Union of Concerned Scientists

[Science Communication Tips

Tips on science communication and policy from the experts at the Union of Concerned Scientists

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Science Communication and Policy Tips

Compiled from our "Tips of the Week"

Contents

Having a productive conversation with a reporter

Reporters may contact you for stories or you may want to reach out to a reporter yourself to promote new research, correct misinformation or share your knowledge on an issue that is in the news. Whatever the reason for talking with a reporter, there are two important tips to keep in mind.

1. Prepare your messages first. News stories are very limited. Instead of hoping that reporters summarize your message correctly, help them do their jobs by summarizing your own work ahead of time. Reporters need concise descriptions that the audience will understand. By preparing your messages in advance, you'll be a better resource for the reporter, and you'll be better understood by the readers.
2. Remember your bigger audience. While you want to give the reporter the information she needs for the article, keep in mind that the reporter isn't your audience—the readers of his or her publication are. Often, scientists are in the position of helping reporters tell good stories.

Avoid Being Misquoted

Sometimes reporters contact sources looking for a specific type of quote, either for or against a particular point of view that fits their story. How can you avoid being misquoted in this situation?

Make sure that when you're preparing your message, you consider not only the message that you *want* to say, that you think about what you *do not want* to say. If a reporter is pressing you to say something and you're not comfortable, it's perfectly appropriate to tell them that you don't feel you can fairly or accurately answer their question. That will help them move on to other points – or other sources – and it will ensure that they don't think you're dodging a question or hiding something from them.

Misquotes and having quotes taken out of context can and will happen. Thinking through the types of statements that you want to avoid can help reduce the chances of an interview going poorly.

Talking Science with Reporters

It's important for scientists to talk to reporters so the public can hear about science from credible sources. If you're contacted by a reporter here's how to get your point across.

Prepare: you want to be able to boil down your message into one or two main points. Practicing these main points will help you stay on message, and you'll be less likely to be misquoted.

Don't use jargon. If you must use technical words, explain what they mean.

Use comparisons to everyday experiences and objects to get your point across. For example, when Dr. David Wright mentions the speed of satellites, he describes it as 30 times the speed of an airplane.

How to Handle Calls from Reporters

A reporter might call and surprise you with an interview request. If this is the case, it's perfectly okay to ask them if you can call them back so you can take time to figure out the main messages you want to share. But before you do that, make sure you ask them a few questions:

1. When is your deadline? This is very important to know so you can get back to them in the right amount of time.
2. What news outlet do you work for, and who is your audience?
3. What is your angle for this story?
4. What topics do you want me to cover? If you're not the best person to answer these questions, you may want to direct them to another expert who can.

Once you have answers to these questions, take a few minutes to write up your main message with the reporter's deadline, audience, and angle in mind.

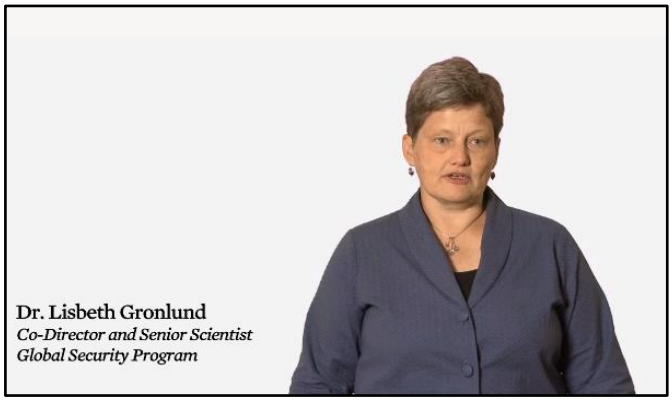
Answering Tough Questions

Even though you're an expert in your field, you may be asked tough questions that are difficult to answer. Here are two suggested strategies for dealing with these questions:

1. Share what you DO know**.** When reporters ask about areas where there are high levels of uncertainty, make sure you establish what is known before delving into less certain areas of scientific research. If reporters are looking for a specific piece of information that you don't have, don't guess. You can always follow up with an email or another phone call after you've had time to research.
2. Point them in the direction of a colleague or other expert who would have the answer their question. If the question is outside your expertise, don't feel obligated to answer. You can offer to help the reporter find the right person to get them the information they're seeking.

Above all, emphasize what you do know. If you can't answer a question, don't guess. Reporters appreciate and trust scientists because they're very clear about what they do and don't know and what they can and can't say with certainty.

When to Write an Op-ed vs. a Letter to the Editor



Letters to the editor are usually in direct response to an article, editorial, op-ed or column that the paper has printed. They are printed on the editorial page, one of the most read pages in the paper: this makes them a very effective way of reaching a large audience.

Choose a letter to the editor if:

- You're writing about a topic that has been mentioned in the paper, especially its opinion page
- You have just one or two points that can be succinctly stated
- You can write a response to the topic mentioned in the paper within 1-2 days

Op-eds are unsolicited articles written by people not affiliated with the paper—from business executives and scientists to school kids and interested local citizens.

Choose an op-ed if:

- You are writing about a topic that will be of interest for most of the paper's readers
- You have something new, interesting or unexpected to say
- You are writing about a larger theme that will not fit into 150 words or less

It is often easier to get a letter to the editor published than an op-ed. Check out Dr. Lisbeth Gronlund's tips on writing a letter to the editor.

Simple, Not Simplistic

If you're speaking to an audience that doesn't include experts or people who are familiar with your field, you may find yourself struggling to distill your message. Here are four tips on creating a simple—but not simplistic—message.

1. Avoid technical or scientific jargon. Complicated scientific terms won't help you explain your point.
2. Try not to use abbreviations and acronyms. "Alphabet soup" can be deeply confusing for audiences.
3. Use short sentences. This helps the audience follow your explanation—and will help keep you on track as well.
4. Find accurate metaphors that most people can relate to. Just because your audience doesn't work in your field, doesn't mean they need a "dumbed down" message—they just need it put into terms they are familiar with.

Shake the Audience's Hand

Images credit pronel.co.za

Here's a tip from a presidential speechwriter that works for any presentation, from a scientific conference to lecturing in a classroom:

When you open your presentation, "shake the audiences hand" before you delve into the details.

No, you don't have to go around and literally shake everyone's hand in the audience. This is a speechwriting tip about how to welcome an audience and draw them in. "Shaking their hand" means demonstrating that you identify with them. It's about including a human element in the introduction

Of course, this requires knowing your audience—so make sure you ask event organizers to help you figure out what's important for your audience and don't be hesitant to do some research on your own regarding audience priorities and backgrounds.

Prepping for a Great Presentation

Often, we start creating presentations not based on what we want people to take away, but what information we have—a report that was recently published, graphs and numbers from the latest research, etc. By if you don't put the audience's needs first, you're not presenting your information in the most effective way. Ask yourself these questions before creating your next presentation:

1. **Preparation:** What is your audience's current viewpoint, and what do you want it to be?
2. **Connection:** How can you engage your audience and communicate your knowledge to them in a way that they will understand?
3. **Release:** What are the main points that you want them to take away from your presentation?

Answering these questions can help not only with the content of your presentation, but the organization and the format as well.

How to Use Video Effectively to Communicate Science: 10 Tips

For most of my scientific career, I shared my research mainly through scholarly writing and oral presentations and to a mostly technical audience. A few years ago, I realized that the scientist of the 21st century needed to learn new communication skills to be successful and communicate science effectively to non-specialists. I began exploring video as a communication tool to show my scientific methods and to share my research findings with others in a more accessible and understandable medium. I discovered that video is a powerful communication tool not only to explain science but to recruit students to science by showing how and where scientists work.

Below is a summary of a few basic guidelines for anyone interested in using video to deliver a science message:

1. **Think carefully about the purpose of your video.** Be specific about what you wish to accomplish (inform, document, motivate, recruit), which will help you identify your core message, the target audience, and an appropriate message style.
2. **Use a 3-part structure.** Your video needs a beginning, a middle, and an end. Such a structure not only helps organize your information, it conforms to an expected storytelling pattern.
3. **Tell a story.** Most scientific information can be presented as a story—put into historical perspective, presented as a mystery or puzzle to be solved, or described from a human-interest standpoint.
4. **Plan your project before shooting any film.** Write out a script or prepare a storyboard (a visual sequence of scenes) to guide you during filming and editing.
5. **Shoot your video.** You do not need expensive equipment to shoot quality video. Most smartphones and tablets shoot HD video and also can be used to edit the footage.
6. **Avoid common filming mistakes.** Use a tripod to steady your camera and the rule of thirds to frame your shots. Avoid backlighting and excessive zooming.
7. **Let visuals tell the story.** Use a variety of footage shot from different perspectives to hold the viewer's attention.
8. **Pay attention to the audio.** Avoid external noises that might interfere with sound quality and use a lapel microphone to ensure the speaker is heard.
9. **Keep it brief.** If you can get your message across in less than three minutes, then don't go any longer by trying to cram in more "facts."
10. **Don't use copyrighted material without permission**. Assume anything, (photos, video, or music) found on the Internet is copyright protected unless evidence to the contrary is found. Content from government and academic sources, as well as content published under a "Creative Commons" license is often free to use.

Dr. Karen McKee is a scientist who has conducted research on coastal wetlands for over forty years. Dr. McKee is a Scientist Emeritus (U.S. Geological Survey, retired) and an adjunct faculty member in the Department of Oceanography and Coastal Sciences at Louisiana State University. Dr. McKee authored the book, The Scientist Videographer, which promotes science communication by teaching scientists and students how to use video to tell their science stories.

Flu Shots are the Key to Building Immunity to Misinformation

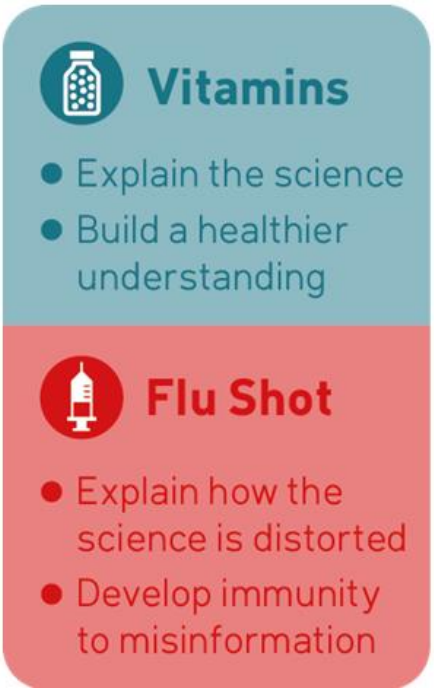
Typically, science communication is like giving out vitamins. By explaining the science, we're helping people develop a stronger, healthier understanding of the science. There's just one problem. Vitamins aren't much help when you encounter a virus. To build up immunity to a virus, you need a flu shot.

Misinformation works the same way. Communicating the science is helpful; indeed essential. But when someone encounters misinformation, they don't know how to reconcile the facts with the myth. If you want people to develop immunity to misinformation, you need to give them a "misinformation flu shot."

How do you do this? Just like a vaccination, you expose people to a weak version of the misinformation. In other words, present a debunking of the myth, explaining how the myth distorts the science. Not only do you neutralize the misinformation, you pre-emptively discredit the source of the myths.

For instance, many people mistakenly believe that the Coriolis effect causes water to drain in different directions depending on whether one lives in the Southern or Northern Hemisphere. Rather than restating this myth directly before debunking it, it would be more effective to first emphasize that the Coriolis effect is most noticeable at very large scales, such as cyclones that form over the different hemispheres. Then you can point out that the effect is so weak at small scales that it's dwarfed by the effect that the shape of a tub and drain has on water flow.

So if there are myths associated with the science you're communicating, consider explaining how that science might be distorted. Not only are you improving people's understanding of the science. You're also equipping them with the critical thinking skills to perceive when the science is being distorted.

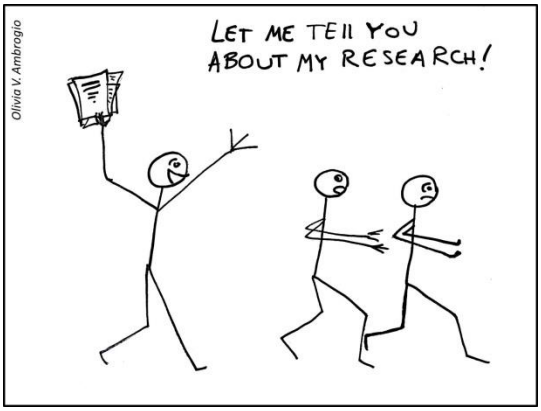


VITAMIN: 97% of climate scientists agree humans are causing global warming

FLU SHOT: Deniers use "fake experts" (e.g., 31,000 scientists who have no expertise in climate science) to manufacture the impression of an ongoing 50:50 debate in the climate science community.

John Cook is the Climate Communication Fellow for the Global Change Institute at the University of Queensland. He created the website Skeptical Science which won the 2011 Australian Museum Eureka Prize for the Advancement of Climate Change Knowledge.

"Once upon a test tube…": Telling a story with your science



She blinded me with…boredom.

As compelling as our science is to us, it's often hard to convey that excitement to others. Telling science as a story is a great way to personalize research and take advantage of people's built-in hunger for tales. We're hard-wired to look for heroes and villains, conflicts and resolutions, passions and personalities.

Luckily, science fits well into many narrative themes. Try captivating audiences with your science using one of these archetypal themes:

The Journey – Research often involves travel—and trials. Describe your fieldwork and field conditions. If you got sick at sea or lost transmitters to trampling rhinos, make those tribulations part of the story.

The Quest – We go into science with a thirst for answers. The process of finding them—why a question matters, how you tried to answer it, what frustrations you encountered, and the final triumph—creates a great story arc.

The Mystery – People love science mysteries (*CSI, NCIS*, etc.). Identifying the culprit behind crop failures and decoding a rock's formation are mystery stories, too.

The Stranger Comes to Town – Many famous narratives, from *Jaws* to *Silent Spring*, use this theme. Employ it when something or someone unexpected (a shark, a pesticide, a meteorite) appears and changes everything.

Mary Catherine Adams is a Public Information Specialist focused on member engagement at the American Geophysical Union (AGU) and Olivia V. Ambrogio is a Strategic Communications Specialist and coordinator of AGU's Expert Outreach Network (AEON). AGU offers more tips and tools for communicating science through its blog The Plainspoken Scientist and its Sharing Science webpages.

Repeat the Facts, Not Misinformation

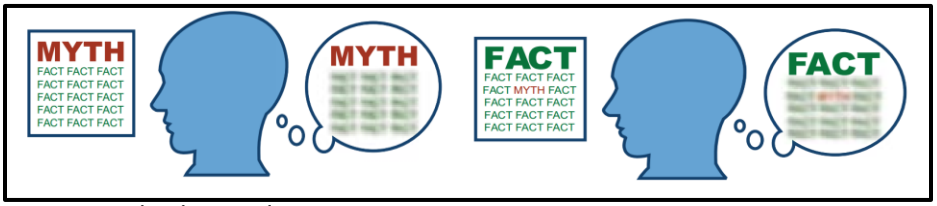


Image credit skepticalscience.com

Fact: Repeating misinformation only gives it more credibility.

Studies have shown that listing a "myth" before a "fact" can cause up to 40 percent of readers to remember the myth as true. As a scientist, engineer, technical or public health expert, you don't want to unintentionally spread misinformation about your field. So how can you avoid this?

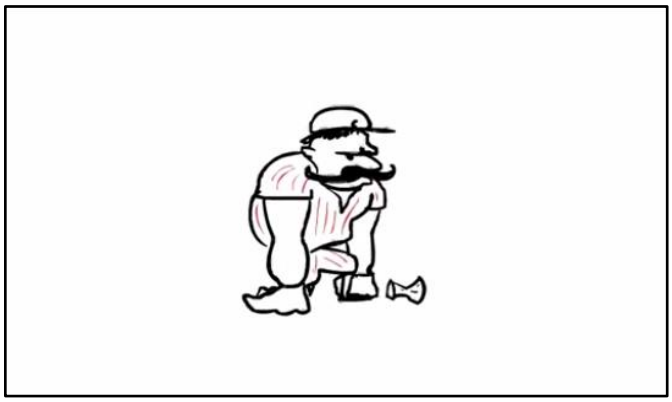
Share the facts first. Back it up with proof. *Then* address the myth, but be sure to close your statement by reaffirming the fact.

How to Respond to Misinformation Online

Many scientists and experts are featured in the media or online, where they share their work and their opinions, in both official and unofficial capacities. Unfortunately, experts and their research are often criticized by hostile bloggers who condemn their work and spread misinformation. Here are some things to consider:

1. Decide if the comment or blog is worth responding to. If very few people are going to pay attention to the criticism, it's probably not worth your time to respond.
2. Respond through an outlet you can control—your own blog, Facebook page, a faculty or organization blog, etc. Don't respond through a comment on the blogger's page; they may be able to edit or manipulate your response
3. Respond in a professional manner. Try not to respond immediately if you're upset. Instead, give yourself time to think through a reasonable response.
4. Acknowledge valid criticisms and don't be afraid to call out misinformation.
5. Don't get dragged into a debate with someone who is out to smear your work. By posting one response and pointing back to it when needed, you can demonstrate that you've already handled it. This will help you avoid explaining the same thing in different ways in multiple venues, which could potentially give a hostile blogger more fodder for criticizing you or your research.

Explaining uncertainty with…baseball?



Credit: ©UCAR. Video by Noah Besser, produced by UCAR Communications for AtmosNews: NCAR & UCAR Science.

Scientists may be comfortable talking about varying levels of certainty or uncertainty when it comes to their work. But sometimes, what exactly is meant by degrees of confidence is lost in translation when talking with a broader audience, which can lead to confusion or the spread of misinformation.

One way to address complicated issues that deal with uncertainty is to **use metaphors the public can understand**, such as comparing steroid use in baseball to extreme weather events related to climate change. This goes back to an idea Susan Joy Hassol helped develop with Jerry Meehl at the National Center for Atmospheric Research and The University Corporation for Atmospheric Research, or UCAR / NCAR.

In this idea (demonstrated in the video), the impossibility of ascribing any single weather event to climate change is compared to the effect of steroid use by a record-setting ballplayer. While you could not attribute any individual home run to steroid use, steroids clearly increase the probability of a home run.

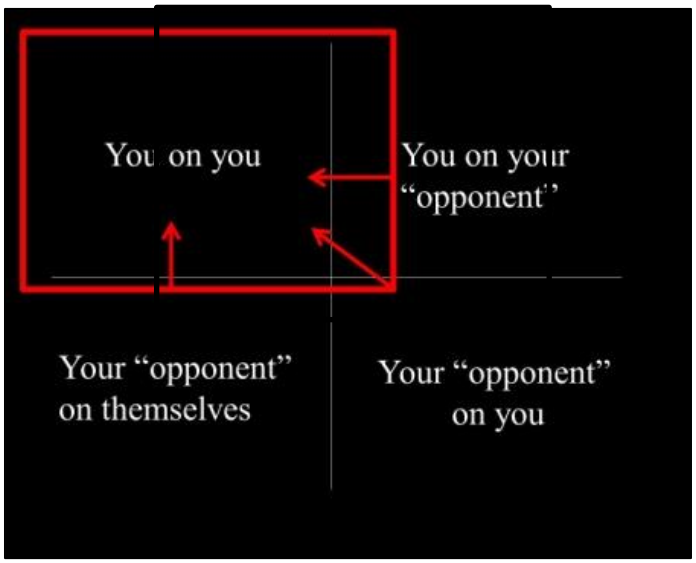
Social Math

Whether infinitesimal or infinite, numbers play a critical role in communicating science. But when explaining to the general public, or to others outside your field, it's important to put those numbers in perspective.

For example, instead of saying that we use **60-170 billion gallons of water every day** to cool power plants, you could say each minute, power plants use t**hree times the amount of water flowing over Niagara Falls over the same time period.**

Or you could use a graphic to demonstrate numbers, like an infographic or a simple chart. Using an infographic to tell a compelling story is an example of using "social math" to communicate science.

Sticking to Your Message



Here's a tip from the realm of strategic communication that can benefit not only politicians or business owners, but experts in any field. We call this tool the "message box." It's a visual tool that can help you organize your main points and prioritize your communications, especially when it comes to scientific topics that are perceived as controversial by the public or policymakers.

Spend most of your time communicating your main message!

The main messages you want to share are the "you on you" square. Because everyone's time and communications resources are limited, it's important to focus on your main points. Spending too much time trying to beat back misinformation can undermine public understanding of science because it feeds into the misperception that established science remains controversial. When you do need to respond to criticisms of research in your field, make sure you also use the opportunity to reinforce what is known. In this way, you can spend more time communicating accurate information in the "you on you" square.