

Oregon



**Developed By:**

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# Summer Ag Institute Lesson Plans

**Title of Lesson:** Soil Chips ..... Day 1

**Academic Subject:** Science (Earth)

**Theme:** Soils vary in color

**Grade Level:** K

NOTE: This lesson consists of two parts. On Day #1, students are introduced to key concepts. On Day #2, students will go on a local field trip to collect samples of soil. Depending on your schedule, you may want to finish the lesson on a third day.

## **CIM/CAM Standards:**

1. Earth and Space Science: Understand physical properties of the Earth, how those properties change, and the Earth's relationship to other celestial bodies.

•Benchmark 1 Standard: Recognize physical differences in Earth materials.

## **Learner Objective: (The student will)**

1. Create a simple soil "chip set" derived from soil samples taken from five distinctly different locations.
2. Base the order of the chip set on a pattern (e.g., light-to-dark).
3. Use the science process skills of observing, describing, classifying, seriating.

## Vocabulary:

1. value—an element of color
2. soil
3. Note: all other words introduced will be used in context and teacher monitoring will be used to address any language that is above-level or outside learners' language experience.

## Anticipatory Set:

You've seen and played with mud before. You've played in dirt with your toys. In your mind, ask yourself, "What color can soil be?" Think of two colors of dirt, or soil, you've seen before. Keep it a secret for now. Here are some cards you may have seen your parents look at when they plan to paint. These are called paint chips. I want you to find two cards which match your idea of the dirt colors close to what you had in mind. Bring your two cards up to the front of the room and tape them to the whiteboard when I point at you. Let's keep them in a neat row on the board. (The teacher models what to do without disclosing the colors.)

## Instructional Outline (Teaching Content)

1. Perform oral and visual modeling.
2. Observe and describe the posted row of chips.
3. List key words students contribute.
4. Use a graphic organizer such as concept map.
5. Introduce "value" as how light or dark a color is.
6. Return to the concept map and emphasize the words associated with value.
7. Refer to the two groupings of posted paint chips.
8. Tell learners that what they call "dirt" is called "soil" by scientists. Inform them that soil is made of broken down rocks, sand, clay, and often includes plant, animal parts all mixed together. Pass out hand lenses and a moist (not saturated) loam sample to students. Use small paper containers, like medicine cups.

## Strategies (What to do, explain or have students do)

Learners verbalize what they notice about the posted colors. Have them describe similarities and differences.

("light" and "dark" are likely to occur; if they don't, prompt)

Have learners help you classify words from their list to develop the concept map.

Learners compare their clothing colors, or objects around the room to reinforce the concept of value.

Select a few students to classify some of the chips into two groups, "lighter value" and "darker value".

Have students tell a partner what value is, and have a couple volunteers state the definition to the class.

Have volunteers order (seriate) the groups into rows of darker-to lighter (or vice-versa)

Students observe and orally describe a sample of loam with a hand-lens.

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| 9. Pass out two more moist samples of soil, making sure your samples vary in color and sand and clay content.  | Have learners state observations about the lightness or darkness of their samples. |
| 10. Revisit the paint chips and their order in respect to their value.   | Have students order their own samples in terms of value, and state their pattern.  |
| 11. Teacher makes observations to monitor for concept understanding of value and ordering.   | Learners observe modeling of procedure.  |
| 12. Model creating chips with the soils sample: (Add enough glue to each sample of soil to achieve a mixture like thick pancake batter. Mix each with a popsicle stick and spread the mixture onto a separate index card.) | Students complete procedure.   |
| 13. Provide materials to students.   |  |

**Closure:**

Learners tell what they learned about soil color, and describe their pattern in terms of value (i.e., light-to-dark). Some individuals may want to do this in front of the class, and others may need to share this with a partner, depending on your numbers. Explain that the following lesson will involve a field trip to collect their own soil samples from different sources, and that they will get to make their own set of soil chips.

**Resources:**

(You will need to judge the quantities based on your class size, and of course substitute materials according to availability/practicality.)

1. Three different kinds of soil easy to discriminate in color per student: loam, sandy, clay (color is the most important, so if you cannot find the three types of soil in your area, modify the lesson as needed)

**Materials:**

**Evaluation:**

Teacher observation of student responses—verbal, task performance, and participation. This informal evaluation will have a bearing on the following day’s concept review; note any needed modifications so that assessment drives your instruction.

**This ends Day #1.**