

# **Diane Dean**

## **Portland Public Schools**

### **2004 NEH Summer Institute**

#### **Final Project**

In this **Integrated Unit Plan** the textile dyeing methods used by the Zapotec people of Oaxaca, Mexico and the Native Americans of the Columbia Plateau, Oregon will be compared and contrasted through an integration of history, science, and the arts.

#### **Social Sciences**

##### **Strand 1: Culture**

- ❖ Describe ways in which language, stories, folktales, music, and artistic creations serve as expressions of culture and influence behavior of people living in a particular culture;
- ❖ Compare ways in which people from different cultures think about and deal with their physical environment and social conditions.

##### **Strand 2: People, Places, and Environments**

- ❖ Use immediate personal experiences for exploring geographic concepts and skills while expressing interest in things distant and unfamiliar.

#### **The Arts**

##### **Common Curriculum Goals**

- ❖ Identify both common and unique characteristics found in works of art from various time periods and cultures.
- ❖ Understand that the arts have a historical connection.
- ❖ Explain how a work of art reflects the artist's personal experience in a society or culture.

##### **Content Standards**

- ❖ Relate works of art from various time periods and cultures to each other.
- ❖ Describe how historical and cultural contexts influence works of art.

#### **Science Scientific Inquiry**

##### **Common Curriculum Goals**

- ❖ Designing the Investigation
- ❖ Collecting and Presenting Data

##### **Content Standards**

- ❖ Design scientific investigations to address and explain questions or hypothesis.
- ❖ Collect, organize, and display scientific data.

#### **Second Languages**

**Communication:** Comprehend, express, and exchange ideas in a language other than English.

**Culture:** Demonstrate and recognize cultural products, perspectives, and practices appropriate to the cultures studied.

**Students:** This unit will be taught to fourth graders in conjunction with a study of the Native American Cultures of Oregon. They have little experience with the Spanish language so expected language goals are very basic

## **Lesson 1: Exploring Colors From Plants and Other Natural Materials**

### **Objectives:**

- ❖ The student will document a scientific investigation with teacher guidelines.
- ❖ The students will investigate a variety of plants and other materials which they collect to discover the colors which can be obtained by rubbing on paper.

**Rational:** This simple investigation should inspire curiosity of how simple dyes can be made from natural materials. Students will learn how natural materials are used by many indigenous people for dyeing materials for weaving.

### **Vocabulary Introduced:**

- Los Colores: rojo, verde, amarillo, azul, anaranjado, café, morado, negro, rosa, marrón.
- ¿De qué color es? (What color is it?) Es rojo. (It is red.)

**Instructional Materials:** Paper, a wide variety of plant and other natural materials

### **Instructional Strategies:**

1. Fold several pieces of 8 1/2" x 11" paper in half and make a booklet.
2. Design a cover including the child's name.
3. Plants and other natural have been collected by the students and brought to school.
4. Student sketches the chosen plant on the first inside page picking the part of the plant he/she intends on using. If name is known, the sketch should be labeled.
5. Students write in complete sentences where the plant was found and any other observations.
6. Using small swatches of coarse paper student rubs the part of the plant or other object to see if a trace of color appears. Student adds this swatch to the booklet and writes in Spanish the color that appears.
7. Student completes the above steps for at least 8 plants or other natural materials. .

**Assessment:** Completed booklet to use as a resource in the next lessons. (What does completed booklet mean? What are the elements in the booklet that will mean complete?)

## **Lesson 2: Exploring Dyes from Plants and Other Natural Materials**

(Two Sessions)

### **Objectives:**

- ❖ The students will explore the dyeing qualities of different plant materials which are mixed with hot water.
- ❖ The students will keep written records with swatch samples of their discoveries.
- ❖ The students will use safe techniques for handling hot water and dyes.

### **Vocabulary Introduced:**

- ❖ números ordinales: primero, segundo, tercero, cuarto
- ❖ Transitional words: entonces(next), luego(then), después(after that), finalmente(finally), e

### **Instructional Materials:**

- ❖ Hot water
- ❖ Several heat resistant containers for every two students
- ❖ Spoons, wooden skewers, craft sticks, etc. for stirring
- ❖ Swatches of white fabrics(cotton t-shirts, cotton balls, wool yarn, wool athletic socks, artificial fabrics, cotton cords)
- ❖ Trays lined with paper towels
- ❖ Masking tape
- ❖ Labeled plant materials: onion skins, flower blossoms, berries, leaves, beets, red cabbage, tea, corn husks etc.
- ❖ Tweezers for picking up hot fabrics
- ❖ Safe cutting tools, bricks or mortar and pestle for grinding materials
- ❖ Hot mitts
- ❖ Goggles
- ❖ Protective clothing

### **Instructional Strategies:**

1. Teacher instructs students to put on protective clothing. Pairs of students will choose 4 different plant materials to experiment with.
2. Show students how to carefully cut up or grind plant materials between two bricks. Then place them in the heat resistant containers. Teacher will add the hot water to each container.
3. Students will carefully stir and mash the ground materials. Students will carefully place swatches in each container and allow them to steep for about 5 minutes.
4. While the materials steep, students prepare a tray lined with paper towels. Use a piece of masking tape to label the plant dyes used.
5. After about five minutes, students remove the swatch from the water with the tweezers or stirrer. They place it next to the label on the paper towel and allow it to dry.
6. Student repeats the above procedure with three more dyes making sure containers and cutting tools are clean before proceeding.
7. The next day student swatches will be arranged on a color wheel type display with labeling.

**Assessment:** Have students pick 5 objects of different color in the room and identify the color.

### **Lesson 3: Compare and Contrast the Woven Textiles Used by the Zapotec People of Oaxaca, Mexico and the Native of Americans of the Columbia Plateau**

#### **Objectives:**

- Students will understand that indigenous peoples wherever they live use natural materials from their own environments for many uses including dyeing.
- Students will discuss the similarities and differences of plants used to dye fibers for weaving in both cultures.

#### **Instructional Strategies:**

1. Divide class in groups of 4 students each.
2. Each group will get an article to read with information about dyes used in both cultures. They will also look at photos and authentic objects.
3. As a group students will display the information they found out on chart paper.
4. They will have about 40 minutes to complete their chart for presentation to the rest of the class.

5. Each group presents their findings to the class.

**Instructional Materials:**

- Authentic examples of woven rugs, bags, shawls, etc. from both cultures
- Photographs of weavers at their looms and examples of woven/embroidered items
- Articles about the Zapotec weavers and Columbia Plateau weavers
- Chart paper for each group
- Colored markers

**Assessment:** Presentations—

**Lesson 4: Preparation and Dyeing of Weaving Fibers for Individual Weaving Projects**

**Objectives:**

- ❖ Students will follow written instructions to complete the process of dyeing fibers with natural dyes.
- ❖ Students will prepare materials for a personal weaving project using what they have learned about dyeing.

**Instructional Materials:**

- ❖ Dyes made from natural materials
- ❖ Alum and Cream of Tartar
- ❖ Materials to dye such as corn husks, wool yarn, and cotton floss
- ❖ Crock pots
- ❖ Stirring implements
- ❖ Plastic or rubber gloves
- ❖ Protective clothing
- ❖ Plenty of newspaper
- ❖ Some sort of hanging rack
- ❖ Plastic to protect classroom surfaces
- ❖ Balance or scales
- ❖ Measuring cups and measuring spoons
- ❖ Cutting boards and cutting tools

**Instructional Strategies:**

1. Students will be given written instructions for this procedure.
2. Students will be instructed to cover their desks and a drying area with layers of newspaper.
3. Students will be instructed to prepare dyes as they did in lesson 2, but this time they will place the crushed plant materials in cheesecloth or nylon hose and tied shut.
4. Groups of 4 students will be assigned to the pot of dye which they have prepared and has been heating in individual crock pots.
5. They will be instructed to add 1 tablespoon of alum and 1 teaspoon of cream of tartar for every 4 ounces of fiber.
6. They will carefully add the wool, cotton and corn husks (which have been soaked in water in advance) to the dye vats. Yarn and floss should be in loosely tied skeins to prevent tangling.
7. Students will take turns stirring the mixtures over about an hour.
8. The dye baths are then allowed to cool.

9. Remove the fibers with gloved hands or strainers, and rinse in water repeatedly until the rinse water looks clear. Wring out or drain well. Hang it up to dry. Be sure to label it so others will know what dye was used.
10. Clean up carefully as directed.

**Assessment:** A great quantity of dyed wool yarn, cotton floss, and corn husks

**Follow Up Activity:** Each student will make a small color poster labeled with the dye used to create the color.

### **Lesson 5: Designing a Weaving Project Reflecting the Cultures of Oaxaca and the Columbia Plateau**

**Objectives:**

- ❖ Students will use sample motifs to help them design a pattern for a weaving project.
- ❖ Students will understand the importance of planning a project in advance.

**Instructional Materials:** graph paper, colored pencils and copies of traditional folk designs for both cultures.

**Instructional Strategies:**

1. Show students a wide variety of traditional patterns.
2. Model using graph paper to create a pattern. Remind children not to choose a design that is too complicated. The design will use 3 colors so they will have to decide which color scheme they will use.

**Assessment:** Individual student designs

### **Lesson 6: Preparing the Loom and Creating the Individually Designed Textile**

**Objectives:** Students consolidate their knowledge of traditional dyeing culminating in a small woven or embroidered wall hanging.

**Vocabulary Introduced**

**Instructional Materials:**

- ❖ Cardboard for individual looms
- ❖ Dyed wool yarn, cotton floss, and corn husks
- ❖ Coffee stirrers
- ❖ Twigs for hanging
- ❖ Small embroidery hoops
- ❖ Needles

**Instructional Strategies:**

1. Show students how to set up their looms.
2. Explain the weaving process and support individual students as they weave.
3. Show students how to transfer embroidery patterns onto fabric.
4. Offer support and help where needed.

**Assessment:** The finished product