

Improving Communication Between STEM Scientists and Consumers

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Introduction

- Public groups without a science background often have strong and influential opinions about scientific concepts they perceive to be controversial (Boulter, 1998).
- Sometimes, these opinions evolve into misconceptions that impede support for the scientific community (Boulter, 1998).
- Misconceptions about scientists and their research can be attributed to the lack of effective communication between the scientific community and the public (Brownell, Price, & Steinman, 2013).





Purpose & Objectives

To understand the science communication interest and practices and of STEM scientists and identify the resources scientists feel they most need to communicate effectively beyond the academy.

O1: Describe the science communication interests of science faculty.

O2: Understand the science communication practices of science faculty.

O3: Identify which resources related to science communication scientists feel they most need to effectively communicate their research to the public.

Framework

- This quantitative study aligns with the six constructs (Bell, Lewenstein, Shouse, & Feder, 2009) of the Science Communication Learning Goals and the learning goals needed to accomplish each construct (Baram-Tsabari & Lewenstein, 2017).
 1. **Affective** – Influencing to experience excitement and motivation
 2. **Content knowledge** – truly understanding and utilizing specific science communication concepts
 3. **Methods** – Implementing written, oral and visual communication skills
 4. **Reflection** – Reflecting on science communication's role in society
 5. **Participation** – Actively becoming involved in science communication activities
 6. **Identity** – Confidently contributing to the field of science communication

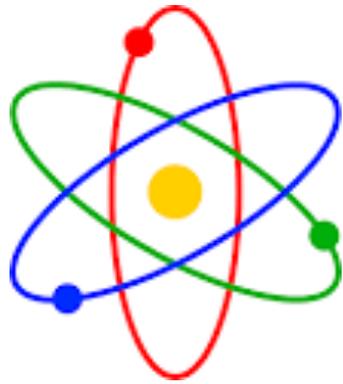
Instrument Development

- Survey methodology (Fraenkel, Wallen & Hyun, 2019) to examine and describe characteristics of the scientist, or research faculty population.
- Relied on guidance from previous literature on science communication
- U.S. National Research Council's recommendation of the six standards of learning science in informal environments
- The final instrument contained 51 questions and addressed 13 constructs as well as demographic information, and took participants approximately 22 minutes to complete
 - Constructs: Affective, personal enjoyment, communication experience, social media, past training, future training, content knowledge, communication methods, reflection, media interest, communication grant, research experience, department and leadership

Method

- All questions in the survey related to the model's six constructs and included questions that represented the learning objectives within each
- Surveyed 1,755 scientists in colleges of agriculture, engineering, science, and veterinary medicine and biological sciences.
- Achieved a 15% response rate with a total of 266 completed responses.
- More than half of the respondents were males and more than half were Caucasian
- To incentivize participants, we donated two dollars for each completed questionnaire to the food bank on campus.





Validity & Reliability

- Used Dillman's best practices for instrument development
- Content validity was achieved through an independent examination of the instrument by each member of the research team
- A pilot study was also conducted to ensure reliability of the instrument

Results

Participants rated the following resources as most important to be able to communicate effectively with the public:

1. Experience communicating
2. Time for communication
3. Support from administration

Conclusions

Scientists showed extreme interest in communicating their research with the public, but need professional assistance.

Scientists are trying to communicate their research, but do so with no prior communication training or learning

Communication experience, time for communication and support from administration are perceived to be the most important resources among science-faculty.

The findings provide a roadmap for closing the communication gap between STEM scientists and the lay public.



Future Research

- Understand department heads' perceptions of science communication and the support they offer to scientists to communicate
- Understand how scientists come to identify as science communicators
- Identify where scientists can best reach consumers for maximum impact
- Develop a toolkit with curriculum framework to deliver information
- Pre- and post-test assessment of curriculum

Acknowledgements

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