



## Earth Science Education Activity

# Painting with Soil

**Background:** Soils are one of our most important natural resources. They also are important for the beauty their many colors add to our landscapes. Most of us overlook this natural beauty because we see it every day. Often these colors blend with vegetation, sky, water, etc. Soil colors serve as pigments in bricks and pottery. If you look at the works of many of the great artists, you will notice that “earth colors” are dominant. The color and texture of soil painting is fascinating and a creative opportunity for all ages of students.

## MATERIALS

- ◆ shovel
- ◆ containers (such as plastic baggies or food containers)
- ◆ soil
- ◆ hammer or mallet
- ◆ mortar and pestle (rubber-tipped)
- ◆ paper cups (4 oz.)
- ◆ pencils
- ◆ ink pens (black, different tip sizes)
- ◆ paint brushes (different kinds and sizes)
- ◆ artist acrylic (clear gloss medium)
- ◆ sponges and rags
- ◆ watercolor paper
- ◆ masking tape

## STANDARDS

### NGSS

DCI: ESS3.A Natural Resources

SEP: Obtaining, Evaluating, and  
Communicating Information

CCC: Patterns; Cause and Effect

**SDG 12: Responsible Consumption and Production**

Learn more about the United Nation’s Sustainable Development Goals (SDGs) and explore resources for educators from UNESCO: <https://en.unesco.org/themes/education/sdgs/material>

**Key Question:** How can we creatively depict why soil is such an important resource?



The winning entry created with soil-based watercolors from an artwork competition hosted by the NRCS Soil and Plant Science Division.

Credit: Sharon Perrone/USDA NRCS



Artistic depiction using soil of landscapes along the Lewis and Clark expedition route.

Credit: Jan Lang/NRCS

**U.S. Department of Agriculture’s Natural Resources Conservation Service (USDA NRCS) • [www.soils.usda.gov](http://www.soils.usda.gov)**

The USDA NRCS delivers science-based soil information to help farmers, ranchers, foresters, and other land managers effectively manage, conserve, and appraise their most valuable investment — the soil.

## **HANDS-ON ACTIVITY**

- 1.** Facilitate a class discussion about why soil is an important natural resource. Create a list of student ideas.
- 2.** Also discuss the historical and cultural aspects of using natural materials in art, highlighting how various civilizations have utilized plants, minerals, and organic elements to create colorful pigments for artistic expression, ceremonies, and other purposes.
- 3.** Encourage students to consider how they might depict soil as an important natural resource in through art, as in a painting or drawing.
- 4.** Gather and prepare soil and other natural materials to make paint:
  - a.** Provide students with shovels and containers.
  - b.** Go outside and allow students to collect samples from preapproved locations. Ask students to document their sample location and record observations about the surrounding area.
  - c.** Once back inside, lay out the soil samples and allow them to dry.
  - d.** In a mortar and pestle, or using a mallet, ask students to crush each soil sample into a fine powder.
  - e.** Place the powder in a paper cup, labeled with the location.
- 5.** Ask students to make observations of all the crushed soil samples.
- 6.** Initiate a discussion about the diverse colors of soil. Questions could include:
  - a.** Why do you think soils are different colors?
  - b.** How might the composition of soil affect its color?
  - c.** How do the sampling locations relate to the color of the collected soil? What insights might the chosen locations provide about the composition and environmental conditions affecting the soil?
  - d.** Can you think of any environmental factors that might influence the color of soil in different regions around the world?
- 7.** Have students make soil paint and use it to depict why soil is an important natural resource:
  - a.** Lightly sketch artwork on watercolor paper with a pencil. When satisfied with composition, use ink for permanent lines.
  - b.** With masking tape, carefully tape the edges of the watercolor paper to a desk, table, or board. This is done so that the artwork will dry flat.
  - c.** Pour small amounts of artist acrylic in small paper cups. Add small amounts of soil.
    - Experiment with depth of color and mixing the different soils.
    - If students want to layer colors, it is recommended to wait until the artwork is dry, and then apply another layer of soil paint.
  - d.** Use different sizes and kinds of paint brushes, sponges, and rags to paint.
  - e.** When the painting is dry, use a black ink pen to make finishing touches.
  - f.** Optionally, have students write a caption below the painting.
- 8.** Encourage students to share their work with the class.

## **ANALYSIS**

Facilitate a classroom discussion about the following questions:

1. How did the soil samples collected by different students vary in color and texture?
2. What factors might contribute to the observed differences in soil color and texture?
3. How did the composition and environmental conditions of the sampling locations likely influence the color and texture of the collected soil?
4. What insights can be gained about soil composition and environmental conditions based on the observations of the collected soil samples?
5. What environmental factors might influence the color and texture of soil in different regions around the world?

## **SYNTHESIS**

Reflect on the significance of soil as a vital resource for life on Earth, considering the artwork created by your classmates and the insights gained from our activity. Think about how soil supports plant growth, provides food and water, and affects ecosystems. Write down your thoughts and share them with the class to explore the importance of soil together.

## **EXTENSION**

Explore the historical use of natural materials in paint by local indigenous communities and its significance to their cultural heritage.