Are You a Scientist?

Materials:
- Handouts
- Markers, crayons, or pencils
- Small poster board or whiteboard

Overview & Objective
According to the Southern Poverty Law Center, "more than three-quarters of women and underrepresented minorities said that girls and children of color are not identified or encouraged to pursue STEM studies. Two-thirds said that resistance to the idea of a female or minority scientists remains an important cause of underrepresentation." This misconception that women and minorities cannot be scientists starts young. A study, published by Science Magazine, found that by the time girls graduate from kindergarten, they are less likely to consider other girls brilliant. They are also more likely than boys to avoid activities for "really, really smart" people.

This lesson encourages students to think critically about what makes someone a scientist. Students will realize that everyone is a scientist, even student gardeners, and curious kids.

Students will:
- Compare their perception of a scientist with modern scientists.
- Identify the necessary skills and practices that make someone a scientist (or gardener).
- Apply the definition of a scientist (or gardener) to their own life.

Pre-Activity Questions:
- Have you ever met a scientist?
- What do you think a scientist does?
- How do you become a scientist?

Strategies for Engagement:
If possible, do this activity outside in the garden, to facilitate connections between the investigations the students are doing in the school garden and what a scientist does.
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Resources
- STEM at Work Lesson Plan with link to "Science Star Cards" www.tolerance.org/lesson/stem-work
- List of scientist picture books: www.tolerance.org/lesson/stem-all
- Biographies of famous scientists: www.famousscientists.org
- Women Scientist Biographies: www.thoughtco.com/famous-women-scientists-3528329
- https://fellowsblog.ted.com/meet-12-badass-scientists-who-also-happen-to-be-women-ace8d797bcad
Gateway Greening Lending Library books that highlight diverse gardeners and scientists:
  - In the Garden with Dr. Carver by Susan Grigsby
  - The Tree Lady by Joseph Hopkins
  - Wangari’s Tree of Peace by Jeanette Winter

Activity
- Tell the class to close their eyes and imagine a scientist. It does not need to be a particular person, just the first image of a scientist that appears in their head. What is their scientist doing? Where is the scientist working? What are they wearing? Do they have any special tools or accessories with them? Be careful not to mention gendered pronouns or ask leading questions.
- After a minute of reflection, pass out the handout and pencils to each student. Have the students draw the scientist they just imagined. Encourage them to use as much detail as possible and not to share their drawing with anyone. They can add labels and descriptions if desired.
- Bring the class back together when the majority of the class finishes their drawing.
- Have a small poster board or whiteboard but keep it facing away from the class. Call on students to share a short description of their scientist drawing. Ask probing questions to determine their scientist’s gender, dress, tools, hair styles, scientific field, etc.
- On your poster or whiteboard, keep track of scientist descriptions. For example, tally when students mention each gender, whether scientists are working outside or in a lab, and how often a scientist is wearing a white coat.
- After at least ten students have shared, add up the total number of times students mentioned each description.
- Turn the board or poster around with the scores, what do the students notice? Are they any patterns that emerged about their scientists?
- If certain genders, fields of study, locations, or dress were very prevalent, ask where the students got those images of scientists. What influenced their representation of a scientist? How do media and classroom depictions of scientist affect your perception of scientists?
Are You are a Scientist?

- Discuss what makes someone a scientist. Is it their clothing and hairstyles? Can you be a scientist if you are solving problems in a garden? In small groups brainstorm what the class can do to change the representation of scientists today.
- Remind them that everyone is a scientist! All you have to do is answer questions and solve problems, using evidence and data. Emphasize that scientists can work in a garden or classroom and can look and dress like them.
- Finish the activity by reviewing the scientific method (or how your class solves scientific problems) and completing the handout.

Additional Activities & Follow Up

- If possible, do this activity twice a school year, once in the beginning and once at the end. What changed over the school year?
- Have older students research a living scientist, encouraging diverse fields of study and culturally relevant representation. Students then present their scientist to the group. What does the scientist study? Why do they think that scientist chose a particular area of study? What challenges did that scientist face during their education and research?
- For younger students, create scientist "trading cards," using the biographies and articles in the Resources section. Try to choose a diverse selection of scientists. Each student gets a scientist. After reviewing their scientist, they pretend they are going to a scientist soiree and have to become their scientist. They must introduce themselves to at least three other scientists. How were they similar and different to the other scientist at the party?
- Repeat this activity but replace the drawings of scientists with farmers. Use it to investigate preconceived notions about farmers and to demonstrate that anyone can be a farmer.
My Scientist Drawing:
Draw a picture of a scientist - any scientist. Make sure to include where your scientist is working, what they are studying, and what tools they are using. Is your scientist wearing anything special?

What are 2 things that make someone a scientist?

__________________________________________  ______________________________________

When were you a scientist this past week?

__________________________________________  ______________________________________

What is one question you want to investigate in the garden?

__________________________________________  ______________________________________
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