

Communicating Science

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"For science to work, communication is essential" -Rush Holt, Former AAAS CEO

"Use soft words and hard arguments"
- English Proverb

Why is science communication important to you?

There are many ways that we use communication as scientists – what does 'science communication' mean to you?

"Communication is not an add on - it is central to your enterprise as scientists" - Nancy Baron, *Leaving the Ivory Tower*



Deficit model of Science Communication





A first step: Getting better at what we SAY

As scientists, we are trained to talk about

- Materials, methods, statistics, setting
- The 'so what' is buried somewhere in here...
- Research results
- "Take home" message

Journalists are trained to report on the take home message first, then the details

A first step: Getting better at what we SAY

Terms that have different meanings for scientists and the public		
Scientific Term	Public Meaning/Perception	Better Choice
abstract	vague, intangible	summary
alcohol	booze	preservative, solvent
anti-biotic	soap, hand sanitizer, kitchen cleaner	sterilizer, way to kill microbes
essay	judge, essay	analyze
chemical	toxic substance, poison	any molecule
cloning	human duplicates	growing bacteria with inserted DNA
confidence	certainty	within an acceptable range
control	authority	unaltered comparison
cosmopolitan	sophisticated, urban	widely distributed in an ecosystem
E. coli	tainted water, food poisoning	laboratory culture, microbe
gen/genome	defining trait, identity	coding region
generic	cheap, low-quality	common
genetic modification	Franken-food, monsters	be specific about the gene and the experimental organism
gravity	importance	attractive force
hypothesis	guess	educated guess, informed prediction
law	legal mandate	fundamental principle
model	diorama, fashion model	computer simulation, mathematical equation

A first step: Getting better at what we SAY

First, fill out your message box based upon a story you could talk to the media about (10 minutes)

Then we'll work in partners (10 minutes)

Second step: Honing our LISTENING skills

Message Box

Audience: *we don't know how well marine populations in different places are connected to each other. many of these connections happen through the movement of fish larvae (larvae) using ocean currents.*

Issue: *How well connected are marine populations?*

So What?: *Small changes of one fish larva can have a major effect on the number of larvae that survive. Changing these connections might affect important marine species and ecosystems. We probably never need to be clear enough together to keep these connections intact?*

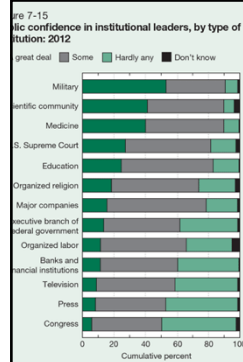
Solutions?: *Thinking the movements of marine larvae can help us better understand their connections. - Shows us DNA of animals can help us tell how connected populations are. - When people arrive in a city, use their license plates to see where they come from and see what they do when they arrive.*

COMPASS SeaWeb

Improv Example (Tessa & Ben)

Other ways that you/ your students might use the Message Box technique?

- Preparing for conferences
- Planning out an outline for a paper
- Planning key points for a meeting/committee to discuss
- Student presentations in class



Science & Engineering Indicators surveys (NSB)

Scientists enjoy a great deal of trust and confidence from the public

- Ranked 2nd to 'Military' for institutional leaders
- Ranked 2nd to "Firefighters" in people who are trustworthy

Psychology of Science Communication

Research by E. Markowitz, M. Nisbet & Yale Climate Change:

- Put people first
- Consider moral foundations and human values as an access point

"linking climate change mitigation and adaptation efforts to positive emotions such as hope, pride and gratitude may allow individuals to circumvent the need for defensiveness, leaving them willing and able to engage more actively" Markowitz 2012

Yale Program on Climate Communication: 5 Key Psychological Insights

Table 1. Overview of Key Psychological Lessons and Policy Advice

Psychological lesson	Policy guideline	Example policy recommendation
The human brain privileges experience over analysis	Highlight relevant personal experiences through affective recall, stories, and metaphors.	The National Park Service (NPS) gives concrete examples of how climate change has already harmed natural resources in specific parks.
People are social beings who respond to group norms	Activate and leverage relevant social group norms to promote and increase collective action.	Government climate science agencies could improve efforts to highlight descriptive norms (e.g., the scientific consensus on human-caused climate change).
Out of sight, out of mind: reduce psychological distance	Emphasize the present and make climate change impacts and solutions locally relevant.	NASA and The National Oceanic and Atmospheric Administration (NOAA) are supporting efforts to enable TV meteorologists to educate their viewers about current local climate change impacts.
Nobody likes losing but everyone likes gaining	Frame policy solutions in terms of what can be gained (not in terms of what is lost).	The Environmental Protection Agency's (EPA) "Clean Power Plan" focuses on cleaning up the nation's fuel supply, which will help clean up the nation's air and water, providing direct health benefits to all Americans.
Tapping the potential of human motivation	Leverage intrinsic motivation to support long-term environmental goals.	The President, Congress, and all federal agencies should be openly aspirational in designing climate policy initiatives that tap into citizens' deeply held motivations for building a better tomorrow.

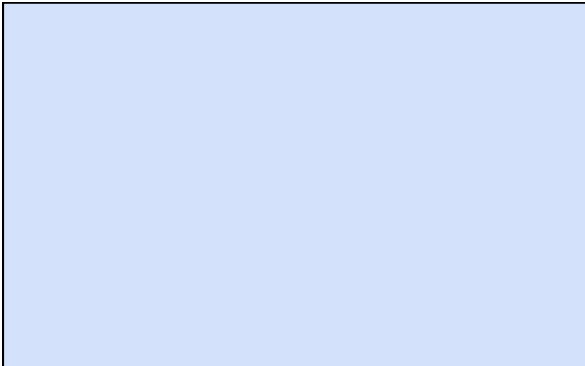
Plan ahead for opportunities to engage

Are there papers, projects, conferences or other events that will provide you an opportunity to speak to the media, give a public talk, or brief policymakers?

What are the pros/cons of these engagement opportunities? What do you worry about? Will you get 'credit' from your university for spending time on these events?

Are there examples to look at of people who have excelled at communicating science in your field – what can you learn from them?

Special considerations:

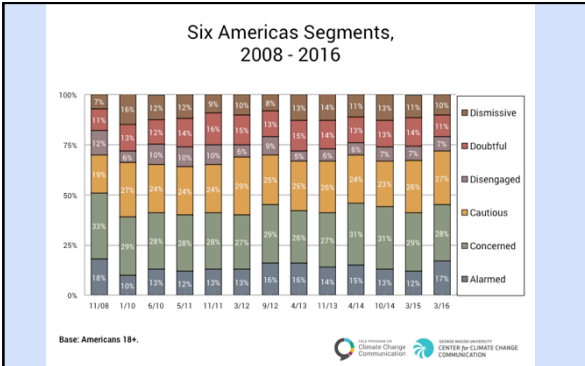
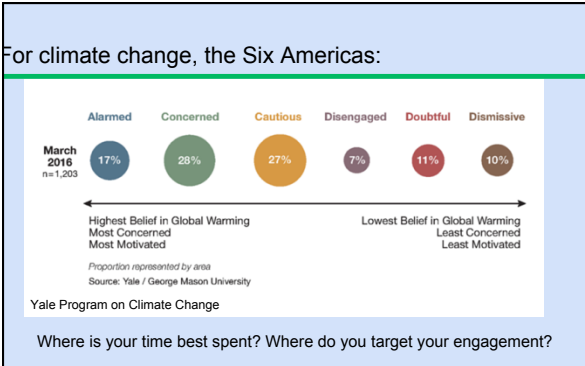


Resources we recommend

Escape from the Ivory Tower, Nancy Baron
Message Box Workbook, COMPASS
SciComm trainings by COMPASS, AGU, AAAS, Alan Alda / Kavi

UpGoer Five Example

Extra/optional slides



Checklist for an interview

Message box

Ask questions - when is the deadline, who is the audience, what is the format?

Set out your research paper, figures, reports

Compile a list of other recommended sources for the journalist

Anticipate the 'hard' questions and prepare an answer

Practice your bridging techniques