker to learn more about them.

Becoming an effective communicator takes effort, attention, and practice. No one is good at all these skills all the time. This exercised focused on developing awareness of one’s own communication skills. Some groups develop norms and practices to support each other in improving their communication skills over time or choose to acquire specific communication skills training.

Workshop Content and Resources

The MURAL boards created for the workshop will remain available to the project until December 31, 2021. The MURAL boards have also been shared as PDFs. Only those with links to these resources will have access to them.

Identifying Purpose and Jargon Worksheet ([GoogleDoc](#))

Introduction Obstacle Course for Faculty and Stakeholders ([MURAL](#))

Introduction Obstacle Course for Students ([MURAL](#))

DART Conference Collaborative Workspace, including instructions ([MURAL](#))

Listening Exercise Instructions ([GoogleDoc](#))

Team Science and Collaboration Resources ([GoogleDoc](#))

References and many works cited during the workshop have been listed in the Team Science and Collaboration Resources document.

Appendix 1. Top Jargon Words Identified, Sorted by Frequency

Word/Phrase	Number of Upvotes	Groups Identifying this word
DMZ	10	1, 5, 7, 9, 10
adversarial learning	6	10
adversarial network	5	7, 9, 3
data life cycle	5	2, 4, 6
networking	5	9
object store	5	7
data governance	4	2, 3, 4, 6, 7
tree forest	4	9
CNN	3	5
computer vision	3	5
cybersecurity	3	9
data analytics	3	7
Modeling	3	9, 7
ROSS	3	4, 7
Social Awareness	3	6, 7, 9, 10
AI/ Artificial Intelligence	2	5, 4, 7,
clustering	2	5
cyber infrastructure	2	1, 7, 6,
data curation	2	2, 6
Deep Learning	2	5
Experimental Design	2	4
Loss Function	2	7
Model (Machine learning)	2	2
Stochastic Processes	2	5
compute node	1	4
curation in the context in of DS	1	3
data democratization	1	2
Data Mining	1	5
Data washing machine	1	5, 6
disinformation misinformation	1	1
Science DMZ	1	3, 7
Statistical learning	1	3
VPN	1	9
an acronym for a type of CNN I wasn't familiar with (and didn't write down!)		3
ANN		5
Bayesian Inference		5
Bias		7, 9
Bimodal Optimization		7

Classification	5
Classifier	4
data anonymization	3
data literacy	2, 4
Data optimization	7
data quality	2
Data Science	7
data stewardship	2
data transparency	2
data/analysis fairness	3
DLCNN	3
economic development	1
epistemological	7
EPSCoR	8, 9
Fuzzy Logic	5
GAN	3, 6, 7, 8
Generalizability	2
Generative Models	2
genomes	7
Hadoop	7
HPC	8
I-Corps	8, 9
Interpretability	2
K20	7
Machine Learning	4, 5, 7
Map Reduce	7
Measure success	7
Media	9
ML	8
MSI	9
Multi- Modal	5
multicomputation	8
multiprocessing	4
Multi-Spectral	5
multithreading	4
Natural Language Processing	5
Operations Research in Data Science problems	3
Optimization	4
Physical Understanding	2
PUI	8
Random Forest	10
ROI curve	3
scheduler	4

silos	7
SLURM	4
social media (what sites)	2
TDA	5
topological analysis	1
Transformer	5
Vision Transformer	5
write computer program; evaluate	7