

Exploring Shapes in Nature

Purpose: This lesson introduces students to living and non-living items found in many outdoor and agricultural environments.

Time: 3, 30 minute activities

Level: K

Materials:

- 10-40 items collected from a natural system (garden, forest, prairie, schoolyard, etc.), some living and some non-living
- 4 large boxes or other containers
- Crayons for rubbings
- Colored paper for rubbings
- Scissors
- Glue/glue sticks
- Poster board or bulletin board space

OPTIONAL

- Shape templates



Minnesota Science Standards and Benchmarks

0.2.1.1.1 Sort objects in terms of color, size, shape and texture and communicate reasoning for the sorting system

0.4.1.1.1 Observe and compare plants and animals

0.4.1.1.2 Identify the external parts of a variety of plants and animals including humans

0.4.1.1.3 Differentiate between living and non-living things.

0.4.2.1.1 Observe a natural system or its model and identify living and nonliving components in that system.

Minnesota Social Studies Standards and Benchmarks

0.3.2.3.1 Identify the Physical and human characteristics of places, including real and imagined places.

Minnesota Math Standards and Benchmarks

K.3.1.1 Recognize basic two-and three-dimensional shapes such as squares, circles, triangles, rectangles, trapezoids, hexagons, cubes, cones, cylinders and spheres

K.3.1.3 Use basic shapes and spatial reasoning to model objects in the real-world.

Minnesota Art Standards and Benchmarks

0.1.2.5.1 Identify the tools, materials and techniques from a variety of two dimensional media such as drawing, printmaking ceramics or sculpture.

0.2.1.5.1 Create original two and three-dimensional artworks to express ideas, experiences or stories.

Background

Many agricultural, food and natural resource systems can be found in a student's neighborhood and school area. Many times students are unaware of the many small items that make-up this natural system. If you are lucky enough to have a natural system (garden, crop field, livestock pasture, forest, prairie, open grassland, sports fields etc.) with-in walking distance of your school, take your students on a mini-field trip to gather materials for this lesson. If a natural system is not nearby, than the teacher or students will need to collect a variety of living and non-living, and animal and plant items to explore before class begins.

This lesson will allow students to feel and observe the many items that make up a complex system. Students will sort these items into different groups and identify shapes that are visible. Finally students will create a simple art project to display in the classroom or at home.

Procedure

Activity 1 – Living and Non-living items

1. If a natural system is nearby, take students to the site and have them collect at least five items each. If a natural system is not nearby, the items must be collected in advance – try to collect items from plants and animals, as well as non-living items. Examples include: leaves, branches, bark, berries, nuts, feathers, fur, insects, rocks, soil, etc.

2. Discuss with the students how all of these things work together to help animals, plants and people. Help students identify what benefits the natural system and the items have on each student's life.
3. Bring out several boxes or large containers. Ask students for ideas about how the items could be sorted or grouped. Have the students sort the items into the containers. Dump the items out and sort by different criteria.
4. Limit the boxes to just two. Label one box with LIVING and the other box with NON-LIVING. Have each student place at least one item into each box. You can have students go one at a time or all at once.
5. Once all items are sorted ask the students:
 - a. How could you tell which box you should put the item into?
 - b. Select an item and ask what purpose it has in the system.
 Examples:
 - i. leaf –adds beauty, provides food and shelter for animals, adds oxygen to the air.
 - ii. Rock – provides structure for insects and other animals to sit on, contains minerals that are broken down and added to the soil

Activity 2 – Plants versus Animals

1. Set the NON-LIVING box to the side and inform the students that you are going to focus on the LIVING box. Set out two additional boxes – label one ANIMAL and one PLANT. Have the students sort the living items into the plant and animal boxes. Once this is done ask the students:
 - a. What is the difference between a plant and an animal?
 - b. What do all of the items in the plant box have in common?
 - c. What do all of the items in the animal box have in common?
 - d. What are the similarities and differences between the plant and animal items?

Activity 3 – Shapes in Nature

2. Tell the students that items in nature can help us learn many things. Today the living items are going to help us learn about shapes. Ask the students to look at all of the plant and animal items. Ask:
 - a. What shapes do you see?
 - b. Which items are shaped like squares?
 - c. How many items can you find that are in the shape of a circle?
 - d. Are there any cylinders, cubes, or cones?
 Continue discussion on additional shapes seen in the items.

3. Tell students that you are going to use some of the plant materials to show these shapes. Demonstrate how to make a rubbing of a leaf, bark, etc. using a crayon and paper. Example:
http://www.youtube.com/watch?v=tkKUF5_4QEo
4. Provide students with crayons and paper to make rubbings of the items they have collected. Circulate around the room asking students what shapes they see in their rubbings.
5. Ask students to use scissors to cut out some of their rubbings as squares, circles, triangles, etc. Provide templates, if necessary.
6. Ask students to apply glue to the back of their cut-out rubbing and then place their shape onto a poster board or bulletin board to create a class texture collage.

Additional Activities

- Collect items from a different location. Compare and contrast these items to the ones found at the first location.
- Visit the same location during a different season. Compare the living and non-living, and plant animal items found in the different seasons.
- Invite a representative from the Minnesota Department of Natural Resources to your classroom to discuss natural systems that are found throughout the state of Minnesota.

Adapted from Utah Agriculture in the Classroom

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