

Draw a Scientist



Grade: 1-6

Length: 45 minutes

Big Ideas: Perception

Topic: Scientist

Summary: Students will draw what they think a scientist looks like and does. After a discussion about scientists with their teacher and peers, students will reevaluate their drawing and make modifications or create a new drawing.

Be sure to scroll to the bottom for the "Try This At Home" activity!

Standards:

This activity does not cover any of the specific SEEd standard topics. However, it does encompass several of the Principles of Scientific Literacy and Principles of Science Learning, which outline skills students need to have in order to engage in scientific thought, processes, and discovery.

Principles of Scientific Literacy:

Science is valuable, relevant, and applicable. Science produces knowledge that is inherently important to our society and culture. Science and engineering support innovation and enhance the lives of individuals and society. Science is supported from and benefited by an equitable and democratic culture. Science is for all people, at all levels of education, and from all backgrounds.

Science is a shared way of knowing and doing. Science learning experiences should celebrate curiosity, wonder, skepticism, precision, and accuracy. Scientific habits of mind include questioning, communicating, reasoning, analyzing, collaborating, and thinking critically. These values are shared within and across scientific disciplines, and should be embraced by students, teachers, and society at large.

Science is principled and enduring. Scientific knowledge is constructed from empirical evidence; therefore, it is both changeable and durable. Science is based on observations and inferences, an understanding of scientific laws and theories, use of scientific methods, creativity, and collaboration. The Utah SEEd standards are based on current scientific theories, which are powerful and broad explanations of a wide range of phenomena; they are not simply guesses nor are they unchangeable facts. Science is principled in that it is limited to observable evidence. Science is also enduring in that theories are only accepted when they are robustly supported by multiple lines of peer reviewed evidence. The history of science demonstrates how scientific knowledge can change and progress, and it is rooted in the cultures from which it emerged. Scientists, engineers, and society, are responsible for developing scientific understandings with integrity, supporting claims with existing and new evidence, interpreting

competing explanations of phenomena, changing models purposefully, and finding applications that are ethical.

Principles of Science Learning

Science learning is personal and engaging. Research in science education supports the assertion that students at all levels learn most when they are able to construct and reflect upon their ideas, both by themselves and in collaboration with others. Learning is not merely an act of retaining information but creating ideas informed by evidence and linked to previous ideas and experiences. Therefore, the most productive learning settings engage students in authentic experiences with natural phenomena or problems to be solved. Learners develop tools for understanding as they look for patterns, develop explanations, and communicate with others. Science education is most effective when learners invest in their own sense-making and their learning context provides an opportunity to engage with real-world problems.

All students are capable of science learning. Science learning is a right of all individuals and must be accessible to all students in equitable ways. Independent of grade level, geography, gender, economic status, cultural background, or any other demographic descriptor, all K–12 students are capable of science learning and science literacy.

Essential Questions:

- Who is a scientist?

Enduring Understandings:

- Science is a process that anyone can do.

Objectives:

Students will...

- Draw a picture of what they think a scientist looks like and what they do based on their own ideas and perceptions of a scientist.
- Draw a picture of what a scientist looks like and what they do after exploring and discussing with their teacher and peers about scientists.

Materials:

- Paper (1-2 per student)
- Writing utensils (e.g. crayons, markers, colored pencils)

Background Information:

Over 50 years ago, researchers asked elementary-school children from the United States and Canada to draw a scientist. Their drawings commonly showed males in white lab coats with glasses, lab equipment, and books. In this original study, of the 5,000 drawings created, only 28 showed a female scientist, and all of those were drawn by girls. In subsequent studies, from the 1980's forward, an average of 28% of children drew female scientists (Yong, 2018). This is an encouraging trend, but today's students are still drawing at least twice as many male scientists as female scientists. It is important to dispel misconceptions about scientists and who can be a

scientist, including, but not limited to gender, socioeconomic status, and race. “Draw a Scientist” can help students learn about their perceptions, dispel misconceptions, and understand that science is a process that anyone can do.

Key Vocabulary:

- Scientist: A person who studies, specializes in, or investigates a field of science.

Procedure:

1. Ask the students to take out a piece of paper and draw a scientist. Do not give them further prompts or ideas of who that scientist could be, what they could look like, or what they could be doing. This should be a quiet activity.
2. If you have time, do a gallery walk, if you are short on time have a few students share about their drawing.
 - a. Gallery Walk: Have students put their picture on top of their desk. Let them walk around and observe everyone else’s pictures.
3. Ask students what they noticed about the scientists in the drawings. What did they have in common? What was different? Was anything surprising?
4. Discuss what makes a scientist a scientist. A scientist is a person who studies, specializes in, or investigates a field of science (e.g. natural or physical). Depending on the students’ level, discuss the scientific process. Anyone that uses the scientific process is a scientist. Make sure to dispel common misconceptions (e.g. not all scientists are men working in labs). If time permits, provide examples of influential diverse scientists.
5. Ask students to
 - a. Think: Individually think about who can be a scientist.
 - b. Pair: Talk to a partner about their answer.
 - c. Share: Let students share out to the whole group their answers, or their partner’s ideas.
6. Have students make modifications on their first drawing or create a new drawing of a scientist based on what they learned.

Citations:

Yong, E. (2018, May 20). What We Learn From 50 Years of Kids Drawing Scientists. *The Atlantic*. Retrieved from <https://www.theatlantic.com/science/archive/2018/03/what-we-learn-from-50-years-of-asking-children-to-draw-scientists/556025/>

Additional Activity/Extension:

For other extensions please visit:

<https://www.calacademy.org/educators/lesson-plans/draw-a-scientist>

Try This At Home: What Scientists Study: Make a list of all the fields you can think of that scientists study, and then do a Google search to find more. How many different scientific study topics did you find? Are there any you might be interested in studying? Why? What are you interested in? Could you be a scientist some day?