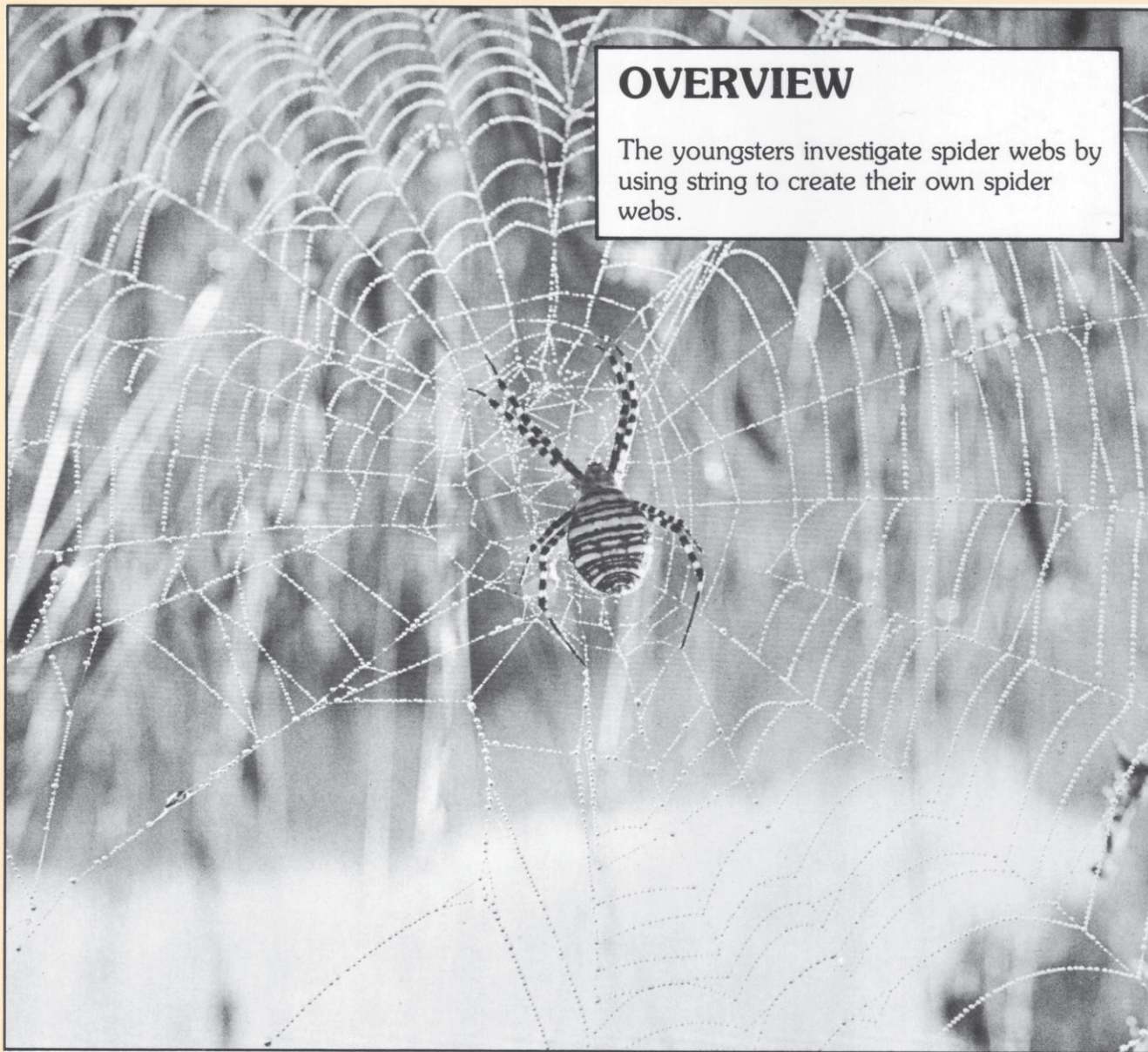


# WEBWEAVERS

## OVERVIEW

The youngsters investigate spider webs by using string to create their own spider webs.



## BACKGROUND



Web-weaving spiders are among the most skillful builders in the animal world. Female spiders construct webs with silk threads, which they produce in specialized glands. (Most male spiders do not weave webs but build nests near a female's web.) A spider releases the silk through openings in her abdomen called *spinnerets* and handles the silk with tiny claws on the ends of her legs. She uses threads of different thicknesses, textures, and strengths for different

purposes: sticky threads for snaring prey; strong, non-sticky threads for building web foundations; and fine threads for making nests, spinning cocoons, and "ballooning." (Some spiders ride air currents by throwing out a long thread of silk. When the wind carries the thread, the spider goes along for the ride.)

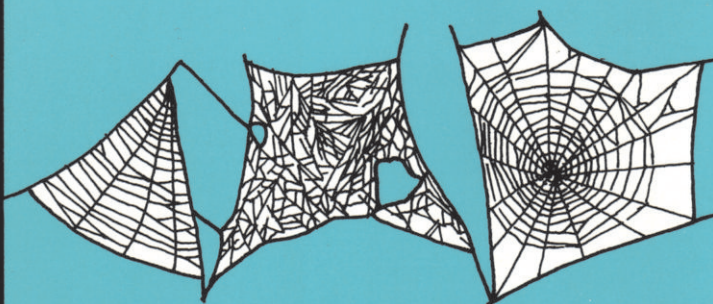
Spiders use several techniques to weave webs. When bridging the distance between two objects (such as two branches), a spider attaches a thread to one branch and then drops to a lower branch, letting a

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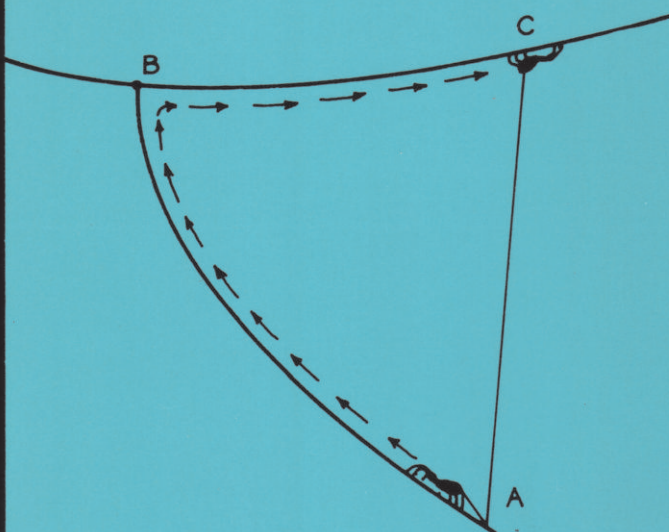
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thread reel out behind her. She attaches the other end wherever she lands. Sometimes a spider spins a long thread and depends on the wind to carry the thread until it reaches and attaches to an object. The most common types of webs are irregular cobwebs, funnel webs, sheet webs, triangle webs, and orb (or cartwheel) webs.



For an orb web, the spider attaches a new thread to an existing thread (point A in the illustration). She reels out silk behind her as she walks on the existing threads (past point B) to reach a place where she can fasten off the other end (point C). This is how the spider forms the "spokes" of the orb web (line A-C).



**CHALLENGE: FIND OUT HOW SPIDERS BUILD WEBS BY USING STRING TO CREATE A WEB.**

## MATERIALS



### For each youngster:

- 1 20-cm x 20-cm piece of fiberboard, triwall cardboard, or flat ceiling tile\* (soft enough to push a nail into)
- 8 meters of crochet thread\* (wrapped around a small piece of cardboard)
- 60 small nails\* (3/4", 18 gauge) in a container
- 1 thimble\* or pencil\* (to push the nails into the cardboard)
- 1 plastic spray mister\*
- 1 broomstraw\*

### For the group:

- 1 "Weaving Webs" Technique Card
- 3 to 4 pairs of scissors\*

\*Available from Delta Education.

## PREPARATION



**Group Size.** This activity works best with groups containing up to sixteen youngsters.

**Time.** Plan on fifty to sixty minutes for this activity. Many spiders are dormant during the winter, so this activity works best during warmer seasons. Also, rain destroys webs. Wait several days after a rain before doing *Web Weavers* outdoors. If an old shed, garage, or other shelter is available, however, you can make *Web Weavers* a rainy-day activity.

**Site.** Find a site with lots of accessible webs of different types. Look on buildings, fences, hedges, trees, shrubs, and outdoor light fixtures. The youngsters will be sitting on the ground while weaving their webs, so look for a suitable place to sit when choosing a site.

### Materials

1. Cut a 20-cm x 20-cm piece of fiberboard, cardboard, or ceiling tile for each youngster.



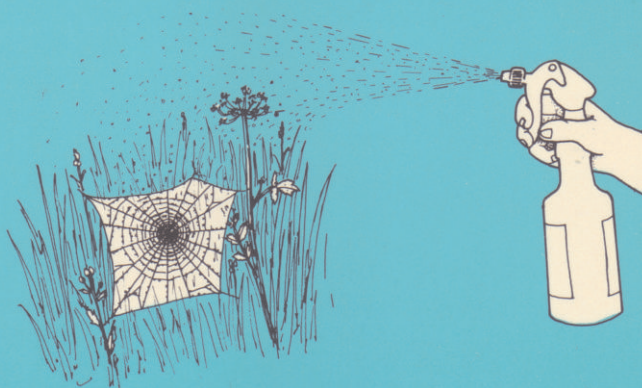
# WEB WEAVERS

2. Wrap an eight-meter length of thread around a piece of cardboard or index card for each youngster.

3. Put sixty nails in a suitable container (envelope, sandwich bag) for each youngster.

4. Fill the spray misters with water and adjust their nozzles to produce a fine mist.

5. Make a copy of Side 1 of the "Weaving Webs" Technique Card, and adhere it to a piece of cardboard. Insert a nail at each point where the web is attached to a branch and at each point where two or more threads come together.



**Safety.** Although most spiders are harmless, caution the youngsters against handling them. One poisonous spider to look out for is the Black Widow, which has a rounded, glossy black body with an hourglass-shaped red or orange mark on its underside. The shape of this mark varies from spider to spider, and some Black Widows may have more than one mark.



## ACTION



### PART ONE: LOOKING FOR WEBS

1. Introduce the activity by telling the youngsters that they will be looking closely at spider webs.

2. Show the youngsters how to locate and highlight webs by gently misting a shrub or other location where webs are likely to be. To avoid damaging any webs, direct the mister so that the spray *falls on* the webs. (Do not spray directly into the web.) Ask the group what spider webs might be used for.

3. Divide the group into teams of two, and point out boundaries for the site.

Challenge the youngsters to use the spray misters to find as many different kinds of spider webs as they can. Tell the kids to be careful not to destroy any webs. Distribute the misters, and send the teams off to locate webs.

4. Allow about ten minutes for the search. Then call the teams back to share their discoveries. Ask how many different kinds of webs they found. Where were the webs located and what did they look like?

### PART TWO: WEB WEAVING

#### Introducing Web Weaving

1. Ask the youngsters:

- How do you think a spider builds her web?
- Does she start in the center and move out, or does she begin on the outside and move in?
- How does she get from one corner to another?
- To what does she attach her silk?
- Where does she place the most threads? Is this where the animals are trapped?

2. Explain to the youngsters that these are a few questions they will explore as they make models of their favorite webs.

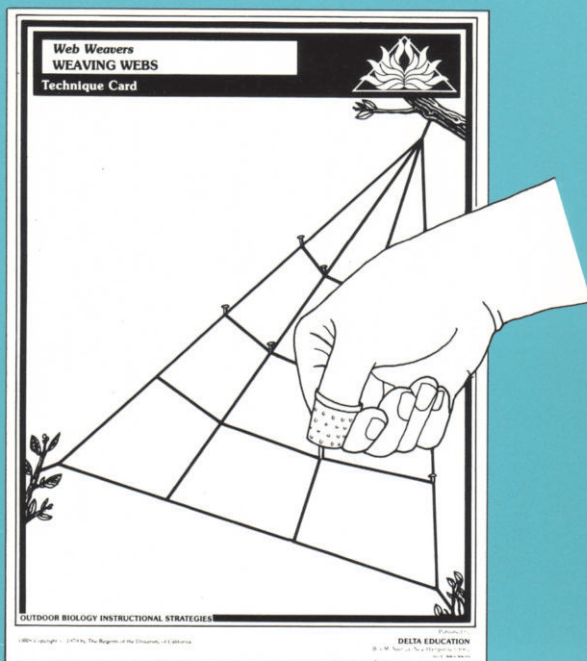
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Observation



## Demonstrating the Technique

1. Show the youngsters the string-art materials and the web-weaving technique. (See the "Weaving Webs" Technique Card.) Most youngsters will need help with this technique, so give a step-by-step demonstration. Bring out the simple web framework that you made beforehand. Explain that you placed a nail at each point where the web is attached to another object and at each point where two or more threads come together. The youngsters should follow the same procedure when they make their own web-model frameworks.



2. Now connect the nails on the framework with crochet thread. Mention that winding the thread around each nail twice helps to keep the thread tight. When the youngsters have the idea, challenge them each to find a favorite web in the site and discover how it was built by weaving their own webs.

Give a set of web-weaving materials to each youngster and tell them they will have twenty to thirty minutes to make their models.

3. Let the youngsters spread out and work at their own pace. Check on their progress from time to time and help anyone who may be having difficulty.

4. Challenge those who finish early to search for spiders on or near webs. Ask the kids to find out where spiders stay during the day.

## TYING UP LOOSE ENDS



When everyone has finished weaving, have the youngsters share their web models.

1. What different kinds of webs are represented?
2. How do you think the spider constructed the web you reproduced?
3. What kinds of animals or parts of animals did you find on or near webs? Did you find any spiders? How do you think the animals got there?



## MORE THREADS



1. Give each youngster a broomstick. Challenge the kids to find out which web threads are sticky and which are not. (The youngsters can gently touch the threads with the straw to find out.)
2. Return with the kids and flashlights to the same site after dark. Have the youngsters look at some of the webs. Can they find spiders weaving or eating? How do the spiders react to the light?

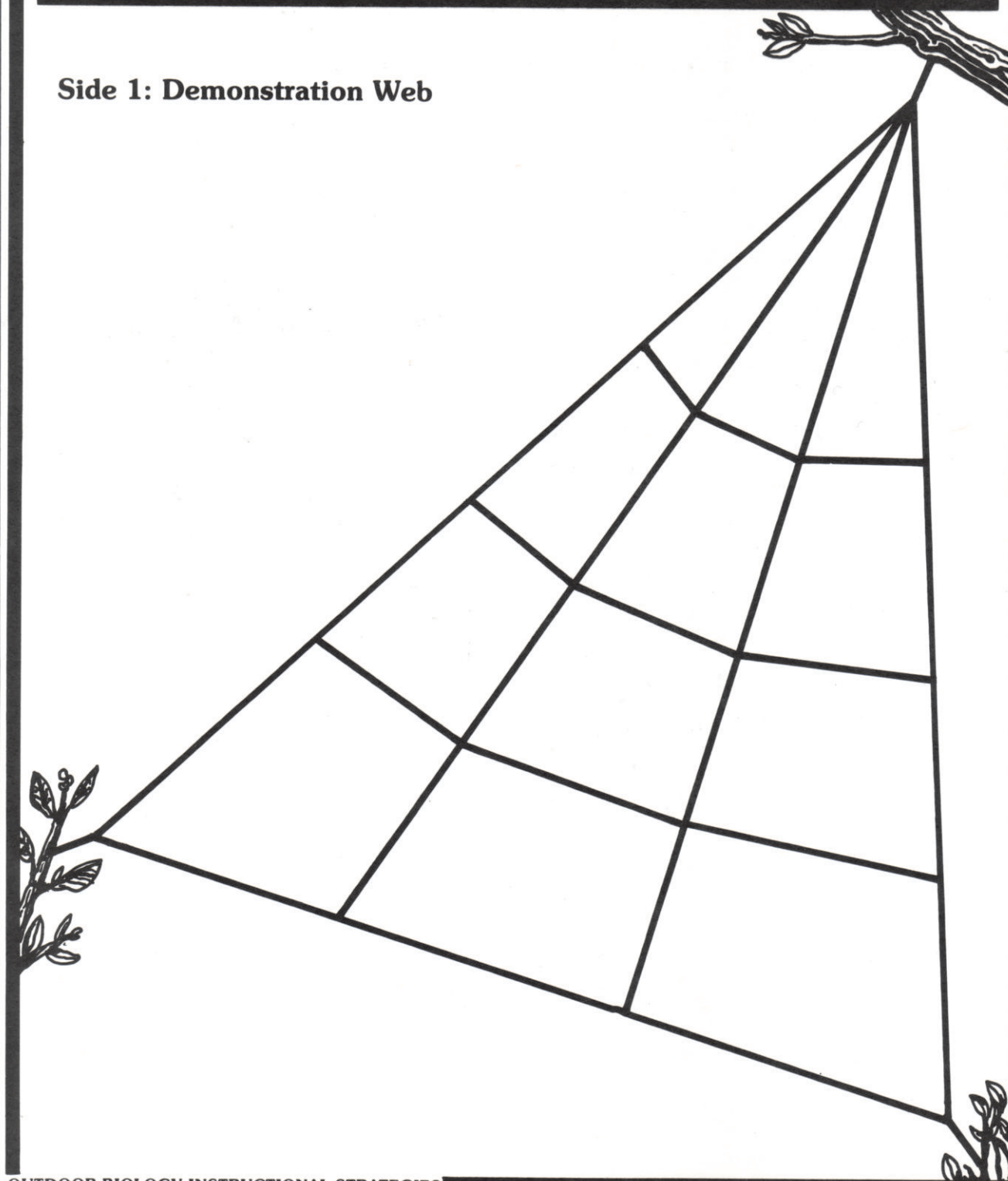


**Web Weavers**  
**WEAVING WEBS**

**Technique Card**



**Side 1: Demonstration Web**



OUTDOOR BIOLOGY INSTRUCTIONAL STRATEGIES

# Web Weavers WEAVING WEBS

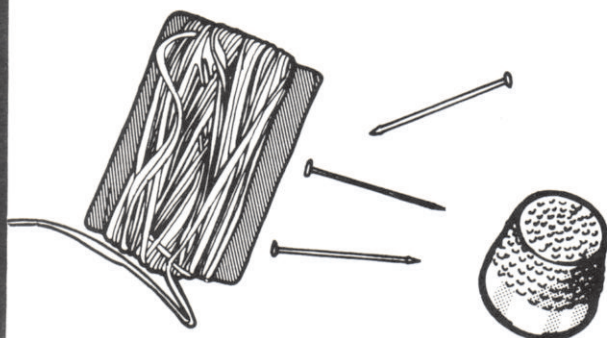
## Technique Card



### Side 2: String Art Technique for Web Weaving

#### MATERIALS FOR ONE WEB:

1 piece of fiberboard, cardboard, or ceiling tile  
nails  
thimble or pencil to push the nails into the board  
crochet thread



#### WEAVING A WEB:

1. Place a nail at each point where the web is attached to another object and at each point where two or more threads come together.

2. Use the crochet thread to connect the nails. Wind the thread around each nail twice to keep the thread tight.

3. Continue to connect the nails with thread until the web is complete. Tie off the ends as you go.

