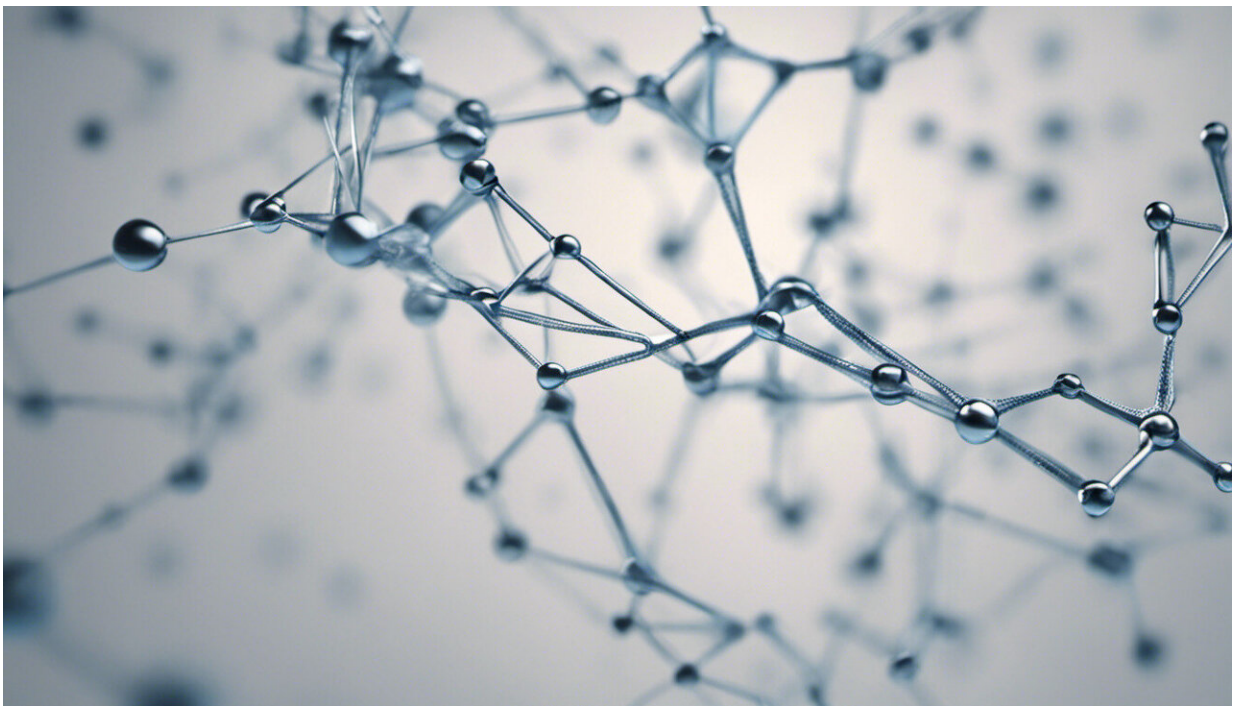


Science communication training should be about more than just how to transmit knowledge

May 31 2016, by John Besley And Anthony Dudo



Credit: AI-generated image ([disclaimer](#))

For some scientists, communicating effectively with the public seems to come naturally. Astrophysicist Neil deGrasse Tyson currently has more than [five million Twitter followers](#). Astronomer [Carl Sagan](#) enraptured audiences for decades as a ubiquitous cosmic sage on American

televisions. And Stephen Jay Gould's public visibility was such that he voiced an animated version of himself on "The Simpsons." But, for most scientists, outward-facing communication is not something they've typically thought about much... let alone sought to cultivate.

But times change. Leaders in the scientific community are increasingly calling on their scientist colleagues to [meaningfully engage with their fellow citizens](#). The hope is that such interactions can improve the [science](#)-society relationship at a time when we are confronting a growing list of high-stakes, high-controversy issues including climate change, synthetic biology and epigenetics.

The gauntlet has been issued, but can scientists meet it?

The answer to that question largely depends on one key group: professional [science communication](#) trainers who offer formalized guidance designed to improve scientists' public communication efforts. There's a wellspring of science communication programs, among them the [Alan Alda Center for Communicating Science](#), the [Center for Public Engagement with Science & Technology](#) at the [American Association for the Advancement of Science](#) and the [Communication Partnership for Science and the Sea](#). Programs like these typically provide communication courses of a half-day up to a week or more. Some organizations also employ in-house personnel to train their scientists to communicate.

Given the important role these training programs now play in the public communication of science, we sought to examine their work. Broadly, we were looking for commonalities in their efforts and experiences, and we wanted to spot possible opportunities for their growth. We were especially interested in something we view as being critical to effective public engagement: helping scientists identify and try to achieve specific communication goals.

What trainers focus on

In late 2014, we conducted a [set of 24 interviews](#) with science communication trainers from across the United States. Ours is the first published study examining this important community. We found that much of the training they provided focused on helping scientists share their research in clear ways that would increase knowledge.

This is consistent with what scientists have told us in surveys: their main objective in communicating their work is to [inform the public about science and correct misinformation](#).

Sharing knowledge will always be a central component of science communication – knowledge generation is, after all, the main enterprise of science. And relaying knowledge makes up the bulk of the science journalism the public encounters through the media – stories about new discoveries and the latest research.

But there are other reasons scientists might want to communicate with the general public. We call these "nonknowledge objectives" – things like fostering excitement about science, building trust in the scientific community, or reframing how people think about certain issues. These objectives are different from a biologist wanting to share with a listener the details on her research on bird migration, for instance. They're more about people, and forging relationships.

We've found that these sorts of nonknowledge goals have a [relatively lower priority](#) for scientists compared to the desire to get information across about their direct scientific work. Not surprisingly, only a few of the trainers we interviewed indicated that, at that time, they were explicitly trying to help scientists achieve these other kinds of nonknowledge objectives.

Nevertheless, the trainers told us they believed many of the scientists they train want to communicate to help raise public support for science in general and because they think their research will help people see the value in specific policy options.

Our work suggests that scientists and the trainers they work with often focus primarily on the successful transmission of science information, leaving those other objectives to fall into place. But there's a problem with that logic. Decades of science communication research – a research area now commonly referred to as [the science of science communication](#) – show that fostering positive views about science requires more than just trying to [correct deficits in public knowledge](#).

Matching the training to the ultimate goal

It may be useful to consider alternatives (or additions) to the character of the current training landscape. The emphasis now is on teaching scientists key journalism skills to help them share information more effectively – by, for instance, distilling jargon-free messages. Training typically places limited emphasis on whether sharing that information will have the desired effect.

Instead, given scientists' goals, training could help scientists avoid doing things that have little potential for impact or, worse, actually diminish people's views of science.

Extensive research shows that we tend to [trust people we judge to be warm and caring](#) because they seem less likely to want to do us harm. With that in mind, more training could explicitly help scientists avoid doing the types of things that might convey a cold demeanor. For example, no matter how accurate a scientist's argument may be, if communicated rudely it will likely miss its mark. Worse still, it may generate negative feelings that a recipient could then generalize more

broadly to the scientific community.

Related research on what people [perceive to be fair or not](#) when it comes to making important decisions could also inform communication training. Studies emphasize the potential strategic value of making sure people feel like they're being listened to and treated with respect. Imagine, for example, how you'd feel if a doctor didn't give you a genuine chance to share your personal experiences with an ailment.

Similarly, given what we know about the value of [framing](#), perhaps more training should help scientists find ways to talk about issues that are consistent with the scientists' work but that are also consistent with the priorities or worldviews of the people with whom they are speaking. For example, given the value that people put on their families' health, it may make sense to [frame climate change in terms of health issues](#).

Challenges to getting more strategic

There are at least two challenges associated with suggesting a more strategic approach to science communication.

First, it is easier to communicate in ways that come naturally and simply hope for the best.

Second, there is a danger that some people will misconstrue being strategic as being dishonest. On the contrary, effective strategic communication rests on authenticity, just like science. Science communicators should never do things like pretend to be warm, fake listening or frame things in ways they don't think are appropriate.

The point is that by thinking strategically, we can begin to recognize that our communication choices – whether it's leaving time after a talk for real discussion, calling those with whom we disagree ugly names or

framing every disagreement as a war – have consequences.

It also seems clear that science communicators and communication trainers – who, in our experience, provide outstanding training in key skills – are already focusing on certain tactics that affect things like trust without making the explicit connection. For example, just using accessible language and speaking without jargon might communicate that scientists care enough about those with whom they are speaking to accommodate them. The power of telling stories isn't just a better way to convey information; it's a social act with social consequences.

Effective public engagement involves high-quality interactions between people. This means that many of the actual effects are likely to be due to the quality of the relationships between participants, including scientists and nonscientists. Content matters, of course, but not unless a healthy dynamic for information exchange is established.

The science communication training community is already doing great work. Ultimately, as trainers and scientists get more strategic in their science communication, it will help justify the time and resources it takes to communicate effectively. And they can forgo activities that seem unlikely to have an impact.

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