Building Organizational Infrastructures for Effective Communication: Five Lessons from Corporate, Government & Academic Experience

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The Science of Science Communication
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Edward Maibach, MPH, PhD
emaibach@gmu.edu
“Everything should be made as simple as possible, but not simpler.”
#1: The less we say, the more we’re heard, but we need to say it often.

To do that right, we must:

• Identify the few points that are most important to convey, and find ways to make these points simply and concretely.
• Convey these points early and often.
• Encourage other trusted sources to convey them as well.
• Make it easy for people in our target audience to convey them to each other.

A useful formula for effective public communication:

“Simple clear messages, repeated often, by a variety of trusted sources.”
Figure 2. Percent decline in age-adjusted mortality rates for stroke by gender and race: United States, 1970–2000

Recommendation #1:

Organizations that wish to become more effective at communicating science-based information should make the effort to coordinate their communication with others, both internally and externally, and should make their communication “as simple as possible, but not simpler.”
#2: The decision about what to say should be informed by audience research.

- What to convey should be determined by the needs of our audience, not by what we are most eager to say.

- Audience research can be used to answer:
  
  a. Which facts about [insert your science issue here], once understood, make the biggest difference in helping audience members grasp the current state of the science?

  b. Which misperceptions are the biggest impediment to audience members’ understanding of the current state of the science?

  c. Is the broader audience composed of distinct segments who have different information needs?
Example of an important misperception:
Few members of the public understand there is widespread scientific agreement that climate change is real and human caused, yet this understanding is strongly associated with a science-based understanding of climate change & policy support.

In May 2011:
• Only 39% of American adults believed “Most scientists think global warming is happening”
• And only 13% believed “81-100% of climate scientists think global warming is happening.”

Source: Ding, Maibach et al (2011) Support for climate policy and societal action are linked to perceptions about scientific agreement. Nature Climate Change, DOI:10:1038/NCLIMATE1295
An example of audience segmentation:

Meet Global Warming’s “Six Americas”

- **Alarmed**: 13%
- **Concerned**: 26%
- **Cautious**: 29%
- **Disengaged**: 6%
- **Doubtful**: 15%
- **Dismissive**: 10%

Highest Belief in Global Warming: Most Concerned; Most Motivated

Lowest Belief in Global Warming: Least Concerned; Least Motivated

Source: Yale & George Mason, March 2012
These audiences have different information needs.

I’d like to know what our nation (and what I) can do to address the problem.

I’d like to know what harm this problem will cause.

I’d like to know why I should trust you.

Source: Yale & George Mason
Recommendation #2:

Organizations that wish to become more effective at communicating science-based information should systematically invest in collecting audience data and conducting audience research.
#3. Trust is our most important asset – we should cultivate it, rather than assume we’ve earned it.

Effective communication can only occur when there is trust.
Trust in Sources of Information about Climate Change:

**General Public**

- Your Congressman
- News media
- TV Weathercasters
- Pres Obama
- Dept of Energy
- Nat Park Service
- CDC
- EPA
- NOAA
- Scientists

**Source:** Leiserowitz A, Maibach E, Roser-Renouf, C & Smith N. (2011) *Climate change in the American Mind: Americans’ global warming beliefs and attitudes in May 2011.*
Change in Expression of Green Opinions on Climate Change from 2010 to 2012

Canada’s “Most Trusted Person” in 2010 & 2011

Scientist and long-time host of "The Nature of Things,” David Suzuki has reached out to millions all across the globe, telling people about the danger the environment faces and how we can make a difference with small changes.

“Honest, compassionate, and communicating a clear message, it's easy to see why Canadians voted him the Most Trusted for the second year in a row.”

- Reader’s Digest, Canada

“He knows how to reach out and explain things so the common man understands,” says 59-year-old respondent Jacqueline Fitzpatrick of Thunder Bay, summarizing the general take on her No. 1 pick.
What’s going on here?

Familiarity ➔ Liking

Liking ➔ Trust

David is familiar, liked and trusted.
Most Americans Can’t Name A Living Scientist

Can you name a living scientist? (total mentions n=278)

65% Yes  35% No

- Stephen Hawking: 7%
- Albert Einstein: 4%
- Louis Pasteur: 2%
- Marie Curie: 2%
- Jonas Salk: 2%
- E.O. Wilson: 1%
- Carl Sagan: 1%
- Robert Jarvik: 1%
- Other: 14%
- Don't Know: 7%

Source: Your Congress—Your Health Survey, June 2009
Charlton Research Company for Research!America
Recommendation #3:

Organizations that wish to become more effective at communicating science-based information should systematically make the effort to help their scientists – and their institution – become more familiar, liked & trusted by the people with whom they hope to communicate.
#4. It takes a team
(to implement the science of science communication)

Members of the team include:

1. Content experts
   *who contribute insight into the state of the science.*

2. Social & decision science experts
   *who contribute insight into how audience members think, feel & behave.*

3. Communication experts
   *who contribute insight into how to reach members of the audience, early and often.*

Lessons from a Science Education Portal

David Micklos,† Susan Lauter, Amy Nisselle

When Cold Spring Harbor Laboratory’s DNA Learning Center (DNALC) launched its Web site in 1996, www.dnalc.org, we did not foresee that it would grow into a portal for 18 content sites reaching more than seven million visitors per year. The evolution of our multimedia efforts and the challenges along the way provide lessons for building learning resources or to attract larger audiences.

Conclusion: “(A)n engaging Web site can potentially increase student learning by about one letter grade!”

“We conducted experiments from 2010–11 to test whether (our web site) improve student learning.”

“The experiments involved 626 students in 28 high school and college classrooms across 10 states.”

Visits rose steadily through 2006 and followed an increase in average monthly visits by search engine spiders and a 24.5% increase in total. The evolution of our multimedia efforts and the challenges along the way provide lessons for building learning resources or to attract larger audiences.
Recommendation #4:

Organizations that wish to become more effective at communicating science-based information should build an inter-disciplinary team whose mission is to improve both information design and delivery.
#5. Evaluation of science communication efforts is tricky, but that’s no excuse for a failure to evaluate

Google’s top three scholarly articles for evaluation of health communication, risk communication and science communication.

Scholarly articles for evaluation "health communication"
... to evaluation of interactive health communication ... - Eng - Cited by 99
... and evaluation of interactive health communication ... - Gustafson - Cited by 91
Public health communication: Evidence for behavior ... - Hornik - Cited by 226

Scholarly articles for evaluation "risk communication"
... participation and their relevance for risk communication - Kasperon - Cited by 195
Risk communication: Facing public outrage - Sandman - Cited by 215
... : a psychometric evaluation of a risk-communication ... - MacGregor - Cited by 108

Evaluating science communication projects - SciDev.Net
www.scidev.net › Home › Practical Guides
Jan 8, 2007 – The trick to evaluating a science communication project, explains Marina Joubert, is to plan carefully -- and learn from your mistakes.

Evaluating science communication activities
www.landcarerresearch.co.nz › Research
Evaluating Science Communication Activities. This page provides a list of topics and questions that others have found useful to consider when trying to improve ...

An example of a science communication evaluation study ...
jcom.sissa.it/archive/07/02/Jcom0702(2008)A03/
Jun 20, 2008 – This article presents an example of how a public science party was evaluated. The main goals of the science party, to increase the positive ...
“While the physical sciences produce many detailed and precise predictions, the social sciences do not. The reason is that such predictions almost always require randomized controlled experiments, which are seldom possible when people are involved. For one thing, we are too complex: our behavior depends on an enormous number of tightly interconnected variables that are extraordinarily difficult to distinguish and study separately. Also, moral considerations forbid manipulating humans the way we do inanimate objects. As a result, most social science research falls far short of the natural sciences’ standard of controlled experiments.”
"There are many approaches to evaluating public health communication programs, all of them struggling to resolve the tension between making strong inferences and making sure that an intervention has gotten a fair test. There will always be some way to question the inferences made or the generality of the results to other contexts. That does not take away from the legitimacy of the evaluations. The fair question for them is whether they have gone reasonably down the path toward reducing uncertainty. **A valuable study is one that can usefully inform the policy community about whether the intervention approach is worthy of support, without promising that there is no risk of a mistake. A study is valuable if future judgments about programs are better made taking this information into account than remaining ignorant of it.**

Recommendation #5:

Organizations that wish to become more effective at communicating science-based information should make program evaluation a priority.
“Everything should be made as simple as possible, but not simpler.”