**Leaf Chromatography**

3rd grade

Source

<http://www.education.com/activity/article/Leaves_Change_fifth/>

Benchmarks

* “I can design explorations to test the behaviors of plant structures.”
* “I can observe and explore various structures of plants and their functions.”
* “I can follow a laboratory procedure and work collectively within a group using appropriate scientific tools.”

Materials

2-3 Leaves per group

Small clear jar

Aluminum Foil or plastic wrap

Rubbing alcohol

Paper coffee filter

Shallow pan

Hot tap water

Plastic spoon

*\*\*\*Begin by introducing yourself to the class, and giving a brief explanation of your major. Since there will be a thirty-minute waiting period, start the procedure immediately and have the discussion during the thirty-minutes.*

Procedure

1. Divide the class into smaller groups. And pass out the supplies to each group.
2. Students will tear up their leaves into smaller pieces, and place into a cup. Volunteers will fill the cups up with rubbing alcohol until the leaves are covered. Students will use their plastic spoons to grind and tear the leaves even more into the rubbing alcohol.
3. Loosely cover the jar with aluminum foil or plastic wrap, and place in a shallow plan filled with ~1 inch hot tap water. Leave jar in the hot water for 30 minutes. Have the students gently twirl the jar every five minutes. The rubbing alcohol should eventually change color.
4. Once the rubbing alcohol has changed color, remove the lid on the jar and place a strip of coffee filter in the jar.
5. After a few minutes, the colors from the leaf will travel up the coffee filter paper.

Discussion

Begin by asking the students what they know about leaves. (*Where do you find leaves? What do they do? What happens to them during the fall, winter, spring and summer? etc.)*

Brief leaf information:

 Leaves are made of tiny cells called chloroplasts, which make them green. Leaves use chloroplasts for photosynthesis. (*Ask the students if they know what photosynthesis is. If not, give a very simple explanation*: *photosynthesis is how a plant breathes. It takes carbon dioxide, water and light, and turns them into sugar and oxygen*).

Leaves change colors in the fall because the leaves are preparing for winter. Leaves shutdown photosynthesis, which makes the green chloroplasts fade away, and all of the other colors in the leaves are now visible. Explain that the colors in the leaves will show up on the filters. You can ask the students what colors do you think will show up on their leaves.

Once the colors have traveled up the coffee filters, ask the students what they observe, and whether or not the leaves are still going through photosynthesis. (*Yes if the leaf is green)*

If there is time remaining, volunteers can go through the different parts of the leaf with the student. There should be some left over leaves that the students can look at. There is a diagram of a leaf on the next page.