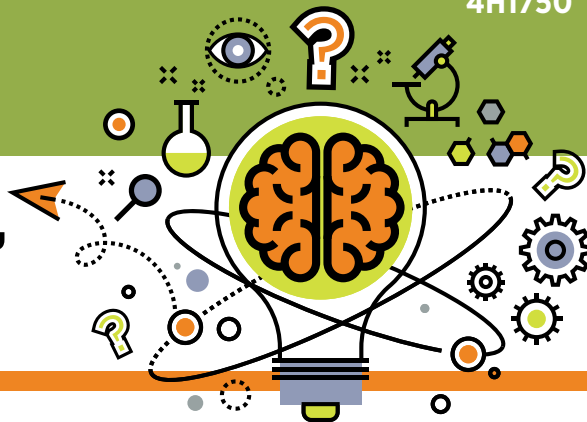


# TEACHING SCIENCE

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

## Are you left- or right-handed, and does it matter?



### 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:

- Several small balls (tennis ball works well)
- Balls for kicking
- Bucket, garbage can or other container
- Pencils or pens
- Writing paper



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### SCIENCE PRACTICE:

#### Asking questions and defining problems

1. *Why are some people right-handed and others left-handed? Can people be both? What percent of the population do you think is right-handed? What percent do you do things right-handed? Left-handed?*

### SCIENCE PRACTICE:

#### Planning and carrying out investigations

2. Begin by asking the following 10 questions:
  - *What hand do you write with?*
  - *What hand do you use scissors with?*
  - *Which hand do you prefer to use to throw a ball?*
  - *Which foot do you prefer to kick a ball with?*
  - *Which hand do you strum a guitar with?*
  - *Which hand do you brush your teeth with?*
  - *Do you swing a bat left- or right-handed?*
  - *Which hand do you deal cards with?*
  - *Which hand holds the match when striking?*
  - *Which hand shoots a pistol?*

3. Determine your dominant eye:

Form a small triangle with both hands between your thumbs and index fingers at arm's length away from your face. Look at a distant object through the triangle. Close your left eye and keep your right eye open. Next, close your right eye and keep your left eye open. If looking with your right eye keeps the object centered in the triangle, you are right-eye dominant. The opposite is true for the left eye.

4. Perform the following tests:

- Toss a ball into a bucket. Play catch with a partner. *Which hand do you prefer to catch and toss with?*
- Kick some balls around. *What foot do you prefer to kick with?*



▶ ARE YOU LEFT- OR RIGHT-HANDED, AND DOES IT MATTER?

Now try tossing a ball into a bucket, playing catch with a partner, and kicking a ball into a garbage can, sometimes using your left hand or right hand, and sometimes using your left foot or right foot. *Is it more difficult or much the same? If difficult, to what degree?* Try all three (tossing, catching and kicking) 10 times each left-handed and right-handed as well as with left and right feet. Record the results.

**SCIENCE PRACTICE:**

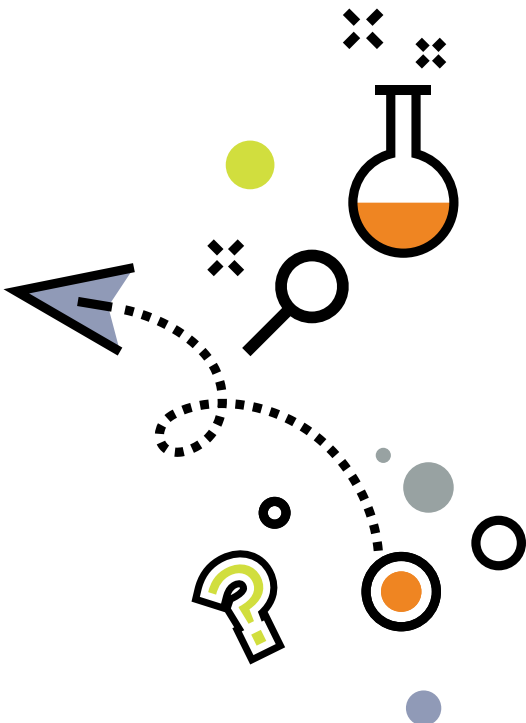
**Using mathematics and computational thinking**

- Record the number of successful tries in 10 attempts.

**Successful Tries**

Name	Catch right	Catch left	Kick right	Kick left	Toss right	Toss left

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.



**SCIENCE PRACTICE:**

**Analyzing and interpreting data**

- How many people in the group are mostly right-handed? What about left-handed? How does this compare to the average? Approximately 90 percent of the world population is right-handed. Are some folks better with the nondominant hand?

**SCIENCE PRACTICE:**

**Constructing explanations and designing solutions**

- Do you think the world is designed for right-handed people? Do you think left-handed people are more likely to have accidents in a right-handed world? Could you modify everyday things to make them more suitable for a left-handed person?

**SCIENCE PRACTICE:**

**Engaging in argument from evidence**

- Are there advantages to being left-handed or right-handed? What are the advantages? Are there disadvantages to being either right- or left-handed? Name some specific activities.



## Other thoughts:

- ▶ Can we teach ourselves to be left- or right-handed?
- ▶ Are some things done right-handed because of the way society dictates?
- ▶ Try writing with your nondominant hand. How does it work?
- ▶ Do you think your pets favor one side or the other?

## 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

## References & resources:

Hadhazy, A. (2011, November 13). Life's extremes: Left- vs. right-handed. *Live Science*. Retrieved from <http://www.livescience.com/17009-left-handedness-ambidexterity.html>

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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