STEM Storytellers:

Improving Graduate Students' Oral Communication Skills

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Joint Statistical Meetings

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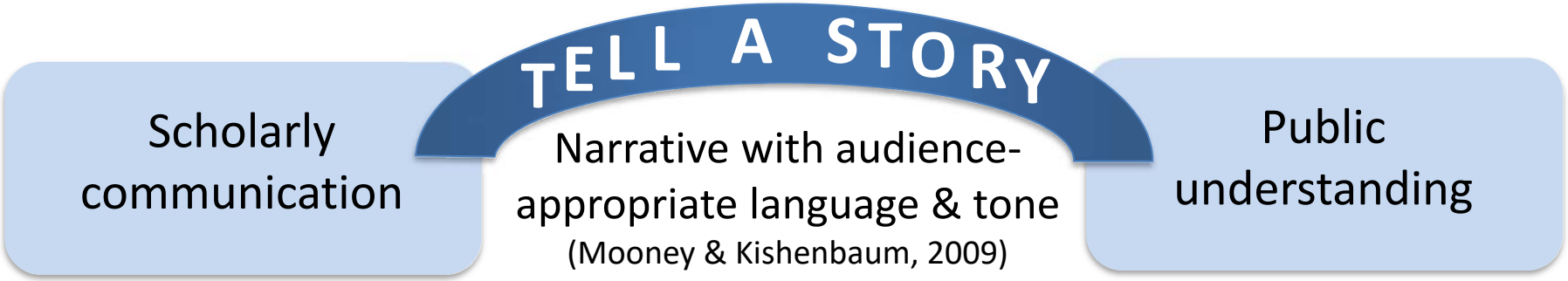
Communication: Science + Public

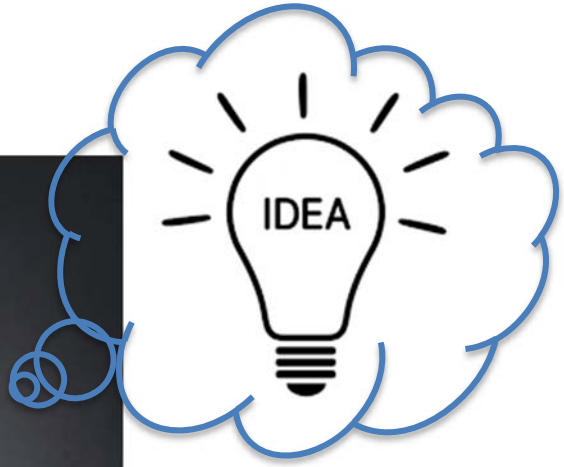
- Effectively communicating scientific ideas is important!
  - Direct benefits to society
  - Use of public funds
  - Inform policy decisions



- 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

Engineering

Math Sciences

Earth Sciences

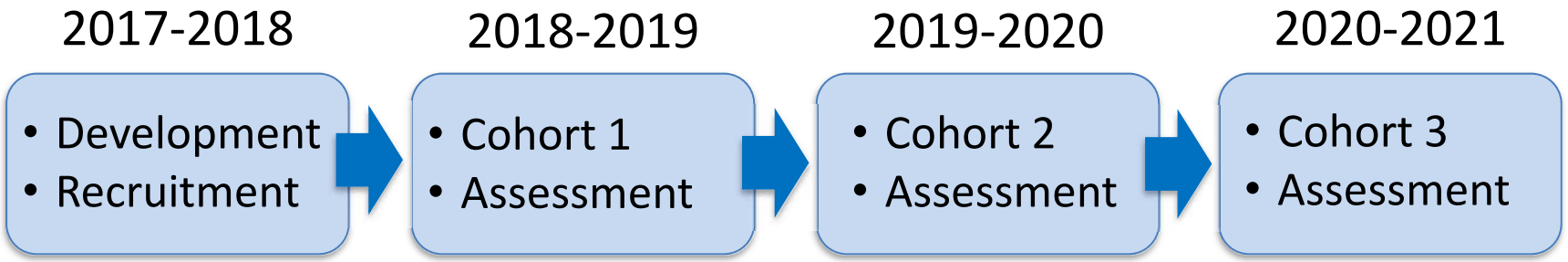
Education

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



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

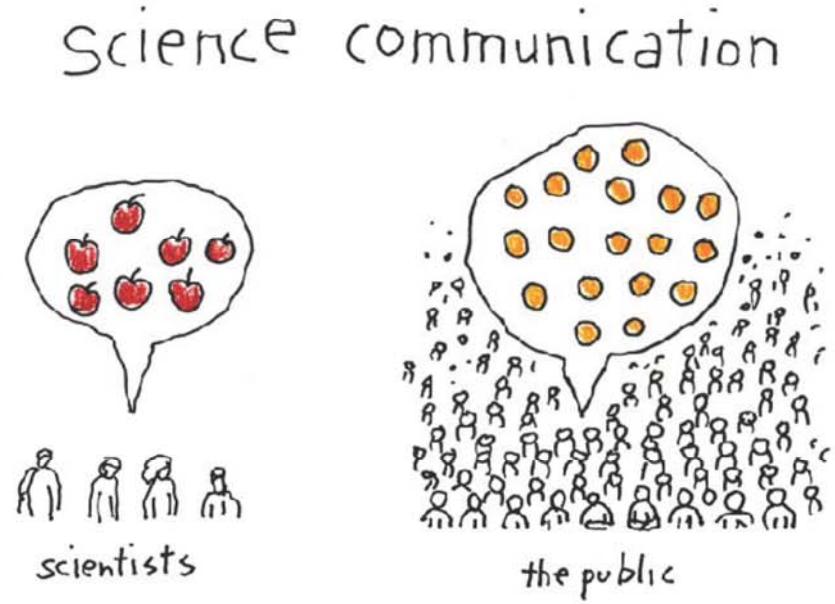
Outcomes and Assessments

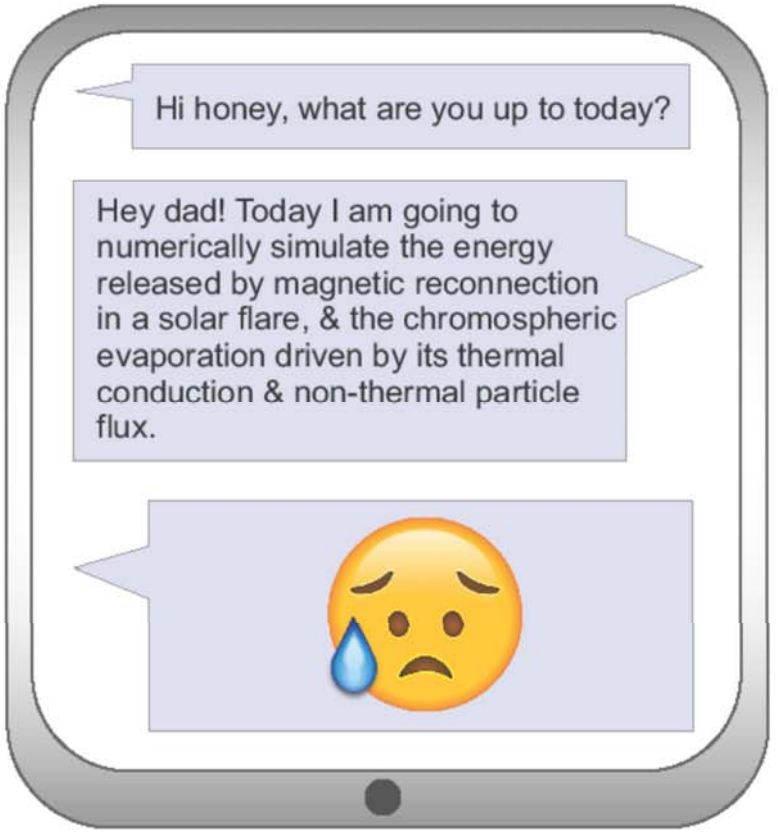
- Reduce use of jargon
  - "Jargoness" score (Sharon & Baram-Tsabari, 2014)
- Improve stage presence
  - Develop body language rubric for oral communication
- Improve public speaking skills
  - Public Speaking Competence Rubric (Schreiber et al., 2012)

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

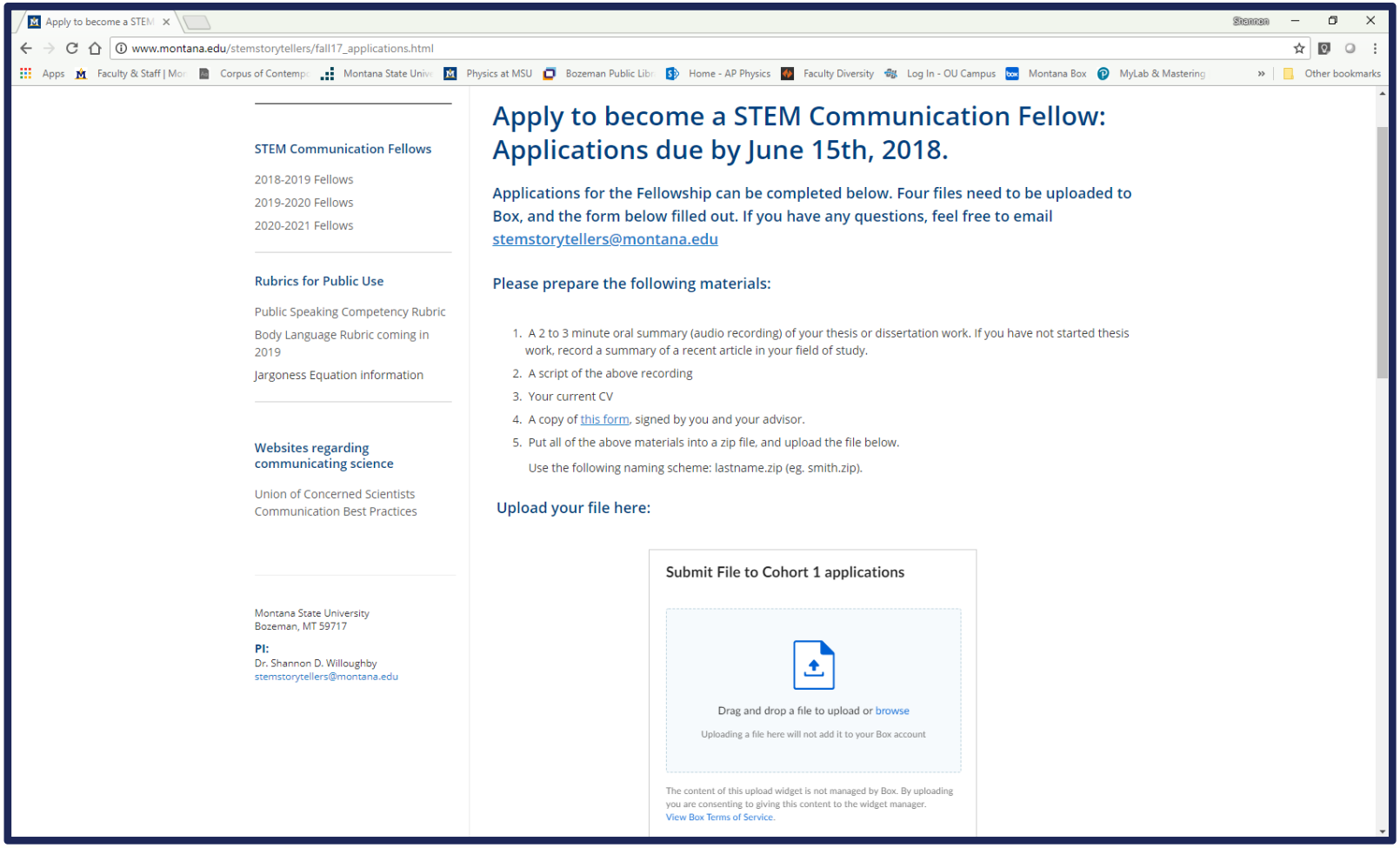
Advertising: Posters





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

Advertising: Website



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

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