

Science Storytelling: Bridging the Gap Between Knowledge and Audience

Part 1

Objective: To analyze and discuss the effectiveness of storytelling in science communication.

Instructions:

Step 1: Introduction—The Importance of Storytelling in Science

- Begin the class by discussing storytelling in science.
- Ask students questions such as:
 - Do you think there is a place for storytelling in science?
 - In what situations could it be an effective method to share science and why?
 - What potential challenges or drawbacks could there be in using it?
- Give examples of scientists and their discoveries that were popularized by stories, citing examples such as:
 - Alexander Fleming’s discovery of penicillin
 - Charles Darwin’s theory of evolution
 - Watson and Crick’s discovery of the DNA double helix

Step 2: Before starting the video, distribute the questions (on the next page) and give students time to read them.

Step 3: Watch the video “Sharing Science Through Story: Fergus McAuliffe at TEDxDublin.”

<https://www.youtube.com/watch?v=cXJJvvjSB9c>

Play the entire video (~13 minutes), or if you are pressed for time, begin at 7 minutes—when the speaker shares the science of a wood frog through storytelling.

Step 4: After finishing the video, have students answer the questions individually or in small groups.

Step 5: Class Discussion—Facilitate a discussion based on students' responses to the questions, encouraging them to provide examples and insights from the video. Emphasize the importance of storytelling in science communication and its potential to engage and connect with diverse audiences.

Questions—Sharing Science Through Storytelling

1. Hooking the Audience:

How does the speaker initially engage his audience when starting his story about the wood frog?

Suggested Answer: The speaker hooks the audience by addressing a universal theme—life and death—to which all people can relate. He poses intriguing questions such as "What if you didn't need a beating heart to be alive?" This creates curiosity and excitement among the listeners. Finally, to explore the questions he asks, the speaker tells the audience they must go on *a journey*, which elicits a sense of anticipation.

"How clear is the line between life and death? Everyone here has something in common—a beating heart that keeps us alive....What if you didn't need a beating heart to be alive? To answer this question, we must go on a journey..."

2. Core Message & Meaningfulness:

What is the speaker's central message in telling the story of the wood frog? And why would the audience care about his message?

Suggested Answer: The core message of the speaker's story about the wood frog is to challenge our perception of what it means to be alive. By describing how the wood frog adapts to survive in the cold without a beating heart, the speaker prompts us to reconsider our understanding of life and death.

The theme of life and death is universally relatable, and the question of what it means to be alive resonates with all humans. Therefore, the audience would care about this message as it addresses fundamental aspects of their existence.

3. Relatability:

How does the speaker frame his message to make it relatable for his audience?

Suggested Answer: Throughout his story, the speaker draws parallels between humans and the wood frog, making the scientific concepts relatable to the audience's own experiences and understanding.

4. Accessibility & Engagement Strategies:

What techniques does the speaker employ to make his talk accessible to his audience? And how does he keep his audience engaged throughout the talk?

Suggested Answer: The speaker uses humor and props, such as the frog and plastic cell models, to simplify complex scientific concepts and keep the audience visually and mentally engaged. Furthermore, the speaker maintains an engaging tone and pace, which helps to immerse the audience in his story.

5. Effective Ending:

How does the speaker conclude his story about the wood frog, and what makes this an effective ending?

Suggested Answer: The speaker ends by restating the theme of life and death in a thought-provoking way—"That's how the wood frog blurs the line between life and death. Not by freezing to death. But by freezing to live." This conclusion effectively reinforces his central message and leaves a lasting impact on the audience.

6. Overcoming Barriers in Science Communication:

After telling the wood frog story, the speaker talks about overcoming barriers in science communication through storytelling. How does he propose to overcome:

a. The objective language barrier?

Suggested Answer: By using emotional terms and discussing concepts (like life and death) to which all people can relate, while explaining the science.

b. The context barrier?

Suggested Answer: By embedding scientific information within a compelling story.

c. Presenting details in a familiar way?

Suggested Answer: By structuring the presentation like a simple story with a beginning, middle, and end, making it familiar and easy to follow for the audience.

7. Key for Scientists to Engage the Public

At the end of his talk, what does the speaker say is key for scientists to do to engage the public?

Suggested Answer: The speaker emphasizes the importance of reconnection between scientists and the public. He suggests that scientists should engage the public through the simple language of storytelling to foster understanding and appreciation for science.

"For scientists to reconnect with the public, we must not be afraid to use the simple language of storytelling. Because simple language does not mean simple thinking. To reconnect, we use the oldest communication tools we have—the voice, the ear, and the Story."

- Fergus McAuliffe



Part 2

Objective: Students will practice sharing science through storytelling, thereby exploring a useful technique to bridge the gap between scientists and their lay audience.

Activity:

- 1. Before class:** Create a list of drinking water related topics (or another scientific topic the class has learned about during the year). Students will use these topics to share science through storytelling.
- 2. Introduction:** Explain to students that they will be practicing sharing science to a lay audience through storytelling. Emphasize the importance of making scientific concepts accessible and engaging when speaking to the general public.
- 3. Group Formation:** Divide students into small groups and assign each a different topic from your list.
- 4. Worksheet Completion & Presentation Preparation:** Have groups work on completing the associated worksheet (next page) and crafting their science story. Encourage students to collaborate and brainstorm ideas together.

Emphasize that they should focus on making their story engaging and understandable for a lay audience. Encourage students to prepare visual aids or props to use while telling their story.

Circulate among groups to provide guidance and assistance as needed.
- 6. Group Presentations:** Have each group present their science story to the class.
- 7. Class Discussion:** Facilitate a discussion with the class about the effectiveness of each group's storytelling. Encourage students to reflect on what made certain stories engaging and how they could improve their storytelling skills.

**Storytelling -
The most powerful way to put ideas into the world?**

Worksheet for Students:
Sharing Science with the General Public through Storytelling

- 1. Scientific topic:** What scientific concept will your story be about?
- 2. Crafting your story:**
 - What is the core message you want to convey to your audience?
 - Develop a brief outline of your story, including a beginning, middle, and end. Do not include details yet—you will develop your story more after answering the following questions.
- 3. Understanding your audience:**
 - How much prior knowledge does the audience have about your topic and what is their level of familiarity with science?
 - Why would your audience care about your message? Reflect on how your message relates to their lives.
 - What aspects of your scientific topic will be most interesting or meaningful to your audience?
- 4. Making the science accessible:**
 - How can you simplify or clarify the scientific details of your topic for your audience?
 - Are there any relevant analogies or metaphors that can be used?
- 4. Engaging your audience:**
 - Write the beginning of your story, thinking about how you can hook your audience.
 - Write the ending of your story, thinking about how to reiterate your core message in an effective, engaging way.
 - What techniques can you use throughout your story to keep your audience engaged?
- 5. Visual aids or props:** What visual aids or props can you use in your story to make the science more accessible?
- 6. Fill in your story & and plan your presentation:**
 - Now that you understand your audience, have simplified the science, and created engagement strategies—next, fill in the details of your story as a group.
 - Each group member must participate in the presentation. Plan who will share what part of the story.
 - Each group member should write down their part of the story so they can familiarize themselves with it before presenting to the class.
- 7. Practice and rehearsal:**
 - As a group, rehearse your story.
 - Aim to become comfortable with your part so that you use your notes minimally during the presentation.
- 8. Present your story:** Now you will present your story to the class!