

# WOMEN IN STEM



## UNIT 4: STRENGTH IN OUR DIFFERENCES

What does the word **diversity** mean? Diversity generally refers to the degree to which people are different or similar in various ways. STEM has a lack of diversity, meaning that most people in STEM fields are from a similar social location (i.e., Caucasian men). What are the consequences of having a diverse versus similar group of scientists working on a problem? Is diversity in science important?

### CURRICULUM CONNECTIONS

Social Studies; people and groups; stereotypes and societal norms

### LEARNING OUTCOMES

- **Describe** what diversity means.
- **Think critically** about the current status of diversity in STEM.
- **Work collaboratively** to discuss the strengths and challenges of greater diversity in science.
- **Identify evidence** that diversity has positive or negative impact in science.
- **Communicate** effectively in presentations by discussing diversity in science and women in STEM.

SUGGESTED GROUP SIZE: 10 TO 30

SUGGESTED TIME: 3 TO 4 HOURS



## INTRODUCTION AND BACKGROUND INFORMATION

Today, many high-profile companies like Apple and Google talk about how diversity leads them to more and better innovations. However, people often have different beliefs about whether diversity is a good thing. Indeed, greater diversity in groups is associated with both challenges, such as conflict, and benefits, such as greater problem-solving<sup>1</sup>.

How do you imagine diversity impacting the scientific process? What might STEM be like if all minds think alike (or do not)?

This discussion will get students thinking and talking about diversity in STEM, particularly in relation to women in these fields.

## OVERARCHING QUESTION

How do you imagine diversity impacting the scientific process?

## GUIDING QUESTIONS

1. How might science be affected by hearing similar vs. different perspectives?
2. What does diversity mean?
3. What does diversity do for teams and groups?
4. What evidence exists that diversity has benefits?
5. What evidence exists that diversity is associated with challenges?
6. How could the scientific process be impacted by a more vs. less diverse group of scientists?
7. What kinds of diversity can you think of? E.g., diversity of ideas, diversity of educational background etc.

## POSTERS - ALL

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<sup>1</sup> Bell, Villado, Lukasik, Belau & Briggs, 2011



## RECOMMENDED PROCESS

1. Arrange the physical space and materials prior to beginning the discussion.
2. Provide all students with the necessary background information about the topic.
3. Provide all students with an overview of the discussion and activity.
4. Assign students to work in small groups of 4-5.
5. Provide them with a scenario in which humanity faces a great challenge
  - E.g., #MySTEMDreamTeam. As a class, brainstorm together about real-world challenges –sustainability, environmental conservation, food or water safety etc. Then, present students with hypothetical scenarios in which they must address one or more of these issues using scientific expertise. Students should work in groups to construct a world-class team of scientists from the #FemInSTEM poster series (between 3-5 posters). Groups should be able to explain why they selected each scientist and how that scientist's unique perspective will benefit the group. Students should also be able to describe the potential benefits and challenges of the team they have assembled in relation to the challenge at hand.
6. Encourage groups to:
  - a. Think about different scientific approaches and perspectives.
  - b. Consider the skills and qualifications of different scientists.
  - c. Be respectful of differences in diversity – demographic diversity, scientific discipline etc.
  - d. Debrief with the educator to review what it was like to discuss different types of diversity and the benefits and challenges of working in diverse teams.

### Remember to...

- ✓ Establish expectations about taking turns to speak so that all students have their voices heard.
- ✓ Encourage students to listen and speak throughout the discussion.
- ✓ Promote an environment of respectful conduct, even when students disagree.
- ✓ Remember that topics related to equity, diversity, and inclusion may bring up strong attitudes or opinions.
- ✓ Redirecting students to evidence rather than opinion may be more constructive in group discussions on diversity.
- ✓ Reinforce the idea that all people may have a different understanding about an issue, so showing compassion for each other throughout learning is critical. adapting to different grade levels



## ADAPTING TO DIFFERENT GRADE LEVELS

**Grades 4-6:** Discussions in fourth to sixth grades should be focused on the following:

- What does diversity mean?
- What does diversity do for teams and groups?
- What evidence exists that diversity has benefits?
- What evidence exists that diversity is associated with challenges?

Social Studies for this grade range involves thinking about how the self differs from others, therefore focusing on how to define diversity and its outcomes is appropriate.

**Grades 6-8:** Discussions in sixth to eighth grades should be focused on the following:

- What does diversity mean?
- What evidence exists that diversity has benefits?
- What evidence exists that diversity is associated with challenges?
- How could the scientific process be impacted by a more vs. less diverse group of scientists?

Social Studies for this grade range involves topics like identity and equity, therefore focusing on how people's differences and similarities is appropriate.

**Grade 9+:** Discussions in ninth and greater grades should focus on the following:

- How could the scientific process be impacted by a more vs. less diverse group of scientists?
- How might science be affected by hearing similar vs. different perspectives?
- What kinds of diversity can you think of? E.g., diversity of ideas, diversity of educational background etc.

Social Studies for this grade range involves topics like diversity within natural and human contexts, therefore focusing on benefits and challenges of diversity is appropriate.

## REFERENCES

Bradshaw, M. J. (2011). *Debate as a teaching strategy*. In M.J. Bradshaw & A.J. Lowenstein (Eds.), *Innovative Teaching Strategies in Nursing and Related Health Professions (5th Ed.)*. Sudbury, MA: Jones and Bartlett Publishers.