Science Communication Training Workshop for College of Agriculture Master's Students

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Introduction

Historically much of science communication has relied on the knowledge deficit model, but that model has been inadequate for addressing societal problems, partly because of the lack of scientists' science communication skills (Brownell et al., 2013; Longnecker, 2016; Simis et al., 2016). Science communication trainings are needed, but there are no clear standards about what practices are most effective (Baram-Tsabari & Lewenstein, 2017). An important component of effective communication is trust, which is notable given increasing distrust in scientific institutions (Fiske & Dupree, 2014; Simis et al., 2016; Su et al., 2015). Improving scientists' communication skills can help extend the results beyond the scientific community, which also improves the reach of information *within* the scientific community (Simis et al., 2016).

Conceptual Framework

Storytelling is a key aspect of effective science communication (Bray et al., 2012), which can be addressed through the Narrative Paradigm. One of the key problems with the knowledge deficit model is that it assumes people are rational, while the narrative paradigm shifts focus from rationality of the audience to rationality of the story being told (West & Turner, 2018). Narrative rationality consists of coherence (i.e., internal consistency of the story) and fidelity (i.e., trustworthiness of the story), which is then evaluated by the audience. Facts and logic are still present, but it takes into account the context of the audience, which is an area that scientists often omit or underestimate in their communications (Besley & Tanner, 2011; Brownell, 2013).

Methods

Two 6-hour science communication trainings were conducted in the spring of 2022 for master's students in a college of agriculture as a pilot. The trainings focused on translating research for public audiences, working with professional communicators, being interviewed, maintaining an online presence, and practicing a three-minute thesis presentation. Participants completed a preflection before the first session asking about how they defined science communication, examples of science communication they have seen, their expectations for the trainings, and their motivations for joining the training. At the conclusion of the session, the completed a reflection about their experience that day, what they learned, and how the training could be improved for the next session. The preflection before the second session asked about changes in perceptions of science communication since the first session, examples of science communication they had seen since the first session, and if their perceptions had changed of the training. They completed a reflection at the end of the second session about their experience that day, what they had learned, and how the training could be improved for future iterations. There were 12 participants in the program. Participants were emailed an IRB consent form requesting permission for their reflections to be used for research, and the seven who were completed them were analyzed. The constant comparative approach was used to analyze the reflections (Glaser, 1965).

Results

In the first preflection, participants considered science communication as sharing and educating about research ("Working to educate others in research based facts and information."). In the second preflection, responses shifted to talking about relevance and importance of science communication ("I better understand the importance of researchers being able to communicate in this way."), as well as the importance of relationships ("I would say I better understand the importance of building relationships with communication professionals instead of trying to do things on my own.") and modes of science communication ("I knew there were many modes of media available, but the variety and thought that goes behind each one is impressive.").

Going into the first session, they were expecting to improve how they communicate about research, improve how they distill information for others, and how to work with the media ("Gain tools and skills necessary to improve the clarity and adaptability of the way I talk about my research, and science more generally."). They were motivated to participate so they could improve their communication skills, share their research, and bridge the gap between the public and the scientific community ("I saw that there is sometimes a communication gap between the public and scientific community that needs to be filled"). They said they had learned to present information in a conversational manner and make the research impactful to others ("It was very impactful to know that others are interested in my research and want to share it with others").

In terms of how sessions were run, they enjoyed the experience and working through pitching their research step-by-step ("I really enjoyed getting to work through pitching the story of my research step-by-step and working up to the interviews at the end."), but they believed sessions could be improved with more time for activity sessions, more feedback from the communicators at their tables ("What was more helpful for me was the feedback from the communicators at our table listening to our pitches and helping us work through each step."), and rotating which tables they sat at to learn more about others' research ("I really liked the group I worked with but I am also curious to know what other people are studying."). In reflecting on the second session, participants continued to have positive perceptions, including noting improvement in how things were paced ("I think it was incredibly helpful and much better paced today than the first session."). Maintaining an online presence as a researcher was a new topic for many of the participants ("I am not very active on social media but learning that it can be a tool to promote yourself to prospective employers will make me take it seriously."). Overall, they enjoyed the hands-on activities and small-group settings that fostered dialogue and feedback with the communicators and between participants ("Overall both sessions were great. The talks and experiences were great and the hands-on activities were wonderful and helpful.").

Conclusions

One of the key findings is the shift in perspective on what science communication was in terms of its goals. Participants shifting from thinking of science communication as merely sharing information to one of building relationships and audience-centered focus, which is a key component of the Narrative Paradigm (West & Turner, 2018). Overall, the program was well-received, which is beneficial given scientists' overall lack of science communication skills (Brownell, et al., 2013; Longnecker, 2016; Simis et al., 2016). While there are no clear standards for what should be included in science communication training programs (Baram-Tsabari & Lewenstein, 2017), this project gives early indications that hands-on practice and direct feedback from practicing communicators is beneficial to learners' experiences.

Recommendations

Future science communication trainings can be informed by the program results, particularly the emphasis on hands-on practice, feedback from professionals, and an audience-centered focus for the sessions. The project having multiple sessions also allowed participants to process information before getting to apply the information again, as opposed to a one-off program. Because this was a pilot, further implementations are needed to best understand what should be included in science communication trainings (Baram-Tsabari & Lewenstein, 2017). This training was limited to a specific population at a specific college of agriculture. Similar trainings and assessments of those trainings should occur with different audiences, such as undergraduate researchers and faculty members, as well as in different locations across the country.

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