

STEM Bites

TODAY'S EXPLORATION: Solar Energy & Earth's Movement

Overview:

Create nature art using the sun to make designs on construction paper.

Next Generation Science Standards (NGSS):

Grades: K-20

Practice: OBTAINING, EVALUATING, AND COMMUNICATING INFORMATION

Discipline: LIFE SCIENCES and EARTH & SPACE SCIENCES

Materials:

- Leaves, flowers, grasses, objects
- Colorful construction paper
- Small stones, rocks, weights
- Markers or colored pencils



Investigation:

1. Collect leaves, flowers, grasses, and other objects with interesting shapes. *Be careful not to disturb homes and other resources that wildlife species depend on.*
2. Put pieces of different colors of construction paper on sidewalk or pavement that is in direct sunlight (hint: this experiment works best midday on a sunny day).
3. Arrange the leaves, flowers, grass, and other flat objects on a piece of construction paper and use small rocks to secure the objects and the paper.
4. On another piece of construction paper, arrange the objects with interesting 3-dimensional shapes and use a marker to trace the shadows of the shapes without moving the objects or the paper – repeat as often as desired, but label each tracing with the time of day.
5. After several hours, remove the plants and objects from the construction paper to reveal the sun print patterns.
6. Write the date, time of day, and exposure time on each piece of artwork. Repeat the activity using different colors of paper and exposure times, and in different seasons.

Product or Artifact Possibilities:

- Frame-worthy nature art.
- Awareness of solar energy and Earth's rotation.
- Improved observation and evaluation skills that are foundational to the scientific method and critical thinking.

Guiding Questions:

1. What happened with different sun exposure times?
2. Did the color of the paper influence how quickly it faded?
3. Where were the object shadows in the morning, at noon, and in the afternoon?
4. What places outdoors are protected from the ultraviolet rays of the sun?

What Are We Discovering?

How environmental attributes and the Earth's position influence the impacts of the sun's ultraviolet rays.

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