STEM Storytellers:
Improving Graduate Students’ Oral Communication Skills

Jennifer L. Green, Shannon Willoughby, Bryce Hughes, Brock LaMeres, Christopher Organ, Leila Sterman, & Kent Davis

Joint Statistical Meetings
August 1, 2018
Communication: Science + Public

• Effectively communicating scientific ideas is important!
  – Direct benefits to society
  – Use of public funds
  – Inform policy decisions

• Graduate students in Science, Technology, Engineering and Mathematics (STEM)-related fields often lack training needed (Rising Above the Gathering Storm, 2007)
STEM Storytellers: The Team

Shannon Willoughby
Physics

Library Sciences

Math Sciences

Education

Engineering

Earth Sciences
STEM Storytellers

- Program and assessment
- Recruitment and application process
- Reflections
STEM Storytellers: The Program

• Novel oral communication curriculum for STEM graduate students
  – Create jargon-less podcasts
  – Train with improvisational actor on stage presence
  – Present at “Curiosity Cafés” for general public

• Three one-year cohorts; Eight fellows / cohort

2017-2018
• Development
• Recruitment

2018-2019
• Cohort 1
• Assessment

2019-2020
• Cohort 2
• Assessment

2020-2021
• Cohort 3
• Assessment
STEM Storytellers: The Program

In this program, fellows will:

- Learn how to expertly communicate at conferences, in interviews, and with the public
- Record podcasts to discuss cutting edge science
- Work with a professional actor on improvisation
- Star in their own Curiosity Café
- Attend the American Association for the Advancement of Science annual meeting
STEM Storytellers: Fall Semester

- Attend weekly 90-minute workshops
  - Storytelling & improvisational techniques
  - Use of jargon
- Record podcast summarizing recent STEM journal article
STEM Storytellers: Spring Semester

• Attend weekly 90-minute workshops
  – Stage presence
  – Public speaking skills
  – Improv techniques

• Present summary of thesis at Curiosity Café
Outcomes and Assessments

• Reduce use of jargon
  – “Jargoness” score (Sharon & Baram-Tsabari, 2014)

• Improve stage presence
  – Develop body language rubric for oral communication

• Improve public speaking skills
  – Public Speaking Competence Rubric (Schreiber et al., 2012)
Advertising

- Posters put up in all STEM departments
- PI met with STEM department heads and graduate student groups
- Emails sent to students and faculty
- Email address set up to field prospective applicants’ questions
Advertising: Posters

Sound familiar? If you are interested in improving your oral communication skills, we can help!
Advertising: Website

Apply to become a STEM Communication Fellow: Applications due by June 15th, 2018.

Applications for the Fellowship can be completed below. Four files need to be uploaded to Box, and the form below filled out. If you have any questions, feel free to email stemstorytellers@montana.edu

Please prepare the following materials:

1. A 2 to 3 minute oral summary (audio recordings of your thesis or dissertation work. If you have not started thesis work, record a summary of a recent article in your field of study.
2. A script of the above recording
3. Your current CV
4. A copy of PIP Status, signed by you and your advisor.
5. Put all of the above materials into a zip file, and upload the file below.

Use the following naming scheme: lastname.zip (e.g. smith.zip).

Upload your file here:

Submit File to Cohort 1 applications
Application Materials

- 2-3 minute oral summary of thesis or dissertation work
- Script of the audio recording
- Current CV
- Expectations Contract, signed by student and advisor
Applicant Pool

• N = 19 STEM graduate students seeking doctoral degrees
• ~ 25% male, 75% female
• Departments represented:
  – Chemical Engineering
  – Chemistry
  – Earth Sciences
  – Ecology
  – Health and Human Services
  – Mathematical Sciences
  – Mechanical and Industrial Engineering
  – Microbiology and Immunology
  – Physics
Motivation to Apply

• “As a short female I am not the typical engineer so it is hard for me to get respect in my field when speaking[;] ... stage presence will help me to better show my knowledge in the field.”

• “…I would strive to increase STEM awareness and interest among underrepresented populations ... through focusing on children.”

• “I struggle to find the balance between personable and professional, and I hope ... [to] develop my personal ‘brand’ as I also develop my skills.”

• “I would also like to gain the confidence to ask questions at departmental seminars.”
Rubric / Selection Criteria

• Understandability of content for general audience
• Quality of delivery
• Use of filler words
• Organization of content
• Alignment of fellowship with student goals
• Other: Graduation date, Department, Diversity of scores
First Cohort

• N = 8 STEM graduate students (6 female, 2 male)

• Departments represented:
  – Chemical Engineering
  – Chemistry
  – Earth Sciences
  – Ecology
  – Health and Human Services
  – Mathematical Sciences (n = 2)
  – Mechanical and Industrial Engineering
  – Microbiology and Immunology
  – Physics
Reflections

• Multidisciplinary team
  – Diverse perspectives
  – Better understanding of different departmental / disciplinary cultures

• Application process: Adaptations and questions
  – Audio recording criteria
    • Disciplinary variation in when students identify research topics
    • Dissertation or thesis work VS summary of recent article in field of study
  – Strong applications: Will students with a well-prepared audio recording still benefit from the program?

• Wide range of fascinating research topics!
References


This work is based in part by support from the National Science Foundation’s *Innovations in Graduate Education* (NRT:IGE) program through award number 1735124. The findings of this work are those of the author and do not necessarily reflect the views of the NSF.