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Motivation:

Today's STEM graduate students need to be able to effectively communicate their research with the public. How do we develop and assess a curriculum that fosters these skills in tomorrow's science professionals?

TRAINING

Goal oriented Improvisation:

- Yes and...
- Focus on assessing audience
- Leveraging metaphors
- Classifying ideas
- Employing storytelling patterns
- Clarifying core ideas

Podcasting:

- Explain why your research matters.
- Discuss an unexpectedly important facet of your research
- Explain a scientific concept that is misunderstood in your field
- Summarize a paper in your field for:
 - Disciplinary colleagues
 - Non-disciplinary colleagues
 - A lay audience
- Tell a story to make a boring fact interesting

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How should we train and assess our STEM graduate students in oral communication?

STEM Storytellers connect, convey & captivate!



Photos by Adrian Sanchez-Gonzalez

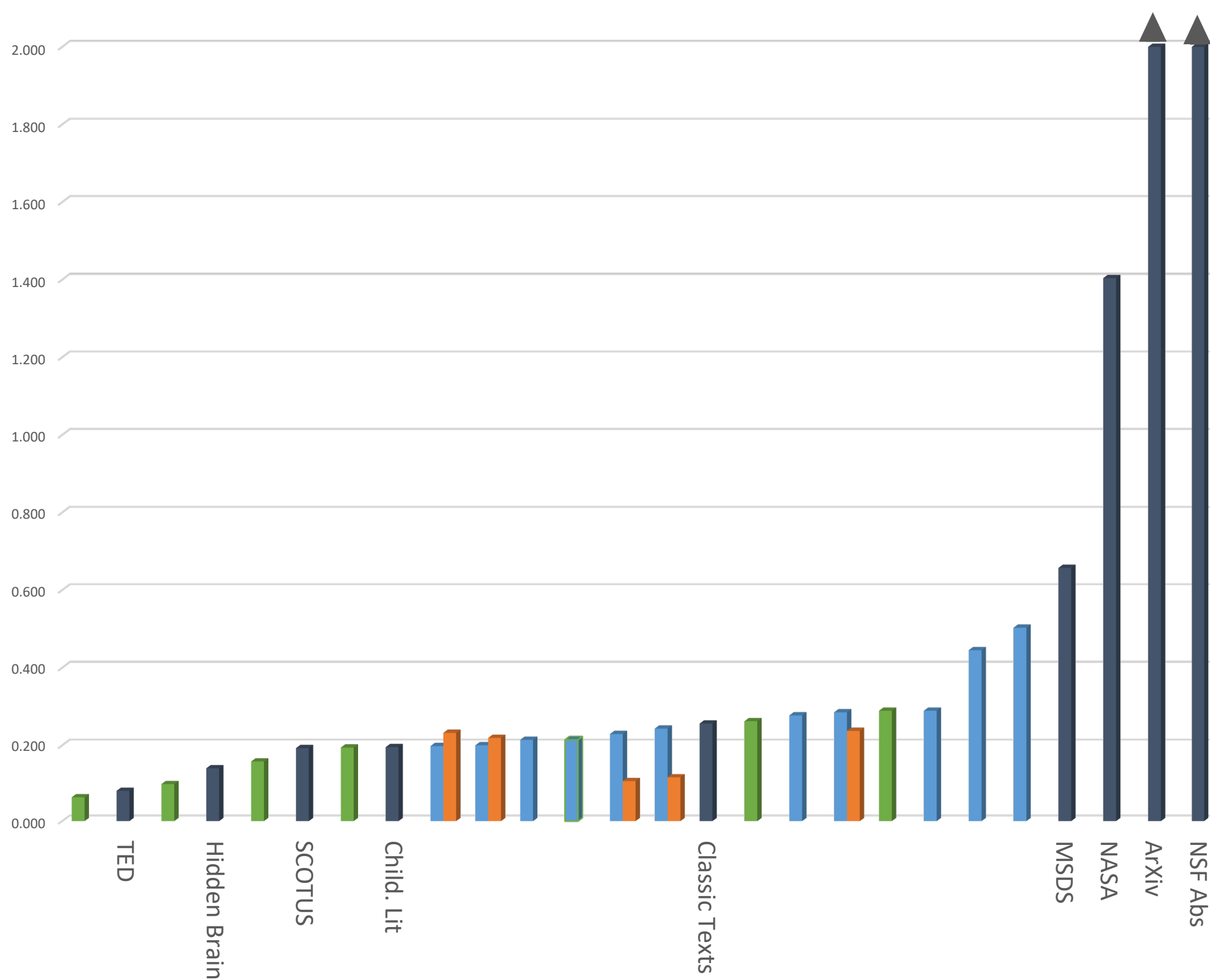


ASSESSMENT

Rubric use and development

- 6 item anxiety measure
- Directed Journaling
- Personal Report of Communication Apprehension
- Public speaking competency rubric
- Calculation of scientific jargon using R script we developed

How much jargon do our fellows use?



Products

1. Green, J. L., Hughes, B. E., Sterman, L., Willoughby, S., LaMeres, B., Davis, K., Women in Science and Engineering Conference, "The art of storytelling: Communicating science with the public," Women in Science and Engineering Conference, Bozeman, MT, (October 19, 2019).
2. Green, J., Willoughby, S., LaMeres, B., Hughes, B. E., Sterman, L., Organ, C., Davis, K., Joint Statistical Meetings, "The Art of Storytelling: Engaging Audiences with Podcasts and Curiosity Cafes," American Statistical Association, Denver, CO. (July 2019).
3. Willoughby, S., Chemistry REU students at MSU, "Using Storytelling to convey your REU research," Bozeman, MT, (July 8, 2019).
4. LaMeres, B., Willoughby, S., Hughes, B. E., Green, J., Sterman, L., American Society of Engineering Education Annual Conference, "Using improvisational acting techniques to improve the oral communication skills of STEM graduate students," American Society of Engineering Education, Tampa, FL. (June 2019).
5. Willoughby, S., Green, J., Sterman, L., Hughes, B. E., LaMeres, B., Davis, K. E., American Association of Physics Teachers, "Quantifying Jargon," Provo, UT. (July 22, 2019).
6. Willoughby, S., LaMeres, B., Hughes, B. E., Organ, C. (2019). Using improvisational acting techniques to improve the oral communication skills of STEM graduate students. Tampa, FL: American Society for Engineering Education.
7. Willoughby, S., Hughes, B. E., Sterman, L., Organ, C., LaMeres, B., Green, J., Davis, K. E., American Association of Physics Teachers, "STEM Storytellers: Improving graduate students' oral communication skills," Washington, DC. (August 1, 2018).
8. Green, J., Willoughby, S., LaMeres, B., Hughes, B. E., Sterman, L., Organ, C., Davis, K., Joint Statistical Meetings, "STEM Storytellers: Improving Graduate Students' Oral Communication Skills," American Statistical Association, Vancouver, BC. (July 2018).
9. LaMeres, B., Willoughby, S., Hughes, B. E., Sterman, L., ASEE Annual Conference and Exposition, "STEM Storytellers: Improving the Oral Communication Skills of STEM Graduate Students," ASEE, Salt Lake City, UT. (June 24, 2018).
10. Willoughby, S., Davis, K., Science Policy Workshop Bozeman 500 Women Scientists, "Communicating Science to Policy Makers," Union of Concerned Scientists, Bozeman, MT. (February 24, 2018).