

Teacher Activity for the classroom

This exciting, hands-on activity will help your students learn about chlorophyll, the amazing substance that helps plants turn sunlight into food!

BEAT A LEAF

This activity is a great way to introduce youth to terminology such as **photosynthesis** and **chlorophyll**. Students will learn how plants make their own food and create leaf imprints of their own.

National Science Standard Correlation

As a result of this activity students should:

- develop understanding of the characteristics of organisms
- develop understanding of structure and function in living systems.

Materials Needed:

- Hammers
- 4 inch square wood blocks (cut from scrap pieces of 2 by 4 which a local lumber yard or building contractor might donate)
- Thumb tacks
- White cotton fabric cut into 4”x 4” squares – 1 fabric piece per child (a cut up old sheet or pillow case works fine)
- Optional: iron, vinegar and spray bottle

Background:

The main difference between plants and animals is that plants have the amazing ability to make their own food. Green plants use light-energy from the sun to make a sugar-like food through a process called **photosynthesis**. Photosynthesis occurs only in plants that contain **chlorophyll**. Chlorophyll is the enabler for the photosynthetic process. During photosynthesis chlorophyll, carbon dioxide, water, and light-energy from the sun are used to make the sugar-like food that becomes the basic source of energy for the plant and other living things that might eat the plant. While making this food, the green plant gives off water vapor and oxygen as byproducts of the process.

Looking through a microscope at a thin section of a leaf will reveal cells containing what looks like little green jellybeans. These jellybean-appearing structures within the cell are called **chloroplasts**. They are full of chlorophyll.

Explain to students that there is an amazing green chemical stored in the cells of green plants that lets plants make their own food. This chemical is called chlorophyll. They are going to have an opportunity to beat the chlorophyll out of the chloroplasts in a leaf and make a leaf print.

There is a high degree of enthusiasm and lots of noise with this activity.

1. Use a piece of solid wood for the base (4" square is ideal). Thumb tack a piece of 4"x4" white cotton fabric to the wood at two adjacent corners.
2. Collect a fresh, green leaf. Place it under the fabric, on top of the wood.
3. Tack the remaining two corners of material.
4. Use a hammer and gently beat the fabric over the leaf to break the chloroplasts. Follow the contour of the leaf to get the best leaf print. As the cell structures are broken, the pigments in the leaf will stain the fabric. Careful beating can actually "trace" the leaf on the fabric with pigment. The green chlorophyll forced out of the chloroplasts will leave an imprint of the leaf shape.
5. After beating, remove the tacks, lift the fabric and gently pull off any "clinging" leaf pieces.
6. To make the leaf imprint permanent, mist the print with vinegar and press it with a hot iron.