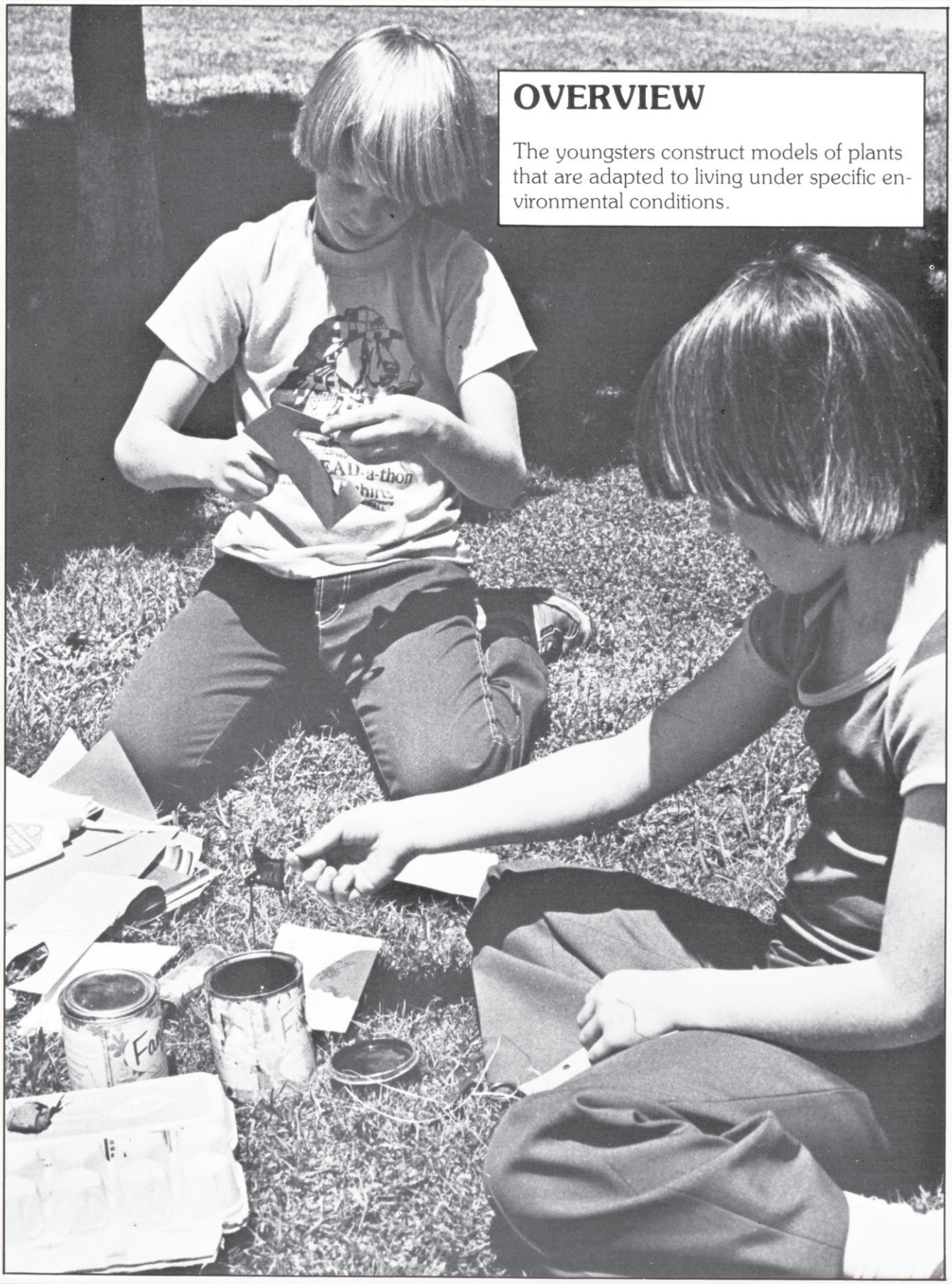
INVENT A PLANT



OVERVIEW

The youngsters construct models of plants that are adapted to living under specific environmental conditions.

BIO KEY

Arts and Crafts
Simulation
Adaptation

Published by
Delta Education
12 Simon Street
Nashua, NH 03061-3000
(603) 598-7170

Developed by
Outdoor Biology Instructional Strategies
Lawrence Hall of Science
University of California
Berkeley, California 94720

BACKGROUND

Most regions support a wide variety of plants. Gardens, parks, city streets, vacant lots, forests, grasslands, and aquatic sites all have their own assortments of plants. Each species of plant displays a unique combination of characteristics that enables it to survive under specific environmental conditions, such as wind, water, light, and temperature. A ***species*** is a group of organisms different from all other kinds of organisms.

Adaptations are features of organisms that help them to survive and reproduce. Examples of plant adaptations include: the water-storing cells in a barrel cactus; the sharp, protective spines on a thistle; and the fire-resistant bark of the redwood tree. By "inventing" plants, the youngsters learn more about adaptations.

CHALLENGE: CONSTRUCT A MODEL OF A PLANT THAT CAN SURVIVE UNDER A PARTICULAR ENVIRONMENTAL CONDITION.

MATERIALS

For each youngster:
1 Action Card

For the group:
thin, aluminum wire*: soft enough to be cut with scissors (See "Preparation.")
scissors*
floral tape*
small pieces of styrofoam, lumps of clay, or egg carton bases to support "plants"*
2 sheets of Action Cards*

FOR CONSTRUCTING PLANTS:

Method A: Plastic Film (See "Preparation.")
3–4 pints of plastic film* † (different colors)
stirring sticks (popsicle sticks)*
plastic film thinner*
paper towels for cleanup

Method B: Paper
1 Invent-a-Plant Junk Box* containing: construction paper, tissue paper, cotton balls, pipe cleaners, yarn, toothpicks, white glue, and transparent tape
leaves, twigs, or other ground litter

* Available from Delta Education.
† Available at craft or hobby shops.

PREPARATION

Group Size. This activity is suitable for both small and large groups; simply obtain more materials for large groups.

Time. Plan on forty to sixty minutes for the activity.

Aluminum Wire. Cut three 30-cm pieces of wire for each youngster. Keep a small roll or two on hand for the activity.

Action Cards. Duplicate the Action Cards, and cut them apart.

BARREL CACTUS

Plastic Film. If you plan to use the plastic-film method of making plants, familiarize yourself with the precautions and thinning instructions on the labels. Practice by making a plant according to the diagrammed instructions in the "Action" section of this folio. Three to four colors in pint-size cans (two green) will be adequate for groups of up to fifteen. For larger groups, obtain two cans of each color.

Site. Choose a site with a variety of plants. Weedy lawns with shrubs or weedy fields are fine.

ACTION

1. Ask the group to describe survival problems for plants in several different types of environments, e.g. in the desert, the ocean, and in Alaska. Announce that you have brought some materials for constructing models of plants that can survive under different conditions.

2. Give each youngster one Action Card. The Action Cards are listed here for your convenience. *Don't read them to the kids!*

- Invent a plant that is lawn mower proof.
- Invent a plant that can live on the surface of a pond.
- Invent a plant that can withstand high winds.
- Invent a plant that can store water.
- Invent a plant that a cow or sheep would not eat.
- Invent a plant that can withstand heavy surf.
- Invent a plant that catches insects.
- Invent a plant that can live in a swift river or stream.
- Invent a plant that is fireproof.
- Invent a plant that can compete with other plants for sunlight.
- Invent a plant that can reach water 50 cm beneath the ground.
- Invent a desert plant that can shield itself from intense heat.

3. Spread out the construction materials. If you are using the paper method, point out that the wire can be used to make stems, branches, and roots, and that floral tape can be used to wrap stems and branches to hold wire pieces together. If your group is using plastic film, demonstrate the procedure illustrated.

WATER LILY

4. Let the youngsters begin constructing their plants. Select an Action Card, and invent a plant yourself!

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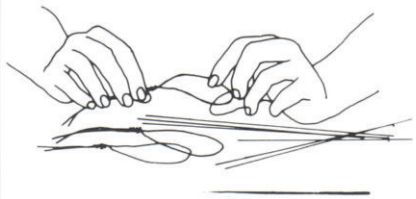
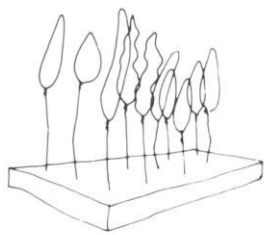
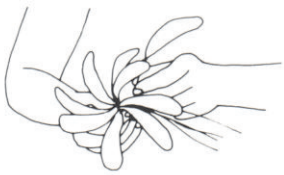


A. Form the wire into a basic petal or leaf shape and contour it as you desire.

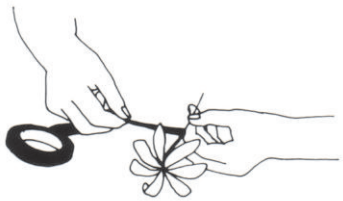
B. Dip the shaped wire into the plastic Film.



C. Stand wire in styrofoam or clay to dry.



D. Group petals together into flower or plant form.



E. Wrap stems with floral tape.

F. Add plastic leaves to stem as you wrap it.

MODEL TALK

1. When everyone has finished making a model of a plant, call the youngsters together. Tell them that they made "plants" that were adapted for certain conditions. Explain that an ***adaptation*** is a feature of an organism that helps it to survive and reproduce.

2. Read one of the Action Cards out loud, and ask the youngsters who had that challenge to point out and decribe the special adaptations of the plants they invented.

3. Repeat the procedure for each Action Card challenge.

2. Ask the kids what plant adaptations they might look for when selecting plants for landscaping a new home, a school, a city park, or a freeway. Challenge the group to find plants that they might use to landscape those areas.

3. Go to a field where cows, sheep, horses, or other animals graze, and find out what kinds of plants they haven't eaten.

LOOKING FOR REAL ADAPTATIONS

1. Challenge the group to find plants in the activity area that are adapted for any one of the Action Card conditions, e.g. lawn mower proof, unappealing to a cow or sheep, able to withstand high winds, etc.

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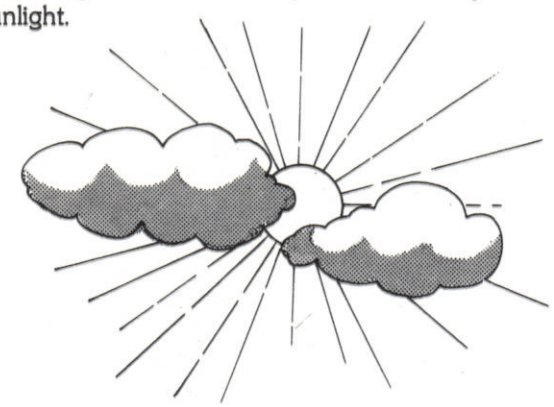
Invent a Plant
Action Card

Invent a plant that catches insects.

Invent a Plant
Action Card

Invent a plant that can compete with other plants for sunlight.

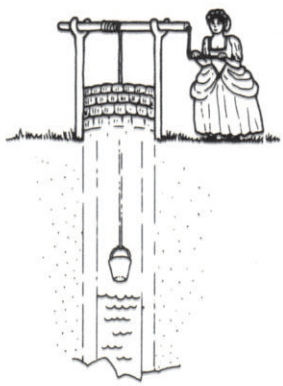


Invent a Plant
Action Card

Invent a plant that can live in a swift river or stream.

Invent a Plant
Action Card

Invent a plant that can reach water 50 cm beneath the ground.



Invent a Plant
Action Card

Invent a plant that is fireproof.

Invent a Plant
Action Card

Invent a desert plant that can shield itself from intense heat.

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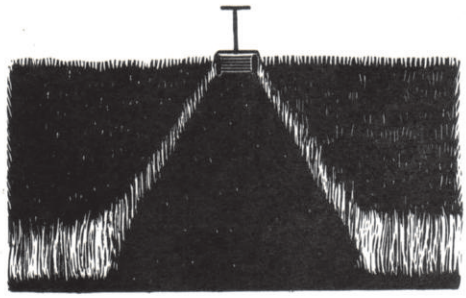
Invent a Plant
Action Card

Invent a plant that is lawn mower proof.

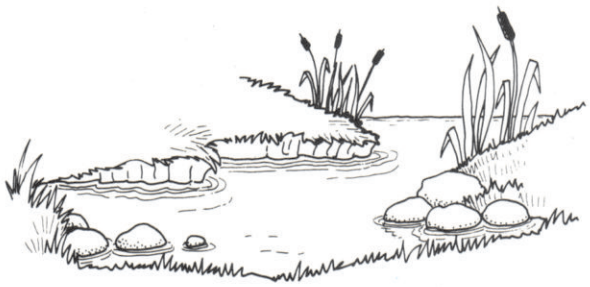


Invent a Plant
Action Card

Invent a plant that can store water.

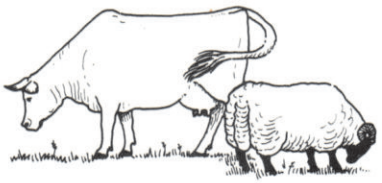
Invent a Plant
Action Card

Invent a plant that can live on the surface of a pond.



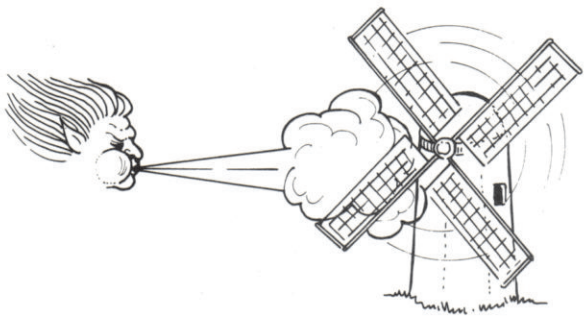
Invent a Plant
Action Card

Invent a plant that a cow or sheep would not eat.



Invent a Plant
Action Card

Invent a plant that can withstand high winds.



Invent a Plant
Action Card

Invent a plant that can withstand heavy surf.

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