

Patterns in Nature

Strand	Earth Patterns, Cycles, and Changes
Topic	Investigating patterns in natural objects
Primary SOL	K.9 The student will investigate and understand that there are simple repeating patterns in his/her daily life. Key concepts include b) the shapes and forms of many common natural objects including seeds, cones, and leaves.
Related SOL	K.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations in which b) observations are made from multiple positions to achieve different perspectives; k) objects are described both pictorially and verbally.

Background Information

Nature contains many patterns that can be observed and described. Veins in a leaf, spirals in shells, and flower petals are just a few examples of patterns found in nature. Other patterns include the seasons of the year and day and night.

Materials

- Clipboards
- Colored pencils
- Crayons
- Paper
- Natural objects such a shell, a feather, a leaf
- Digital camera(s)
- Computer
- Printer
- Photo presentation software

Vocabulary

patterns, nature

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

Introduction

1. Review what students know about patterns. Let them create and share patterns made with items such as connecting cubes and pattern blocks.
2. Show students a natural object such as a shell, a feather, or a leaf. Ask them if they can see any patterns in the object. Discuss patterns that are found such as repeating lines, colors, and shapes.

Procedure

1. Tell students that they will be going outside to look for other patterns found in nature. Have students bring clipboards, several sheets of paper, colored pencils, and crayons so they can record what they see.
2. Have students collect information about patterns in nature that they see during the walk in four ways:
 - Drawing a picture and writing a description of patterns
 - Creating a rubbing of patterns (e.g., rubbing of a leaf, rubbing of a fern frond, rubbing the surface of a stone)
 - Taking photographs of patterns with the digital camera
 - Collecting items that show patterns
3. Have students take turns using a digital camera to capture a picture of the pattern they found. Make sure that each student has the opportunity to take a picture. Record the list of students in the order that they used the camera so later pictures can be matched with the student who took them.
4. After the nature walk, discuss the patterns that were observed and do the following:
 - Record information and drawings on chart paper labeled “Patterns in Nature” of those items students noted on paper while on their nature walk.
 - Create a bulletin board in the classroom of the rubbings of patterns that students made. Post the name of each item with each rubbing.
 - Print the photographs students took of the nature patterns during the walk. Glue each photograph on a separate piece of construction paper. Have each student write one or more sentences describing the pattern that he/she found, and attach it to his/her photograph. Put all the pages together to create a class book about patterns in nature.
 - Let students who collected items on the nature walk describe the patterns on the item.
 - Working in small groups, have students examine the natural items using magnifying glasses. Encourage them to feel the objects as they search for patterns in colors, shape, lines, etc. Add a description of the patterns they found to the chart paper.
 - Use photo presentation software to create a presentation using the photographs that students took. Record each student reading his/her explanation of the pattern he/she photographed. As a culminating activity, watch the presentation as a class.

Assessment

- **Questions**
 - Look at the drawings of nature patterns you did while on the nature walk. What did you see? What did you draw?
 - What patterns did you find when you worked with the nature items?
- **Journal/Writing Prompts**
 - Look at pictures of animals, and observe patterns; then draw and color an animal with a pattern. Tell about the pattern in your picture.

Extensions and Connections (for all students)

- Collect leaves in the fall. Sort by color, size, and shape. Make leaf rubbings with crayons or leaf prints using paint.

- Make rubbings of natural objects with patterns and use the rubbings to create pattern booklets.
- Cut apart fruits and vegetables and observe patterns. Use the fruits and vegetables to make prints.

Strategies for Differentiation

- Create a class activity to match zoomed in/up close pictures of patterns to pictures of patterns taken from a distance (e.g., bird feathers/bird, up close pinecone/pinecone hanging on a tree, zebra stripes/picture of a full zebra).
- Have students dictate into a recording device patterns discovered at home, at school, and in nature. Place in class listening center for repetitive listening and reinforcement of concepts.
- Give students black and white pictures of items such as a shell, flowers, and leaves to color repeating patterns. Question students orally about the details of the patterns found.
- Using a graphic organizer as a class, and classify examples of patterns found in nature. Create a journal of patterns found in nature.