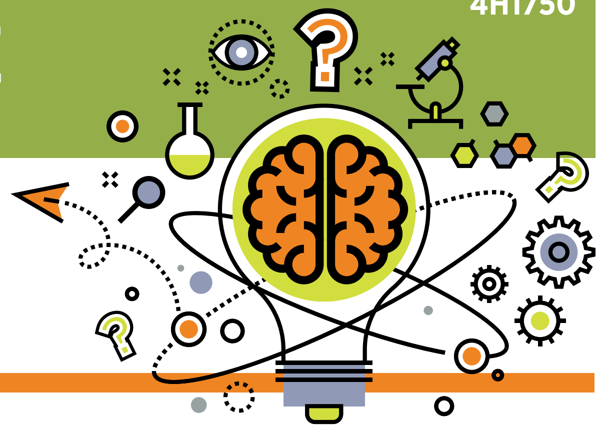
TEACHING SCIENCE

4H1750

...when you don't know diddly-squat



Why does poop splash?

Purpose:
The purpose is **not** to teach specific content, but to teach the process of science – asking questions and discovering answers. This activity encourages young people to try to figure things out for themselves rather than just read an answer on the internet or in a book. As a leader, try not to express your opinion, but let the youth engage in arguments based on evidence.

Time required:
20 minutes or multiple days depending on the interest and questions the youth have

Materials:
❑ Modeling clay*
❑ Tape measure
❑ Kitchen scale
❑ Pans of varying shapes and sizes
❑ Water
❑ Corn, peanuts or other small bits of food (optional for extra grossness)

*Note: It must be clay, not dough. Dough will dissolve more readily in water.

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Science Practice:
Asking questions and defining problems

1. It might be gross to think about, but when you go to the bathroom, sometimes the poop splashes your backside when it hits the water, and sometimes it does not. (Or maybe it splashes you every time. Or not at all.) *Why? Is it the shape? How heavy it is? Distance from the water? Consistency?* Brainstorm other possibilities and then explore some possible answers.

Science Practice:
Developing and using models

2. Ask how you could test your ideas on why poop sometimes splashes, and sometimes it doesn't. *How could you set up as accurate of an experiment as possible?*
   a. *How far does the poop fall before it hits the water? Is it the same for all people? For all toilets? How can you tell?*
   b. *Can you make realistic poop that is sanitary to deal with for the experiment? Is all poop the same shape and size? How can you vary the consistency?* (A medical chart, the Bristol Stool chart, describes some of the sizes and shapes (*http://www.webmd.com/digestive-disorders/poop-chart-bristol-stool-scale*). Try making model poop that simulates the different types of real poop.
      i. *Can you make a poop of the same shape and size, with different density?*

Science Practice:
Planning and carrying out investigations

3. Next have youth add water to their pans. Try dropping the "poop" into the water and see how it splashes. *Is there any way to make it not splash? What makes it splash higher?*
   a. Having a tape measure next to your pan of water can help record the splash height.
   b. Track the poop shape compared to the splash height as accurately as possible.
   c. *Does a higher drop mean a higher splash?* Predict what will happen and then test it.

d. *Does a heavier poop mean a higher splash?* Predict what will happen and then test it.

Science Practice:
Constructing explanations and designing solutions

4. *Is there any way to make your models for your poop or toilet basin more accurate?*
    a. *Is there a way to design a toilet to reduce or eliminate the amount of splash?*

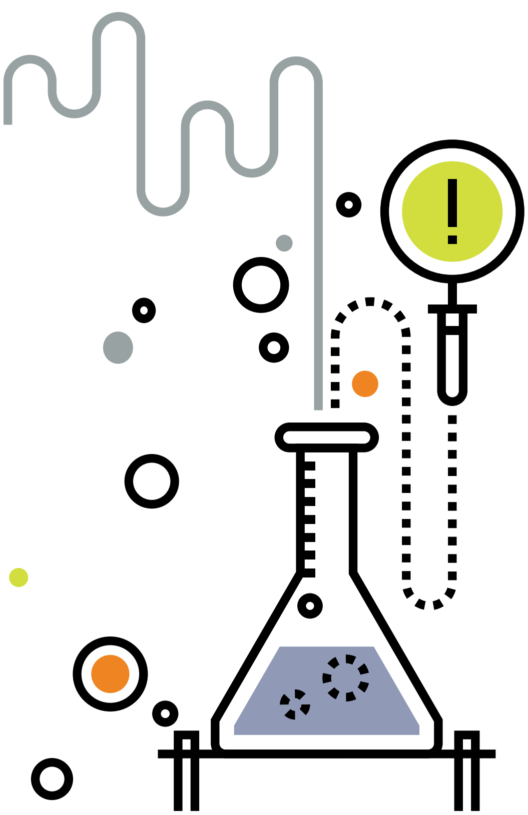
Science Practice:
Engaging in argument from evidence

5. *What made the biggest difference in the amount of splash?* Discuss the reasons why.

Science Practice:
Obtaining, evaluating, and communicating information

6. *Do you think scientists sometimes have difficulty talking about gross subjects? Is communicating that kind of information important? Can you think about any significant yucky subjects that require important communication? What is the best way to communicate that information?*

You do not need all the answers to teach science. You simply need an inquisitive mind and to be willing to carry out an investigation.



Related questions to explore:

- *Are toilets around the world different than the ones in your home?*
- *Why does poop sometimes sink and sometimes float?*

Science & Engineering Practices:

These eight Science and Engineering Practices come from *A Framework for K–12 Science Education* (National Research Council, 2012, p. 42). These research-based best practices for engaging youth in science are connected to in-school science standards that all children must meet.

- Asking questions and defining problems
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations and designing solutions
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

Reference:

National Research Council. (2012). *A framework for K-12 science education: Practices, crosscutting concepts, and core ideas.* Washington, DC: National Academies Press.

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