PUBLIC ENGAGEMENT

The benefits of communicating

Survey data suggests that nanoscientists are relatively frequent public communicators and in general have a positive outlook when it comes to engaging with journalists and lay audiences.

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The communication of scientific findings with lay audiences has taken on heightened importance in recent years and scientists are now frequently being asked to play the role of public communicator for their work. But the push for greater and improved science communication is not new. Nearly a decade ago, for example, Ralph Cicerone, then the newly appointed president of the National Academy of Sciences, outlined his vision for the organization he was tasked to lead. Cicerone spoke immediately about the need for effective communication strategies to counter lagging public enthusiasm and comfort with science[1]. He specifically called on scientists to do a better job of communicating directly with the public[2]. Cicerone is not alone in this viewpoint. Similar sentiments have been echoed by academics and members of industry who have urged scientists to take advantage of technological advances in social media to better educate and communicate with the masses[3].

As science becomes increasingly politicized, effective communication becomes even more important. Legislation such as the High Quality Research Act in the US, which seeks to ensure that National Science Foundation (NSF) funds are only applied to projects that address the critical problems of the day[4], threatens scientific resources and has brought increased scrutiny to the work of researchers. In nanotechnology specifically, the US federal government has cut funding for the "education and societal dimensions" of the subject from US$41.9 million in 2012 to just US$35.5 million in 2013[5], which suggests that outreach will need to be done in a more cost-effective manner. In the face of diminished resources for public outreach, an even greater emphasis is likely to be placed on researchers themselves to publicize and promote the value of their work. In short, the ability to communicate the societal value of research to non-academic audiences is becoming a critical skill for scientists in all fields, including nanotechnology. Writing in *Nature Nanotechnology*, Anthony Dudo and colleagues at the University of Texas-Austin now provide a look at the public communication attitudes and behaviours of nanoscientists affiliated with the NSF's National Nanotechnology Infrastructure Network (NNIN), an integrated partnership of US research institutions focused on facilitating nanoscale research and development[6].

Through the use of survey data, the researchers find that nanoscientists engage in more frequent public communication than might otherwise be expected and that they have overall positive outlooks when it comes to engaging with journalists and lay audiences, both in terms of the societal benefits of such interactions as well as the impacts on their own professional development. In particular, they find that nearly half of the nanoscientists surveyed report participating in four or more public engagement activities in the past five years. And, moreover, three-quarters of those surveyed report positive impacts on their professional careers as a result of their public communication efforts. The team also pinpoint the drivers of communication attitudes, finding that the nanoscientists surveyed were more compelled to communicate based on beliefs about its importance than any personal enjoyment they may derive from the practice. Not surprisingly, those who saw value in public outreach report a greater willingness to communicate with journalists and lay audiences in the future.

And it turns out, those nanoscientists are correct in their assessments of the value of public communication, at least as it relates to their own professional development. Evidence is mounting that illustrates the professional benefits for scientists who publicize their research. Traditional newspaper coverage of journal publications has been found to correlate positively with citation numbers[7], and researchers have found evidence that Twitter mentions are positively related to measures of scientific impact, including h-index[8]. Findings such as those reported above may further motivate nanoscientists to seek out opportunities for public engagement as they suggest there are tangible rewards that go along with the practice. It may also help change the minds of those who fail to currently see the value in promoting their work through media and public channels.

Of course, motivating scientists to bring their research findings to lay audiences is hardly a panacea to all the woes currently facing science communication. Even scientists who are willing and excited to promote science still require an audience interested in hearing what they have to say. Traditional science outreach, and nanotechnology outreach in particular, has been criticized for failing to reach those audiences most in need, appealing instead to the already engaged and supportive[9]. The result has been widening gaps in knowledge between the most and least educated members of society[10]. Nevertheless, the results presented by Dudo and colleagues are a necessary first step for engaging audiences around the crucial science questions of the day. Future work will need to look beyond the motivations of nanoscientists to better understand how to engage audiences most in need of outreach. ❐

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References

1. *Chemical Eng. News* **83,** 31–38 (October, 2005).
2. Cicerone, R. J. *In Focus* http://www.infocusmagazine.org/6.3/president.html (2006).
3. Van Eperen, L. & Marincola, F. M. *J. Translational Med.* **9,** 199 (2011).
4. Rogers, K. High Quality Research Act doesn't know how science works (2013); available via http://go.nature.com/Au7uVD
5. National Nanotechnology Initiative *National Nanotechnology Initiative Budget* (2013); http://www.nano.gov/about-nni/what/funding
6. Dudo, A., Kahlor, L., AbiGhannam, N., Lazard, A. & Liang, M.-C. *Nature Nanotech.* **9,** 841–844 (2014).
7. Kiernan, V. *Sci. Commun.* **25,** 3–13 (2003).
8. Liang, X. *et al. J. Mass Commun. Q.* http://dx.doi.org/10.1177/1077699014550092 (2014).
9. Corley, E. A. & Scheufele, D. A. *Scientist* **24,** 22 (2010).
10. Cacciatore, M. A., Scheufele, D. A. & Corley, E. A. *Public Underst. Sci.* **23,** 377–395 (2014).