

# Science Communication: Teaching to Your Audience

## Lesson: Teaching One Topic at 4 Different Levels

**Objective:** Students will learn to effectively communicate scientific concepts to audiences of different ages, backgrounds, and levels of understanding.

### Instructions:

**Step 1:** Play the video for the class:

[“Drinking Water Explained at 4 different levels”](#)

**Step 2:** Have students answer the following questions individually or in small groups, and then discuss as a class. Answers will vary, and some suggested answers are included below.

1. How does Morgan (The Expert) engage her audience and maintain their interest throughout the presentation?

*Suggested Answer:* Morgan engages her audience by using visual aids, asking questions, and encouraging participation. She also adjusts her tone and pace to keep her audience interested and involved.

2. Although Morgan discusses the topic of drinking water to people of four different ages with different levels of prior knowledge, she changes the exact topic for each audience. Why do you think she does this?

*Suggested Answer:* Morgan changes the exact topic for each audience to tailor the information to their specific level of understanding and interest. This ensures the content is relevant and engaging for each group, maximizing comprehension and retention.

3. Do you see any method Morgan uses exclusively for one of the audience levels and not the others?

*Suggested Answer:* One method Morgan uses exclusively for the two younger levels is the use of visual aids, which help to simplify complex concepts and make information more accessible and engaging. By contrast, when Morgan speaks to her fellow expert, she uses more technical concepts and in-depth explanations, thus adapting the content to meet her audience's expertise level.



4. Do you think there is anything Morgan could have done better in teaching any of the four levels?

*Suggested Answer:* Elementary-aged audience—explain the visual aids further, including using one’s hands on the images to show the movement of water. Middle-school-aged audience—(1) explain the reasons why people have public vs. private water, and (2) show a town’s drinking water map that has both systems to demonstrate this concept. High-school-aged audience—include a visual aid, such as an EPA list of metals and their maximum contaminant levels.



**Now think more broadly!**

1. As a science communicator, how can you ensure that your audience understands the main points of your explanation, regardless of their level of scientific literacy?

*Suggested Answer:* Science communicators should use clear and concise language, avoid jargon, use analogies and real-life examples, and engage the audience through interactive elements such as visuals and demonstrations.

2. Why is it important for science communicators to be able to adapt their message for different audiences?

*Suggested Answer:* Audiences vary significantly in terms of their background knowledge and level of scientific literacy. Adapting the message ensures that it is relevant, understandable, and engaging for the specific audience, leading to better comprehension and retention of the information.

3. Reflecting on broader society, can you provide real-life examples where poor science communication or a lack of effective dissemination of scientific information has resulted in confusion or misunderstanding among the public? How might these instances have been mitigated with clearer communication strategies?

*Suggested Answer:* One example of poor science communication is the misinterpretation of vaccine information, leading to vaccine hesitancy and outbreaks of preventable diseases (i.e., measles). Clearer communication strategies, such as providing accurate and accessible information through trusted sources, addressing common misconceptions, and engaging with communities to address concerns, could help mitigate confusion and improve public understanding of vaccination.

4. In what ways can you apply the principles of effective science communication in your own life, both inside and outside the classroom?

*Suggested Answer:* Students can use effective science communication principles in a wide variety of settings—the classroom, everyday interactions, their communities (i.e., a community meeting), and future careers. Students can practice effective science communication by:

- communicating with clarity and conciseness
- using analogies and real-life examples to explain complex concepts
- actively listening to others' perspectives
- critically evaluating information before forming opinions or making decisions

### **Step 3:** Small Group Activity - Roleplay

1. Brainstorming: In small groups, students will choose a scientific concept learned during the school year to teach at 4 different levels.
2. Roles: Assign, or have students choose, the roles of "The Expert" and audience members for each level.
3. Planning: Students will plan and organize the lesson for each level considering engagement strategies, language adjustments, teaching methods, and topic variations.
4. Roleplay: Each group will perform their roleplay for the class, presenting their lesson at each level.

#### Instructions for the Roleplay:

- Each group will have a designated time to perform their roleplay.
- After each presentation, allow for brief feedback and discussion from the class.
- Encourage students to reflect on what worked well and areas for improvement in each presentation.
- Emphasize the importance of clear communication and audience engagement throughout the roleplay activity.

#### Conclusion:

- Summarize key takeaways from the roleplay activity.
  - Reinforce the importance of effective science communication in conveying complex ideas to diverse audiences.
  - Encourage students to apply the principles learned in their future communication endeavors.
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