OVERVIEW

The youngsters investigate the specialized climbing structures and growing styles of different vines.
BACKGROUND

Creeping, climbing, and trailing vines often grow in forests where sunlight is limited. Vines have specialized structures and growth styles that enable them to compete with other kinds of plants for sunlight. The modified stems or leaves (tendrils) of some vines coil tightly around objects to help support the plant as it climbs towards sunlight. Vines with tendrils include the garden pea and wild grape.

Other climbers, such as English ivy and poison ivy, have roots that sprout along the stem and anchor the plant firmly to tree trunks, walls, and other supporting structures. Many other vines, such as honeysuckle and morning glory, have stems that coil or twine around supporting structures.

**Adaptations** are features of an organism that help it to survive and reproduce. Specialized structures such as tendrils, modified roots, and twining stems are examples of adaptations that help vines to obtain the sunlight they need for survival.

CHALLENGE: INVESTIGATE THE SPECIALIZED STRUCTURES AND GROWING STYLES OF DIFFERENT VINES.

MATERIALS

**For each team of two:**
2 Action Cards
1 pair of scissors*

**For the group:**
1 data board or large drawing pad*
1 marking pen*
cloth* or plastic strips* in two colors to be used as flagging (One of the colors should be red.)
1 sheet of Action Cards*
* Available from Delta Education.

PREPARATION

**Group Size.** This activity is suitable for any size group.

**Time.** Plan on forty to fifty minutes for this activity.

**Site.** Choose a site with a minimum of five kinds of vines. Densely vegetated areas such as forests (particularly in the southern states), stream margins, and parks are likely vine locations. If necessary, obtain permission to collect small samples of the vines growing at the site.

**Taking a Sample.** As you check over the site, take a sample of a vine to show when you introduce the activity. The sample should be twelve to thirty centimeters long and have several leaves, as well as tendrils, roots, or coiling stems.
**Safety.** Search the site carefully for poison ivy, poison oak, and other dangerous plants. Place red flags next to these plants and warn the youngsters before they go into the area to avoid the flagged plants.

In areas where poisonous snakes may be present, primarily in the South, warn the youngsters about blindly reaching into dense clumps of plants, especially near the ground.

**ACTION**

1. With a woody branch (e.g. willow or oak) in one hand and a vine in the other, ask the youngsters how they think the vine supports itself and competes with other plants for sunlight. Point out that the vine has no “backbone” like the woody branch and must use other means for support. Tell the group that they are going to look at the special parts or structures on vines that are used for support.

2. Tell the kids that they will be gathering samples of vines during the activity. Show the youngsters how to cut a small sample (12 to 30 cm) of a vine branch with a pair of scissors.

3. Encourage the youngsters to look carefully before reaching or stepping into thickets or bushes. Point out the poisonous plants you have flagged and caution the youngsters to avoid touching them.

4. Divide the group into teams of two. If necessary, establish boundaries for the site. Distribute scissors and pieces of flagging. (Use any color besides red.) Challenge the teams to find as many different vines as they can and to bring back samples of each kind. Tell the youngsters to tie a flag around any vine they cannot cut.

5. After about fifteen minutes, call the teams together. Ask one member of each team to show the group one of the vines she collected and to describe how it was growing. Ask what structures held the vine to its supports.

6. As each of the three main holding structures (tendrils, modified roots, and twining stems) is shown for the first time, introduce the term for that structure and write it on the data board. Ask other participants to show vines they have collected that have the same type of holding structure. Have the youngsters pick up the flagging to use in the next part of the activity.

7. Give each of the team members an Action Card. Make sure everyone has a piece of flagging. Challenge the kids to find and flag a vine like the one described on the card. Circulate among the youngsters as they work to offer help or encouragement. Offer another card to those kids who complete their challenges quickly. After five to ten minutes, call the
group together and ask the participants to read their challenges and show the group their flagged vines. Encourage the youngsters with the same Action Card to compare results.

8. Have the teams collect all the flagging.

**VINE IDEAS**

1. What do vines have in common with other plants?
2. How are vines different from other kinds of plants?
3. Many plants must compete with other plants for sunlight—especially in forests. How do vines compete for sunlight? How do trees compete?
4. Explain that vine structures such as tendrils, modified roots, and twining stems are called adaptions. Adaptations are features of an organism that help it to survive and reproduce. These particular adaptations help vines to obtain the sunlight that they need for survival.

**MORE VINEYERY**

1. If the youngsters discovered several twining vines at the site, challenge them to find out if all the vines twine or twist around their supports in the same direction (clockwise or counterclockwise). If they discover more than one twining direction, have them investigate whether a particular kind of vine (for instance, honeysuckle) always twines in the same direction.
2. Ask if the kids think a twining vine can be trained to twine in a new direction. Challenge the teams to reverse the direction of a growing tip of a twining vine by rewinding it around a branch or stick. Some teams may wish to tape the tip into position. Make observations first after several hours, and then after a day or two to see if the vine begins to grow in the new direction.
3. Suggest that the youngsters investigate tendrils to see how they grow. Can their growing direction be changed? How fast do they twine around something? Set up some experiments to find out.