

PLANT PIGMENT PAINTS

Teacher/Parent Instructions

Get a little creative with plants in this hands-on art activity!

For children in PreK – 1st grade

Materials:

- 1 cup fresh or frozen spinach
- 1 red beet, peeled and cut into quarters or 1 cup red raspberries
- 1 golden beet, peeled and cut into quarters
- 1 cup blackberries
- Watercolor paper
- Watercolor brushes
- Cup(s) of water
- Stove & pot for boiling OR electric kettle
- Containers for paint colors
- Blender
- Mesh sieve and/or cheese cloth

Set-Up:

1. Prepare Paints:

- Each vegetable or fruit will give you a different color: spinach is green, beets and raspberries are red, golden beets are yellow, and blackberries are a dark purple. Save a few extra pieces of the plant material for use while painting.
- To make the paints, put the plant material into a pot*, cover with water, and bring to a boil. Let it boil for 15-20 minutes – the water will start to turn color.
 - *If you have an electric kettle, put the plant material in a bowl or cup and pour boiling water over. Let sit for 1.5 to 2 hours. The longer it sits, the stronger the color will be.
- Pour the colored water into separate containers for painting. Get as much color out of the spinach, raspberries, and blackberries as you can by either wrapping them in cheesecloth and squeezing out excess liquid into the paint container, or by pushing them against the mesh sieve.

2. Clear a table for an art project and make sure to wear clothes you don't mind getting stained or provide aprons.

Background Information:

Plant pigments are colorful molecules found within plant cells. The ease with which we can get the pigment out of a plant cell is called accessibility. Some plants' pigments are easily accessible (think of grass stains) and some are not. Accessibility is related to the strength of the cell walls within the plant: weaker cell walls provide easier access to the colors contained within, whereas sturdier cell walls do not. For example, tearing up lettuce does not make your hands green because the tearing does not break the cell walls of the lettuce cells, whereas sliding on the grass in your socks will stain your socks green; the sliding breaks the cell walls of the grass, releasing the pigment because lettuce has stronger cell walls than grass.

Activity:

- Invite children to explore the extra plant material prior to introducing the paints. Ask them to describe what they notice about each item and introduce them to each of the plants. This is an opportunity to develop vocabulary, make connections to previous experiences, and to practice taking turns.
 - Possible descriptive words: hard, squishy, juicy, flimsy, soft, hairy, rough, stem, leaf, fruit, root, gold, yellow, red, purple, green
- Introduce the paints and share that you made them from the plants they explored before. Invite children to guess which paint came from which plant. If the children struggle initially, model the thinking process aloud for them.
 - *Ex: This paint is a green color. Are any of the plants we looked at green? Let's go through and check each one. Maybe it will help to hold it up next to the paint.*
 - **Scaling Down:** To support younger children as they compare and contrast the plants and paints, cut the beets so that their interior flesh and its juice are revealed.
 - **Scaling Up:** To challenge children, do not cut the beets and challenge them to guess which is red and which yellow based on their exteriors. Then cut them open to reveal the answer.
- Invite children to paint with the plant paints on watercolor paper. As they paint, invite curiosity and promote problem solving with an "I wonder" statement targeted at the process of making the paints.
 - *Ex: I wonder how the plants turned into paints. Could we do it with other plants, too?*

Extension Activities:

- If possible, try out the children's suggested processes for making paint. Model problem solving skills and planning by speaking your thoughts aloud as you experiment.
- Not possible? Invite children to pick a new plant from the fridge or grocery store for the next batch of paints. Predict what color it may be and make the paints with them.