SUPPORT SYSTEMS FOR SCIENTISTS' COMMUNICATION AND ENGAGEMENT

Every scientist who wants to communicate and engage should be supported to do so, and do so effectively.

From December 4 – 6, 2017, the Kavli, Moore, Packard, and Rita Allen Foundations hosted a workshop at SUNY's Global Campus, to explore how communication and public engagement trainers support scientists' engagement and communication. The workshop was intended to explore the systems where communication and public engagement trainers are thriving, where they are running into obstacles, and places they can advance the field as a community. This outline summary aims to capture the ideas, notes and content discussed at the meeting. (See Annex for a list of participants.)

PART I: A SYSTEMS LOOK AT SCIENTISTS' ENGAGEMENT AND COMMUNICATION

Part I of the workshop, led by consultant Chris Soderquist, explored the larger system of how scientists are supported to communicate and engage effectively. One clear takeaway from the day's discussions was that we all have different reasons and goals for supporting scientists' communication and engagement efforts.

1. Introduction to Systems Thinking

Chris provided us a 1-hour lecture about systems thinking, where he shared concepts about:

- Routine vs Adaptive problems
- The importance of looking at the whole system, not just "your" parts
- How to develop theory about how a system is working, and how to improve it
- The importance of developing an operational shared picture
- Cautions against improving one part of the system, at the expense of or with harmful consequences to another ("cobra effect" and "parachuting cats")

Chris' slide presentation has been shared, and is available again upon request.

2. Thinking in systems takes good collaboration: what makes good collaboration?

We reflected on elements needed for a good collaboration:

- Understand your audience
- Shared vision; shared mission; alignment around a shared purpose
- Shared ownership
- Systems perspective – supported with data
- "Bottoms-up" approach – listening, hearing
- Supportive environment; common needs/ground to create relationship to achieve greater means

- Common understood framework
- Personal initiative/passion
- Adaptability/flexibility
- Leveraging diverse strengths
- Leadership, guidance, but also self-reflection; self-awareness
- Crisis = opportunity: catalyst to bring group together
- Time: to build relationship and trust
- Trust; respect; transparency
- Willingness to be vulnerable; humility
- Clarity; open lines of communication
- Compromise; willingness to give up; recognition when collaboration is not working
- Level playing field
- Work around organizational leadership
- Mix of complementary perspectives; finding good collaborators (timing, expectations, goals)
- Play
- The right people in the room – generous
- Joint understanding of what impact should be
- Find points of pain, resolutions

3. Hopes for the 2 days

- Metrics: actionable, meaningful, measurable, predictive
- Identify best practices
- What does it mean to be a trained scientist?
- What do scientists want?
- Defining effectiveness
- “Science online 2.0”
- Succession planning
- Take advantage of experience, diversity and knowledge in the room
- Establish shared goals
- Expand network to build community
- Keep dialogue going
- Better understand where my work fits in – avoid redundancy
- All participants are heard (not just big players)
- Work plan/action plan
- Keep engaged with community so that we’re aware of/can participate in future convenings
- Suggestions for who is not at the table(s)
- Clarity on boundaries of this conversation
- Impact & value proposition changes everything

4. What do we hope to be different in 5 – 10 years?

If scientists are better supported to do quality communication and engagement, we identified different things we might measure over time. These represent indicators of how we'd like this system to operate (note: these ideas were plotted on graphs over time):

- More scientist politicians
- Greater acceptance of scientific proof for policy (scientists viewed as experts and listeners)
- More engaged scientists in communication process
- More democratization of science communication (e.g. platform for scientists to create a community, not just a few superstars)
- Effective science communication training is part of more first year PhD programs
- Increase of gender and racial diversity in science fields, and science communication training professions
- Increased roles for scientists in our society
- Scientists perceived as less cold
- More prizes for science communication (ultimately a Nobel Prize in this category)
- K-12 students have a better understanding of science
- Society's appreciation for science increases
- Percent of NSF budget spend on broader impacts increases
- Percent of scientists who have a responsibility to be civically engaged increases
- Proximity of scientists to policy and public partners increases
- Use of deficit views in scicomm decreases

Our thoughts about this exercise:

- It is difficult to identify a few agreed-upon metrics
- There are many reasons to engage and communicate, do we feel we need to agree on just one? How do we reconcile the diversity of goals as we build a community?
- We gravitate towards things we can measure, not necessarily what we care about
- There is little evidence that these "things" would lead to larger goals we care about.

5. Introduction to the systems map (Monday afternoon) and refining it (Tues am).

Chris shared a preliminary map for groups to reflect on and think about (has been shared, it is available upon request). We raised the following key ideas in small groups as we discussed the maps:

- We need to better represent and think about the impact of scientists' engaging on science itself.
- Science is not separate from society, yet we often depict it or talk about it that way.
- Motivations for engaging (by scientists and the public) need to be better understood and captured.
- In addition to things we might care about that we articulated in exercise #4, other ideas about ultimate goals include: fostering a culture and democracy that embraces science, growing a society that supports and celebrates critical thinking, and acknowledging there is joy and wonder to life that science helps us explore.
- What about the impact on science itself?
- Societal impact can be both an input and output of science communication and engagement.
- Yet…we are fuzzy on societal impacts.

· How can we engage the public in funding priorities? Do we want to?

PART II: COMMUNICATION TRAINING LANDSCAPE VIEW

A review and discussion of John Besley and Anthony Dudo's landscape study.

Take homes shared by John and Anthony: Communication training community is incredibly passionate, but also like the wild west.

1. Emerging themes from report:

1. Choose your own adventure: participating scientists define their own goals
2. Distilling vs. crafting messages: most programs help distill, rather than craft specific goals
3. Listening as a first step, but what comes next: programs teach listening, but not clear what goals are intended to be met by listening
4. Stories are great…at something: storytelling is important, but outcomes of storytelling beyond interest were rarely noted
5. Evaluation would be great, if….: some evaluation is done, but the sense is that training is already expensive, and it's difficult to add on

2. Key topics from the report:

1. Unique selling propositions of each training program are unclear (sometimes to the trainers themselves).
2. A few key best practices are agreed upon, but there is a lot of reinventing the wheel.
3. Trainees are diverse in terms of career stage, but not in terms of cultural or ethnic backgrounds.
4. Thought leadership: most trainers are familiar with only a few training programs.
5. Trainers infrequently interact with one another.
6. Trainers expressed diverse opinions about the value, and use, of the science of science communication.
7. Trainings are evolving through experimentation, not through evidence.
8. Universities are becoming increasingly interested in training services.
9. When looking to the future, trainers unanimously agree they want to connect more as a community. They are concerned about building and scaling.
10. Funders can help by improving interactivity, and collecting data about the impact of training curricula.

3. Discussion:

Did John and Anthony have any surprises or observations?

· There was a lot of consistency of answers;

· Surprised that when asked “Who are the thought leaders?”, people paused – then answered one or two of the same people;
· There is a big disconnect to the social science - people don’t know how to access or distill it, and some simply don’t care;
· Two gaps in their study: could have had more participants from museums, and universities;
· It is not a community of practice, it’s a “wild west”;
· Almost no trainers have a social science background;
· There is very little evaluation: although people said they would like to do it, they just don’t have the time and resources;
· People think storytelling is effective, but no one knows why;
· Most trainers don’t know what makes them different from other trainers;
· If we could fix one thing, it would be to identify best practices, and align those with business models.

Our group shared and discussed:
· Need to bring theory of learning (not just communication) to trainings.
· The tone of the report felt “judgy” at times.
· Where do we all go for resources? Resources are very limited.
· There is an evaluation framework in the works by AAAS (John and Anthony will send it out).
· We would like to understand more about each other’s business model – the cost is high, how are we ensuring financial ends meet?
· What is truly unique about scientists being supported to communicate well? Strategic communication is not new, and is applied to many other fields. Can we connect to those fields?

PART III: COMMUNITY BUILDING

On the 2nd day, we regrouped and retooled to a community-driven approach. We agreed on the shared belief that a stronger community of trainers makes a stronger support system, with better access and quality support for scientists who do want to communicate and engage. What do we need to have a stronger community of trainers? What kinds of things might we work on together?

1. What kinds of things should the community do more of together to be a stronger community?

Main ideas included:
· Commitment to, and shared approaches in, monitoring and evaluation
· Better connections between research and practice
· Improve equity, diversity, and inclusion
· Share best practices
· Bring in ideas from other fields

- Meet at annual meeting
- Stay connected electronically
- Discuss other shared obstacles, and ways to get past them together

2. Designing an annual conference.

We imagined there was an annual conference, and designed sessions to reflect the above ideas. We separated into breakout groups to design each session of this hypothetical annual meeting, intended to be a framework by which we could explore these topics. There was, though, great interest by some of the groups to hold an actual annual conference.

a. Equity, Diversity and Inclusion session would feature questions and ideas about:
- How can we diversify what scientists are doing scicomm; who is the voice of science?
- How can we diversify scicomm trainers?
- How can we diversify the audiences we are empowering scientists to connect with?
- We need to hear from minority serving institutions.
- We need to make sure it's not just racial diversity, but gender, LGBTQ, ages, and other types of diversity.
- We need to have a track devoted to this at our conference, but also model it throughout the conference.

b. Connecting research to practice, and doing good monitoring and evaluation:
This session would include ideas and discussion about:
- What's the value of using social science?
- Overview of public attitudes towards science
- Overview of public attitude toward scientists
- How are theory and research applied to scicomm training?
- How can we measure impact?

c. Barriers to doing scicomm, and how do we overcome them? This session would:
- Identify and discuss current barriers (funding, departmental support, etc.)
- Bring in people who have overcome these barriers
- Bring in people who are successfully scaling programs
- Discuss how to cultivate institutional support
- Discuss how to describe the value of scicomm training
- Have a session about building the future system we want to see: one that incorporates broader impacts, rewards people and institutions, capitalizes on incentive structures, values skill building in early career researchers
- Highlight the need to fill the gap between often small rewards for scientists to engage ($1K - $10K) to the large ones ($300K). Explore how we can have more "medium"-sized support for scientists' engagement (like $50K/scientist).

d. Share best practices

· Have a diversity of practitioners highlight their approach, how they developed it, how it works, their business model, etc.
· Provide an opportunity to learn and discuss

e. Bring in new ideas and/or lessons from other fields.
· Keynote speaker from a parallel universe experienced in building community of practice
· Highlight the Hubbell telescope (how astronomers agreed to each have a little less money, so they could collectively get the Hubbell) and Hell Angels (shared sense of purpose that self organizes) communities.
· Bring in marketing and advertisers
· Consider an innovative environment (see PopTech)
· Bring in a variety of people including artists, non-verbal sessions, new constituents
· Make space for as much networking as possible

3. What kinds of things do we want to dig into more deeply together?

The group brainstormed ideas of things we'd like to discuss further. We voted on the top 2, plus thought about an RCN proposal, as areas to focus on during the final part of the workshop. The complete list of ideas that were shared include:
· Foundational skills and pathways of engagement: Map out what foundational skills are, and identify different pathways to move into real engagement practice/opportunities.
· Identify metrics: Discuss and agree upon (5?) evaluation metrics that trainers could agree upon and start implementing now.
· Community building: identify what steps we want to take to keep building a community.
· Brainstorm new projects: propose two projects this group can work on together, including timelines.
· Relevant research from other fields: use some of the free time to do some group searching/googling/sharing about what relevant research in other fields may be.
· Scale best practices? How have groups that have scaled best practices, scaled them?
· Curate existing information: Given the desire to curate what we know, start that process with the people in the room – what do the people in the room have and know about?
· What are the benefits of public engagement? Discuss a strategy for identifying examples of benefits of public engagement (and develop paper from that).
· NAS Science of Science Communication: What do we think of that report?

We focused on the following top three:

a. Monitoring and Evaluation: What should we be measuring?

Goals of scicomm training could be organized around:
- motivation and excitement to engage (I want to do it)
- content knowledge about scicomm (what do I need to do it)
- scicomm methods (how do I do it)
- Reflection of role and processes of scicomm on their own learning (why do I do it)
- Participants in scicomm activities (Do It!)

- Identifying as a scicomm-er (I am someone who does scicomm)

b. Pathways to Engagement

“There are a lot of practices, but not a lot of games” (from John and Anthony’s landscape report). Science communication trainings are providing skills for scientists (practice), but how do scientists apply them in the real world (games)? A small group mapped out the relationship between trainings and engagement opportunities.

<u>Fundamental skills, advanced skills, and pathways of engagement</u>

When scientists explore a pathway, they should consider:

- Where do you go? Who are your networks? What do you care about? What do they care about? What are their questions/concerns/interest?
- What do you need to understand to get there?
- What skills and tools do you need?
- How do you sustain or deepen your engagement?
- What social networks do you need?
- Who is doing what in this space?
- How do you benefit?
- What are perceived benefits to society/community/target group?

Types of pathways – how can scientists find their way into a pathway and/or how can communication trainers be better connected to pathways to hand scientists off to them:

Goal	Public/Lifelong Learning	Decision Making	Education
Places to engage	Everyday/unexpected places Festivals Museums Film Media News Blogs	Policymakers Courtroom Standards Committees Testimony to legislators	K-12 After-school IHE leadership?
Ways to engage	Advising Direct verbal communication Online Writing		
Types of people in these areas to engage	Influencers Engaged Unengaged		

We acknowledged that “knowing your audience” is similar to “knowing who is playing”. Thus, bringing in data/info about audiences (like Science Counts) can help focus training and engagement approaches.

c. RCN proposal:

A small group worked on how to bring these concepts into an RCN proposal.

Our proposal “How do we develop scientist communicators of the future?” is organized around the following central themes:

- *WHY* do we do it - is scicomm training necessary?
- *HOW* do we best do it – are we utilizing social science to inform quality training?
- *WHO* is doing the training, and whom are they training – is it inclusive?
- *WHERE* are scientists linking their training to practice?

An RCN proposal is used to:

· Advance a field
· Create new directions in research
· Pull together groups to communicate and coordinate across disciplines, organizations, and geographies

Funds can be up to $500K for 5 years, and can be used to support a network, online sharing. They cannot be used to do original research.

Jory Weintraub agreed to take the lead on advancing this idea.

4. Connecting with other workshop participants and content:
As Kavli, Moore, Packard, and Rita Allen convene future workshops, the Workshop 1 group discussed what we are interested in learning about, and what we want other groups to know about us.

a. Things this group wants other groups to know:

· We see a need for a tighter relationship between research and practice
· We have a diversity of goals for doing scicomm
· We have a hunger for more capacity and infrastructure
· There are many ways to communicate and engage, communication trainings are not monolithic
· Our interest in connecting to a broader system is high
· We see a need for professional development for our community
· Diversity and inclusivity matter, and we want to work on it
· We want to collaborate better together, and with others
· We don't want to reinvent the wheel of scicomm programs, nor do we want others to reinvent it.

b. This group has the following questions for other groups:

· What is the market demand for trainings at universities? Do your scientists want or need it? · What training exists on your campus? What's the landscape on campuses? Where is the best lever on campuses to get/bring in trainers – VPR? Chairs? Deans? Students?
· How can trainings be incentivized?
· Can we create a culture of inclusion together?
· Can we institutionalize support?
· Can societies rethink their annual conferences to teach or do scicomm?
· Can we help students advocate for what they need?
· What can societies and universities commit to - resources and collaboration?
· What circumstances would help collaboration?

What are our hopes for the future

· NSF-RCN proposal to develop science communication trainer community
· Accessible and usable evaluation frameworks
· Clearer outcomes of this process
· Definition of priority pathways for professional development
· Availability of existing resources on an accessible platform
· Stronger definition of roles between trainers and practitioner groups
· New research-practitioner partnerships
· Clarity on what researchers and practitioners each want

- Develop a shared language
- Annotated, easily accessible online repository of resources
- Increase collaboration for this group
- Learn more about what members of this group are working on; what is unique about each group?
- Develop a community charter for the community of practice
- Map out where workshops have been done nationally?

Some immediate next steps and things already buzzing:

· Research Coordination Network Proposal: *Jory Weintraub* has taken the lead on, and already began drafting a one-pager that describes an approach to an NSF-RCN concept (to share with us and share with NSF).

· Get together at future gatherings*? Erica Kimmerling* created this spreadsheet to track relevant meetings so that we might identify new networks to connect to, and identify places for our groups to meet to continue discussions.

· Possible get-together at AAAS in Austin in Feb 2018? *Anthony Dudo* graciously suggested hosting anyone at AAAS at his campus for a day (or less or more), to continue some of these conversations. More from Anthony on that soon.

· Continue "Pathways" thinking: *Laura Lindenfeld, Elyse Aurbach*, and *Bronwyn Bevan* are taking the lead on moving this thinking forward. Many of you expressed interest in being connected to this, they have your names and/or please reach out.

· Evaluation metrics**:** *John Besley* was to review previous proposals he and others have been part of to help bring more shared evaluation to the community. He'll share relevant ones he finds.

· Diversity, equity, and inclusion: The breakout group that discussed this is already pulling ideas together. *Bronwyn Bevan* created a document summarizing their ideas, be in touch w/ her if you'd like to be included in that work.

· Training list: *Nalini Nadkarni* has already shared her latest list with all workshop participants. *John Besley* and *Anthony Dudo* will be sharing theirs as well.

ANNEX

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