

Exploring How to Communicate Polar Science More Broadly: Polar-ICE Science Communication Workshop

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Abstract

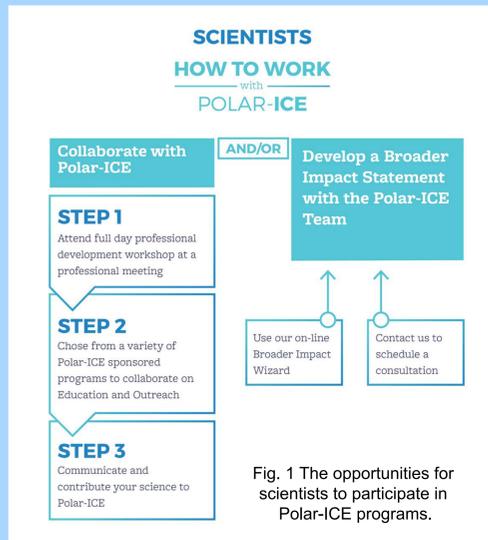
When research and education are effectively interconnected, the process of discovery can help stimulate learning, and the resulting research can be communicated to a broader audience. Although there is no single approach for a successful integrated research and education plan, the Polar-ICE **Science Communication Workshop Series** helps attendees build the foundation for thinking creatively about how their research will impact their education goals and, conversely, how their education activities will feed back into their research. Each workshop features demonstrations and discussions designed to build skills, including:

- connecting with diverse audiences
- crafting and telling your science story
- deconstructing/decoding science for non-experts
- building effective ways to teach and communicate with the public
- broadening the reach of your science.

These day long workshops build upon lesson learned from the Centers for Ocean Science Education Excellence (COSEE) Gears Professional Development Workshops for Early Career Scientists run from 2012-2014. Evaluation results from the first workshop indicate that scientists were positive about the workshop format and content. Scientists communicated a positive change in both attitudes regarding communicating their research and knowledge of how to go about communicating their research.

Introduction

The Polar-ICE team is comprised of educators and scientists working together to share scientific research from the Arctic and Antarctica with broader audiences. Our objectives are to help scientists communicate the importance of these regions to larger audiences and engage students in polar research, including the climate and environmental changes. We work with polar scientists to develop and implement broader impact projects and provide opportunities to learn and apply effective communication techniques (Fig. 1).



The first Polar-ICE Science Communication Workshop Series kicked off with an in-person workshop prior to the Ocean Sciences Meeting in February 2016. Twenty-two scientists at various career stages participated, more details on the workshop are included below. A compendium educator workshop was run for 14 educators from around the county. The educators spent part of the day exploring polar research, including how the research is conducted and how to bring it to their students, and the other part of the day working directly with the scientists to help them more effectively communicate their research. Two additional workshops will be held prior in 2017 and 2018 at meetings attended by polar scientists.



Workshop Sessions

Deconstruct Your Science

Novices often struggle to develop the mental moves of a Polar Scientist. One thing that can make it difficult is that the mental moves of the scientist have become natural and tacit, and so hard to make explicitly available to novices. In this session, participants worked to identify bottlenecks to learning, to “decode” their own expertise, and to share strategies to make their mental moves available to their audience members. They also worked on simple analogies that could help address these bottlenecks.

Telling Your Science Story

We are all made up of stories. They are the currency of communication and memory. When crafting a science story, it is often helpful to understand common bottlenecks to learning and use the analogies that have been created to help overcome these bottlenecks. In this session, participants learned how to take their science and the analogies that they created in the previous session to frame it inside of a story. They then practiced telling it by sharing with the group. Using examples, participants were also presented with information on how to produce their own audio and video stories.

Connecting with Diverse Audiences

In addition to using effective communication techniques such as decoding the science and storytelling, communication and engagement with members of the public from underrepresented groups hinges on effective mentorship and cultural competency on the part of scientists. In this session, participants explored culturally responsive communication strategies, which build from the assumption that audience members may come with a set of beliefs, skills, and understandings that can be grounded within their personal cultural experiences.

Broader Impacts

Building upon the information that they had learned in the previous session, participants engaged in a discussion around effective practices for developing and implementing broader impacts projects. Then, they learned about how they can incorporate Polar-ICE into their broader impacts activities.

Application

To help the participants apply the information and skills that they had gained during the workshop, they were asked to work with an educator to discuss how to more effectively convey their research to their intended audience.

Evaluation Results

Evaluation results indicate that the participants’ reactions to the workshop content and delivery was positive. 95% of the participants indicated that overall the workshop met their expectations (Fig. 2). When asked how satisfied they were, the participants were particularly satisfied with the opportunity to interact with other participants (86.4% were very satisfied) and the feedback that they were given by the educators (86.4% were very satisfied). Moreover, participants reported positive changes in knowledge and attitude related to communicating their research (Fig. 3).

Describe how satisfied you were with the following aspects of today's workshop:	Not Very	Somewhat	Very
Presentations (n=20)	0.0%	5.0%	95.0%
Amount of new tools/skills (n=22)	4.5%	27.3%	68.2%
Amount of New Learning/Content (n=22)	0.0%	36.4%	63.6%
Opportunity to Interact with Participants (n=22)	4.5%	9.1%	86.4%
Opportunity to Interact with Presenters (n=22)	0.0%	18.2%	81.8%
Opportunity to interact with educators (n=22)	0.0%	36.4%	63.6%
Feedback provided to scientists by educators (n=22)	9.1%	4.5%	86.4%
Overall, met my expectations (n=22)	4.5%	0.0%	95.5%

Fig. 2 Percentage of scientists who reported they were not very satisfied, somewhat satisfied, and very satisfied with the different aspects of the workshop on the post-survey.

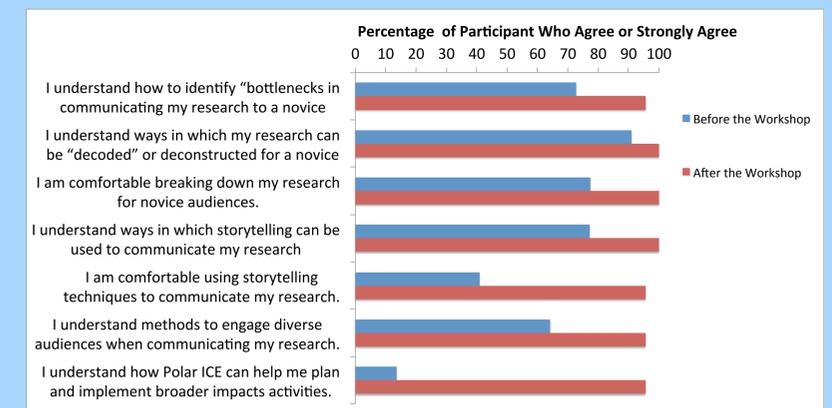


Fig. 3 Percentage of scientists who agreed or strongly agreed that they had an understanding or sense of self-efficacy before the workshop versus those who agreed or strongly agreed after the workshop.

Scientists also indicated in the evaluation that they would have liked more time to interact with the educators. Additionally, they wanted more time for reflection and discussion of their intentions for planning and implementing broader impacts activities. This would allow participants time to think through what they are currently doing, how they can do it better, and then share their work with their peers and educators. To accomplish this, more time will be added to future workshops by limiting the number of workshop sessions within the 1-day format or a half day will be added to the workshop overall.

Summary

- ❖ The purpose of the Science Communication Workshop Series is to provide polar scientists with the skills and techniques necessary to improve their teaching and communication while also helping them to develop and implement more robust broader impact projects.
- ❖ Comparison of pre/post assessment demonstrate that the participants found the kick-off workshop helpful in thinking about and communicating their science.
- ❖ More time will be built in to future workshops for scientists to work with educators and reflect on their broader impacts activities.