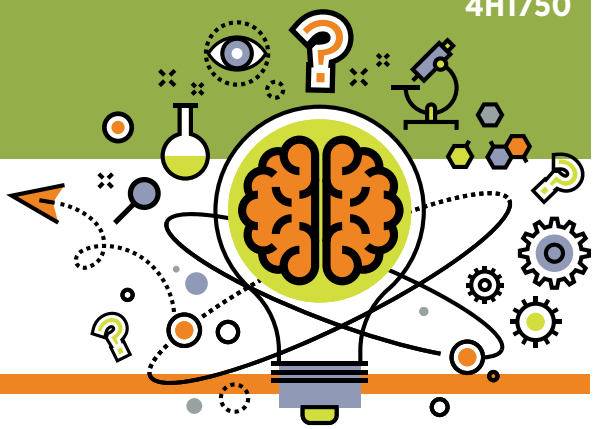
TEACHING SCIENCE
...when you don't know diddly-squat



Want or need?

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:

- ❏ Pencil
- ❏ Paper
- ❏ Pictures of items listed in #3 and #8 (optional)

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SCIENCE PRACTICE:
Asking questions and defining problems

1. Once your group is assembled, ask: *How do you tell the difference between things that are needed for survival and things we just want?*

SCIENCE PRACTICE:
Planning and carrying out investigations

2. Have youth pair off. Ask participants: *What do all plants and animals need to survive?* Allow time for the pairs to discuss this question, and then come back to the larger group to see what kind of answers youth provide. Ideally, answers can be condensed into these general categories: food, water, air and shelter.

3. Provide each pair of students with a list of these items (scuba tank, full bathtub, banana, barn, grocery store, winter coat, snorkel and garden hose) and have then label each as food, water, shelter or air.

SCIENCE PRACTICE:
Engaging in argument from evidence

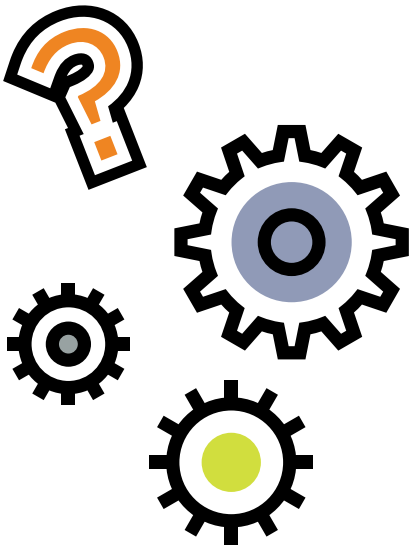
4. Many items can be sorted into multiple categories. Allow this, but encourage youth to share their thinking on why they put each item in a particular category. Do not discourage creativity and abstract thinking.

SCIENCE PRACTICE:
Planning and carrying out investigations

5. Prepare a chart like the one that follows while youth are working on their lists.

6. When youth have completed labeling their lists, ask each pair to tell you one item and what category (or categories) it goes into. Place the information in the chart. Continue placing items into categories until all answers have been recorded. The same item may end up in multiple categories. Talk about why this happened and ask participants to share the reasons why they made the category choices they did.

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.



Things Plants and Animals Need to Survive

Food	Water	Air	Shelter

SCIENCE PRACTICE:
Planning and carrying out investigations

7. Designate one side of the room as "wants" and the other as "needs." Discuss with youth the basic needs for people: food, water, air and shelter.

8. Tell the youth that you will be saying or showing a picture of an item. They need to silently decide if it is a need or want for people. Then they need to move to that side of the room. Use the following list for ideas.

Needs or Wants Item List (add items as desired)

- Apples
- Glass of water
- Skateboard
- Pants
- Shoes
- Chickens
- Toothbrush
- Hair ties
- Fancy dress shoes
- Dinner
- Dessert
- House or apartment
- Radio
- Lunch from a restaurant
- Cell phone
- Car

SCIENCE PRACTICE:
Engaging in argument from evidence

9. When they don't all agree that an item is a need or a want, ask a youth to volunteer to explain his or her reasoning. Don't correct the youth. Listen to their answers and allow them to explain.

SCIENCE PRACTICE:
Constructing explanations and designing solutions

10. *Is it easy to decide if something is a need or a want?*

11. *Why do you think it is important to understand the difference between needs and wants? Do you think your parents have to think about needs and wants?*

SCIENCE PRACTICE:
Engaging in argument from evidence

12. *Do you think it is important for everyone to have a good understanding of the difference between needs and wants? Why?*

SCIENCE PRACTICE:
Obtaining, evaluating, and communicating information

13. *While you may not get a paycheck yet, do you think you can talk with your parents about how they make sure your family needs are taken care of?* You can also talk to your parents about what they do to save money for the wants and needs your family may have, such as vacations.

Other thoughts:

- *What other items do you think could be needs? Social interaction?*
- *How do you decide if other items are needs and not wants?*
- *How do you think needs and wants change based on where you live?*
- *What wants do you have?*
- *What do you think you could do to save or earn for what you want?*

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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