

A decorative graphic on the right side of the page consists of three overlapping circles of varying sizes, each with a darker pink center and a lighter pink outer ring. Two thin pink lines intersect at the top right, forming a large angle that frames the circles.

Soil Paints & Crayons

Exploring the uniqueness of our soils

Basic Instruction booklet

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Painting & Coloring with Soils

Soils are an important foundation for the landscapes that surround us. Soils also make an important contribution to the beautiful colors we see in nature everyday. Through many of us forget to appreciate the beauty that that our soils have, artists often use soils as pigments in bricks, pottery and art work because of their natural beauty.

The color and texture of soil painting and coloring is a fascinating and creative opportunity for students of all ages to learn about the value of soil and its fundamental properties.

Caution about foreign soils

Soil can contain numerous diseases and pests such as; animal and plant viruses, bacteria, fungi, nematodes, noxious weeds, and the life stages of destructive insects. In addition, adequate screening soil for the spectrum of organisms which might be harmful is not possible to the plain eye. Therefore, soil from all foreign countries and from U.S states and territories is regulated to protect from the introduction or foreign or invasive species. For more information on these regulations visit, http://www.aphis.usda.gov/plant_health/permits/organism/soil/index.shtml

Even soil that becomes disposed of in trash or down drains can be a danger to our local ecosystem. Therefore, if you already have soils from other parts of the state or country it is imperative that the soil be pasteurized before use.

Although there may be differing recommendations on pasteurizing soil, one option is to subject soil to dry heat for an extended period of time.

- Spread out soil on baking sheet in a thin layer, cover with foil, and punch a small hole in foil (the key is to create steam)
- Bake in oven at about 250°F for at least two hours.

Soil Paint Preparation

1. A variety of soil samples with differing colors, pasteurized.
 - a. You will need about 2/3 cup of each color for a classroom project (20-25 students).
 - b. If you are grinding your own soil, pasteurize first.
 - c. Use mortar and pestle to grind soil to fine texture.
 - d. Sift ground soil through sifter to remove any rocks or large particles of soil.
2. For each color, pour finely sifted soil into 3oz. cups, filling about 2/3 full.
3. Add enough water to cups to make soil the consistency of a “mud brownie,” once combined. *Add liquids sparingly as they can easily water down colors.
4. Add about 1 teaspoon of glue or acrylic medium and mix until smooth (2 parts water to 1 part glue is usually helpful). Depending on amount of water added, you may need to add more glue to get desired consistency or color saturation.

Soil Crayon Preparation

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. Soil crayons, a mixture of soil and wax, provide an opportunity for observation of a variety of colorful soils. This natural beauty can be interesting to art students and others who want to create a natural look in their artwork.

Materials

- soil (dried in air)
- hammer/mallet
- sharp knife/razor blade
- plastic resealable bag
- mortar and pestle paper cups (8 oz.)
- knee-high nylon hose (white preferred)
- paraffin wax
- hot plate
- saucepan (medium)
- 15-ml (milliliter) pointed centrifuge tube (hard plastic)
- small beaker/rack to hold centrifuge tubes
- small glass funnel
- wood stir sticks (popsicle sticks)
- teaspoon
- ice bath
- metal spatula/scrapper (thin blade pocket knife)

Procedure

1. Prepare the soil:
 - a. Place dried soil on a piece of brown paper and crush into pieces with a hammer or mallet.
 - b. Place some of the crushed soil into a mortar. Use a rubber-tipped pestle to crush the soil into a fine powder. Repeat to crush all of the soil.
 - c. Place cup of powdered soil in a paper cup. Wrap a knee-high nylon hose over the top three times.
 - d. Turn the cup upside down over a piece of paper and gently shake to sprinkle out the finest powder onto the paper. Use this soil powder to make the soil crayons. Prepare each of the soils in this manner.
2. Prepare the wax:
 - a. Cut the wax into small (1mm or less) pieces with knife or razor blade or place a block of wax into a heavy duty zip lock bag and crush with a mallet.
3. Make the crayon:
 - a. Heat approximately 2 inches of water in a saucepan on a hotplate. Place rack or small beaker with water in the pan. When the water starts to boil, turn the hotplate down to a simmer.
 - b. While the water is heating, place enough small pieces of wax into a 15-ml centrifuge tube (packed slightly) to about 12 ml.
 - c. Place the centrifuge tube with the wax into the rack or beaker in the saucepan and wait for the wax to melt.
 - d. When the wax is completely melted, place the glass funnel into the top of the tube and spoon in approximately 1 teaspoon of prepared soil. Remove funnel. Stir melted wax and soil mixture with a wooden stir stick. Continue stirring while removing the tube with the wax and soil mixture to an ice bath and remove stick.
 - e. Let the tube sit in the ice bath about 15 minutes. Take the tube out of the bath and scrape the inside of the tube to remove any excess soil or wax along the rim edge of the crayon to help release it.
 - f. Turn the tube upside down and gently tap on counter to release crayon.
 - g. Color and have fun.

Helpful Hints

1. The best temperature for melting the wax is right at its melting point. If the water is too hot, the wax becomes runny and the soil settles to the bottom quickly.
2. The higher the clay content in the soil, the less problem with settling (the finer particles settle more slowly).
3. The 12 ml of un-melted wax in the tube melts down to about 6 ml. Adding the spoonful of soil brings the volume to approximately 9 ml.
4. Network with others to get a variety of soil colors.
5. Handle hot items with caution. The hot wax step may not be suitable for younger children.
6. The 15-ml centrifuge tubes may be acquired from a medical supply store.

Activities

There are a variety of activities available for teaching the soils paints lesson. Consult with others instructors as there are a variety of activities that have been done with the paints throughout our area.

Included you will find a few common activities that may be helpful in presenting this activity.

I. Toilet paper books (soil paints)

1. Prepare a mixture of watered down glue of about two parts water to one part glue –this mixture can be saved to create soil paints with later in the activity.
2. Provide each student with a single piece of 8.5” x 11” construction paper; light grey works best.
3. Ask students to initial or write their name on the backside of the paper.
4. Each student needs to tear their three, three-square lengths of toilet paper into horizontal thirds (it is easiest to do this if the three squares are folded and then torn).
 - a. The horizontal pieces should be laid across the book cover paper so it is covered.
 - b. Use brushes and watered down glue to wet/texture the toilet paper to the page, one strip at a time.
 - c. When all strips have been placed allow the page dry.
5. Using the rest of the watered down glue, add soil and mix as directed above.
6. Students should begin painting their book covers. This can be done in a variety of patterns.
7. If possible, the painted pages should just be left to dry without being moved.
8. The following day the pages are folded in half and hole-punched at the top and bottom of the fold. A piece of twine can be used to string through the holes and attach any pages that are placed inside.
9. Journals can be used for various lessons and can be especially helpful when created with native soils.

II. Soil Painting Art (Soil Paints or Soil Crayons)

1. It can take more than 1,000 years to produce just one inch of soil! Therefore, the soil that we have now has witnessed many historical events in our national and state history. At the end of this book you will find various examples of art created with soil paints, many of which depict scenes from our state’s heritage.
2. There are also basic templates at the end of this book which can provide some guidance for creating this type of art.

III. Advanced Soil Color Lesson (more accurate with soil paints)

1. Materials
 - a. Copies of soil colors worksheet (3 or 6 color options included) and instructions.
 - b. Examples of soil used to make paints in original form in plastic bags, (this is for texture analysis -optional).
 - c. Copies of the Munsell color book (included, please keep these copies with this activity as they will be used by other schools).
2. Procedure
 - a. Pass out soil paints, instructions, worksheet, and Munsell book copies to students in groups.
 - b. Have students paint soil colors in worksheet boxes.
 - c. While paint is drying, talk to students about soil color variation through the United States/world and some of the causes of this variation (refer to attached presentations for guidance).
 - d. Review the top sheet of the Munsell color book copies showing students where to find the Hue and Value/Chroma of a color (attached presentations have guidance on this).
 - e. Using worksheets and Munsell color book copies have students attempt to find the Hue and Value/Chroma of each painted sample. Record on worksheet.
 - f. Have students try and determine whether the soil is sand, silt or clay using samples and texture “by the feel” worksheets included and record.
 - g. Have students guess where the soil is from and what factors affected the color of the soil in question (age, composition, layer location, climate, topography, vegetation).
 - h. Discuss with class each group’s observations/results.

Clean-up

1. Soils should be disposed of correctly in garbage and not washed down drains.
2. Please rinse paintbrushes and let dry if possible.
3. Please pack all materials back into activity box and contact us for pick-up.

This is a shared resource by school and organizations county and state-wide please make efforts to return materials in original condition so that we may all enjoy them!

Please contact us if you have additional questions.