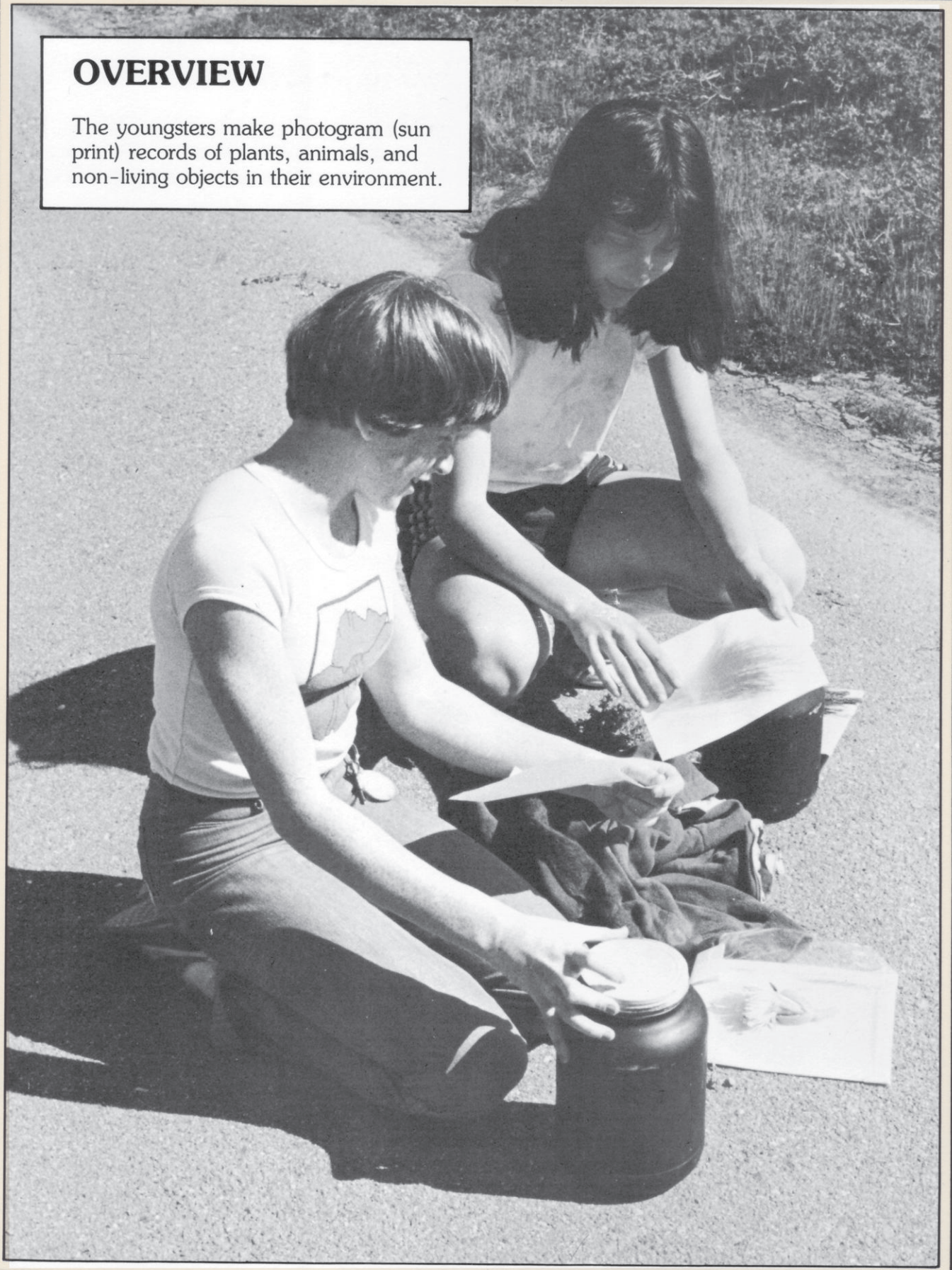
ENVIRONMENTAL SUN PRINTS

BIO KEY

Arts and Crafts
Bio-technique
Environmental Awareness

OVERVIEW

The youngsters make photogram (sun print) records of plants, animals, and non-living objects in their environment.



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Developed by
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BACKGROUND

The ***environment*** is everything that surrounds an organism: physical conditions such as temperature, moisture, light, wind, sound, and chemicals; the presence of other organisms (plants and animals); and non-living objects such as rocks, metal, and plastic. All of these factors make up an organism's environment and affect the organism's survival.

One interesting way for children to observe their environment more closely is to make sun prints of various small objects. In this activity, the youngsters collect a wide assortment of objects from their environment, place them on photosensitive paper, and expose and develop the paper. The resulting sun print provides the youngsters with a record of their environmental selections.

MATERIALS

For each student:

2 pieces of Ozalid paper*, 10.75 cm x 14 cm (4¼" x 5½"), in a lightproof envelope* (See the "Preparation" section.)
1 paper clip*

For the group †:

3 one-gallon wide-mouth plastic containers with lids*
3 large grocery bags
coarse gravel or small rocks from a road or driveway (enough to cover the bottoms of the gallon containers to a depth of 2 cm)
clear plastic wrap*
masking tape*
0.5 liter of household ammonia* (non-sudsy)

* Available from Delta Education.
† The quantities listed here are sufficient for a group of sixteen participants. For larger groups, increase the quantities.

CHALLENGE: MAKE A SUN PRINT OF OBJECTS IN YOUR ENVIRONMENT.

PREPARATION

Group Size. This activity is suitable for groups of up to thirty participants.

Time. Allow forty to sixty minutes for this activity.

Site. Select a site that has both sunlight and shade, as well as plants, tiny animals, and perhaps some litter. The activity must be done on a sunny day.

Materials

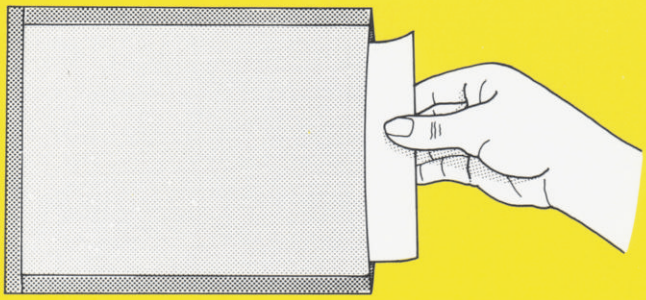
1. Containers

a. Place enough gravel into each gallon container to make a layer about 2 cm deep.

b. Pour 125 milliliters (about ½ cup) of household ammonia into each container. Put the lid on the container.
c. To make the container lightproof, place it in a large grocery bag.

2. Envelopes of Ozalid Paper

a. Tape manila folders or thin cardboard together to form a lightproof envelope. Tape a piece of clear plastic wrap the same size as the envelope to one edge of the envelope.
b. Make an envelope for each youngster. (If you have twenty or more youngsters in your group, you might consider letting them work in teams of two. In that case, make an envelope for each team.)



c. In subdued light, insert two sheets of paper (or four, if you are preparing envelopes for pairs of youngsters) into each envelope. Fold over the top to prevent light from entering. Use a paper clip to keep the flap folded.

3. Make two or three sun prints to show the group.

4. Duplicate enough Action Cards for each youngster to have one.

HOW TO MAKE A SUN PRINT

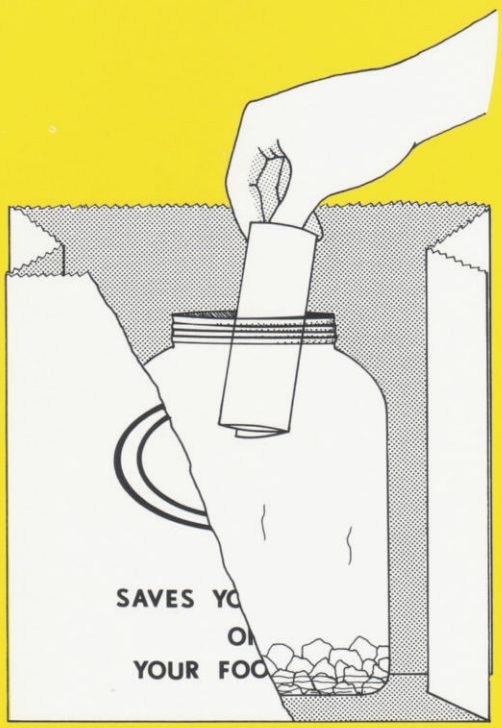
1. Collect the objects to sun print.

2. Working in the shade, remove one sheet of Ozalid paper from the lightproof envelope. Place it, yellow side up, on top of the envelope.

3. While still shading the paper, arrange the organisms or other objects on the paper. If it is windy, cover the objects and paper with the flap of clear plastic wrap to keep them in place.

4. Expose the paper to direct sunlight for thirty to sixty seconds. (A longer exposure may be necessary if the paper is not in direct sunlight or if the sunlight is partially obscured.) When the yellow paper around the objects turns white, the paper has been exposed enough.

5. Quickly remove the objects and loosely roll the paper. Initial the back for identification and place it in the gallon container. (Make sure that the papers do not lie flat against each other.) Put the lid on the container.



6. Leave the paper in the capped container for thirty to sixty seconds (more time if the container is cool). Remove the paper and look at your developed print.

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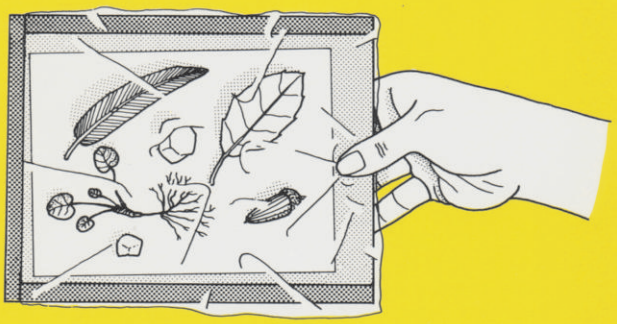
ACTION

Introduce the term ***environment*** to the children and explain that it is everything around an animal or plant. Point out an ant, a fly, or a plant and encourage the kids to name everything that could affect that organism. (If the youngsters need help, mention people, air, nearby rocks, other plants and animals, the temperature, shade, light or litter.)



1. Show the group the sun prints you made, and demonstrate the sun-print technique.

2. Introduce the challenge, and distribute the Action Cards. The Action Cards are listed here for your convenience. *Do not read them to the youngsters!*

- Make a sun print representing a grassy environment. Try to include at least one plant, one animal, and one non-living object.
- Make a sun print representing a soil environment. Try to include at least one plant, one animal, and one non-living object.
- Make a sun print representing an environment made of natural ground litter (dead leaves, twigs, pine needles, etc.). Try to include at least one plant, one animal, and one non-living object.
- Make a sun print representing a paved-area environment. Try to include at least one plant, one animal, and one non-living object.
- Make a sun print representing an under-rock environment. Try to include at least one plant, one animal, and one non-living object.
- Make a sun print representing a shrub environment. Try to include at least one plant, one animal, and one non-living object.
- Make a sun print representing a tree environment. Try to include at least one plant, one animal, and one non-living object.
- Make a sun print representing a water environment. Try to include at least one plant, one animal, and one non-living object.

3. Make a collage of the sun prints. Encourage the youngsters to describe an environment by referring to a sun print.

ENVIRONMENTAL IMPRESSIONS

1. Invite the kids to identify the objects that made the shapes on each other's sun prints.

2. What parts of the environment can not be shown on a sun print?

3. What evidence is there in the environment to indicate that other animals have been here?

MORE SUN PRINTS

1. Make a sun print using only non-living objects. Predict what types of organisms would live in the environment the sun print represents.

2. Make a sun print of an environment for an imaginary organism — an *Okpok*. *Okpoks* require warm, moist, dark places to live, and they eat plants. Invent other imaginary animals with different requirements, and make a sun print of a suitable environment.

Environmental Sun Prints
Action Card

Make a sun print representing a grassy environment. Try to include at least one plant, one animal, and one non-living object.

Environmental Sun Prints
Action Card

Make a sun print representing a soil environment. Try to include at least one plant, one animal, and one non-living object.

Environmental Sun Prints
Action Card

Make a sun print representing an environment made of natural ground litter (dead leaves, twigs, pine needles, etc.). Try to include at least one plant, one animal, and one non-living object.

Environmental Sun Prints
Action Card

Make a sun print representing a paved-area environment. Try to include at least one plant, one animal, and one non-living object.

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Environmental Sun Prints
Action Card

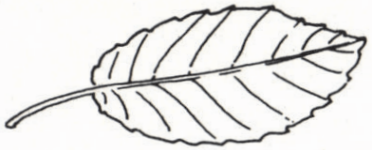
Make a sun print representing an under-rock environment. Try to include at least one plant, one animal, and one non-living object.

Environmental Sun Prints
Action Card

Make a sun print representing a shrub environment. Try to include at least one plant, one animal, and one non-living object.

Environmental Sun Prints
Action Card

Make a sun print representing a tree environment. Try to include at least one plant, one animal, and one non-living object.



Environmental Sun Prints
Action Card

Make a sun print representing a water environment. Try to include at least one plant, one animal, and one non-living object.

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