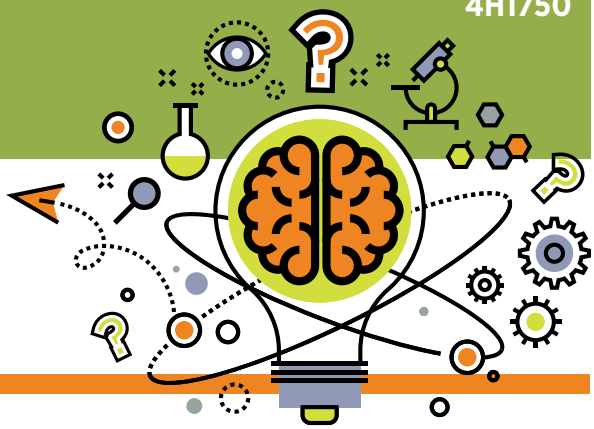
TEACHING SCIENCE
...when you don't know diddly-squat



How do puddles disappear?

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:
- ❑ 3 shallow pans of equal size
- ❑ Water
- ❑ 1/2 teaspoon measuring utensil
- ❑ Fan
- ❑ Heat lamp (or lamp with an incandescent bulb)
- ❑ Blow-dryer
- ❑ Timer

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Science Practice:
Asking questions and defining problems

1. Ask youth: *What happens when a puddle dries up*? Allow them to share their answers. Don't share your ideas. After they have given answers, follow up with more questions. *How do puddles form? What makes the water "disappear"? Where does the water go after the puddle is gone?*

Science Practice:
Developing and using models

2. Put ½ teaspoon of water in a shallow pan to simulate a puddle. *How long do you think it will be before the water disappears? How is this puddle different from one that is outside?*

Science Practice:
Planning and carrying out investigations

3. Have three pans of equal size available. Pour ½ teaspoon of water in each pan. Blow a fan on one pan. Put a heat lamp over another pan. Run a blow-dryer over a third pan. *Will there be a difference between the three pans on how long it will take for the water to disappear? Why? Which pan will contain the water that will disappear the fastest?* You can time each pan for how long it takes the water in it to disappear.

Science Practice:
Analyzing and interpreting data

4. Discuss the results of the water in each pan. *Which one of the pans had water disappear the quickest? What factors make water disappear quickest?*

Science Practice:
Using mathematics and computational thinking

5. If you timed how long it took for the water to disappear, those results can be graphed or charted. You could also begin by measuring the amount of water used and comparing results.

Science Practice:
Constructing explanations and designing solutions

6. Discuss why and how the water disappeared. *Could what you learned from this experiment be useful in drying your laundry?*

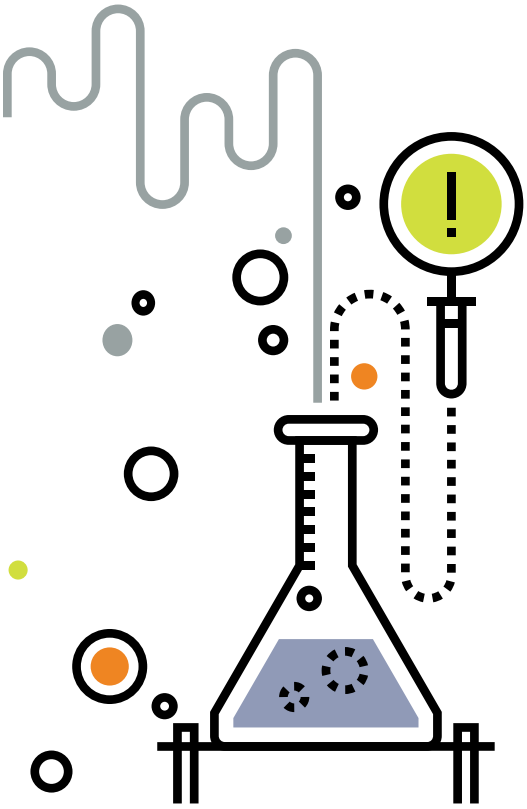
Science Practice:
Engaging in argument from evidence

7. Provide evidence from your observations about what made the water disappear faster. *Do you think you could make the water disappear faster if you used a bigger fan? What if the fan blew at a faster speed? Is there any evidence from your experiment that leads you to believe this?*

Science Practice:
Obtaining, evaluating, and communicating information

8. Discuss evaporation and how it works. Introduce the water cycle and its importance on Earth.

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.



Other thoughts:

- *Once the water evaporates, where does it go?*
- *What factors determine where it goes?*
- *Does this water ever make a puddle again?*

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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