

1st Grade Activity: How Do Plants Breathe?

*Plants use specific parts to help them survive. For example, their leaves are used to take in carbon dioxide and release oxygen.
(NGSS Disciplinary Core Ideas 1.LS1.A Structure and Function)*

Pre-Activity Questions

- Do plants and animals need the same things to survive?
- Why do plants have leaves?
- Do plants breathe?

Activity

- Let's make a list of the five things animals need to survive. Now a list of the five things plants need. What's the same and what's different?

ANIMALS	PLANTS
food	sun (energy)
water	water
air	air
shelter	soil
space	space

- Plants create their own food through a process called **photosynthesis**. Can you lay out in the sun and get breakfast? A plant can!
 - Their roots draw up water and minerals from the soil.
 - Their green leaves absorb energy from the sun and carbon dioxide (what we breathe out) from the air.
 - This combines to create sugar (food) for the plant to grow and releases oxygen (what we breathe in).
- Look very closely at your hand. Can you see little holes or dents in your skin? Those are pores. Plants have pores too, but they use their pores to breathe. Hold your nose and close your mouth. Now take a deep breath in through your pores. Did it work?
 - We sweat and release oils from our pores, but we cannot use them to breathe.

See a Plant Breathe

Materials

- Bowl of water
- Large leaf
- Small rock
- Sunny spot

Steps

1. Fill a large glass or plastic **bowl** with lukewarm water.
2. Find a **large leaf** and pick it from a tree or plant.
 - a. Usually we ask people NOT to pick flowers and leaves off of plants, but this experiment won't work without a leaf that is still alive. Please be respectful and find a plant that has lots of leaves to spare.
 - b. Note: This works best with a smooth leaf (not one that is fuzzy).
3. Place the leaf in the bowl of water and put a **small rock** on top of it so it is FULLY submerged under the water
4. Put the bowl in a **sunny spot**.
5. **WAIT!**
6. Take a peek a few hours later. What do you see?
 - a. You should notice bubbles forming along the leaf's surface. The bubbles are trapped oxygen being released from its pores.

Post-Activity Questions and Activities

- If we don't have enough trees and green plants, what will happen to the oxygen we need to breathe?
- Do all plants have the same leaves? What are some differences? Why do you think a plant might have a different leaf?
- Draw a picture or take a photo of a plant in your nature journal. Observe that plant first thing in the morning, in the middle of the day, and then just after sunset. Do you notice any changes in the leaves? flowers? shape?
 - Visit the plant multiple times in a week. Are there changes you notice based on the weather?
- Draw a picture of a plant and what it needs.
 - Hint: Draw arrows to show what goes in and what comes out during photosynthesis.

Adapted from Fisher, J. (2019). How do leaves breathe? A simple science experiment for kids. Retrieved from <https://www.kcedventures.com/blog/how-do-leaves-breathe-a-simple-science-experiment-for-kids>