ACTIVITY

Spider Sensations

Summary:
Participants discover how web-spinning spiders find their prey by feel.

Grade Level:
K-6

Time:
30 minutes

Learning Objectives:
Participants will be able to:
- Identify the parts of a spider.
- Understand the hunting strategy of web-spinning spiders.
- Discuss different adaptations of spiders.

Materials Needed:
- Pictures of orb-weaver and other spiders
- A large, labeled poster of a spider
- Several blocks of wood with 5 pieces of 6' yarn tied to large staple in center of block
- Several blindfolds

Background:

Spiders belong to a huge group of animals called **arthropods** (**phylum Arthropoda**), which means that they have jointed legs and a hard outer skeleton rather than a backbone. Arthropods also include insects, crustaceans, and centipedes. The portion of arthropods to which spiders belong are called **arachnid**s (**class Arachnida**). This class also includes scorpions and mites.

All arachnids have four pairs of legs, no antennae or wings, and two body segments. The front section of a spider is called the **prosoma**, while the rear is its **abdomen**. Arachnids also have well-developed jaws that are tipped with fangs, and spiders' fangs are usually poisonous, though most spiders' venom is too weak to do much harm to people. Though many species have multiple eyes (often eight of them) most spiders do not see very well. They use sensory feelers directly in front of their mouths, called **pedipalps**, to feel and handle their prey. All spiders use silk in one way or another, spinning it from **spinnerets** at the rear of their abdomen.

Not all species make webs from their silk. Some make silk to protect their young, others make trapdoors, and some line their burrows with it. Of those that do spin webs to capture their prey, **orb-weavers** (**family Araneidae**) are the most numerous. Orb-weavers design amazingly intricate webs to catch insects. The strands of silk are also very strong; if a spider could make a one-inch thick silk strand, it would be stronger than a steel cable of the same thickness. Orb-weavers have a very developed sense of feel, and relatively weak vision. When something becomes entangled in the sticky strands of the web, the orb-weaver finds the insect or other prey by feeling vibrations and tensions in different threads. The spider will then wrap its prey in silk, bite it to paralyze it, and eventually, eat it.

What to Do:

1. Ask participants if they know the difference between insects and spiders. Give a basic introduction to spiders; show pictures and use a large, labeled diagram of a spider to help illustrate key points. Ask the group how spiders can be beneficial to humans.

2. Discuss different adaptations of different spiders (e.g., some spiders use their silk to make a trapdoor to capture their prey, they use their venom to paralyze their prey, etc.). Discuss the characteristics of web-spinning spiders. Ask participants if they know how web-spinning spiders capture their prey. Explain that the game "Spider Sensations" simulates how web-spinning spiders capture their prey.

Spider Sensations

ACTIVITY

3. Divide participants into groups of six and give each a wooden block, with yarn strands attached, to put on the floor.

4. Designate one participant to be the spider, crouched next to the block with eyes blindfolded, and the remaining five to be insects, who each take one strand of yarn and radiate out in all directions from the spider. The strands should be held taut, next to but not touching the ground. The spider's hands rest lightly on top of them in order to feel any vibrations.

5. Next, the leader points to one insect, who plucks his or her strand once. The spider crawls to the end of the strand that moved, captures the insect, and then they change places. If the wrong insect was captured, the spider gets one more try before they switch places. Continue until everyone has a chance to be the spider.

6. When all are done, ask, *What did you learn? How is this method of hunting prey different from the ways other animals' hunt? Would this method of hunting work for a lion? An eagle? A human?*

Questions:

- What characteristics set spiders apart from insects?
- What do different species of spiders do to capture their prey?
- How do web-spinning spiders capture their prey?

Adaptations:

Refer to general adaptations on pages 11-16.

Hearing Disabilities:

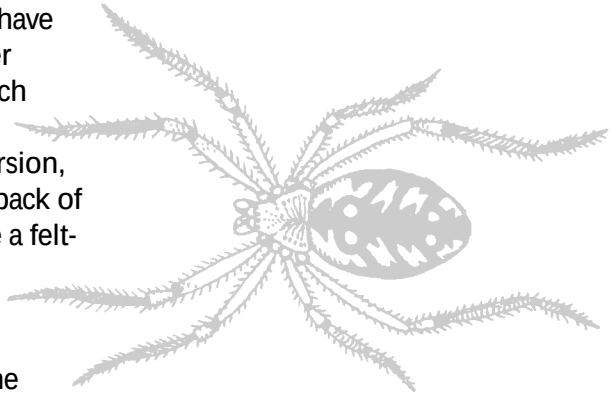
- Create an interactive display of a spider to help illustrate the discussion. Make and label spider part "puzzle pieces" out of cardboard and secure them to a piece of poster board with Velcro. Draw the outline of the spider on the poster board as a guide. Give participants a labeled part and have them add these to the poster board as the functions of each part are discussed. (To make a more permanent version, put pieces of Velcro on the back of the cardboard parts and use a felt-covered board.)
- Have a plastic spider for participants to explore.
- Demonstrate each step of the game as you explain it.

Learning/Cognitive Disabilities:

- Create an interactive display of a spider to help illustrate the discussion. Make and label spider part "puzzle pieces" out of cardboard and secure them to a piece of poster board with Velcro. Draw the outline of the spider on the poster board as a guide. Give participants a labeled part and have them add these to the poster board as the functions of each part are discussed. (To make a more permanent version, put pieces of Velcro on the back of the cardboard parts and use a felt-covered board.)
- Have a plastic spider for participants to explore.
- Demonstrate each step of the game as you explain it.
- Provide verbal coaching directions for spiders as needed.

Motor Disabilities:

- Place the block of wood on a lap tray or another chair when the spider uses a wheelchair. Have the insects sit in chairs.



- Wrap yarn loosely around participant's wrist or the arm of his or her wheelchair if they have difficulty holding it. If wrapping around the wrist, make sure to check periodically to see that it's not too tight.
- Make sure that participants are spaced out enough for safety purposes.
- Assist participant in maneuvering

Spider Sensations

toward the insects as needed.
- If the spider has limited mobility of upper extremities, but use of lower extremities, have them sit in a chair in the center, shoes off, and feel the web with their feet. All insects should be seated on the floor.

Visual Disabilities:

Overall:

- Create a tactile spider poster using different fabrics (e.g., corduroy, silk, felt, etc.) for each of the parts. Label the poster in large print and Braille.
- Have a plastic spider for participants to explore.
- Tap the participant on the shoulder to signal when it is his or her turn to pluck the string.
- Have participants use string as their guide to find the insects. Give verbal cues as needed.
- Make sure that participants are spaced out enough for safety purposes.
- Have participants identify themselves to players with visual disabilities before capturing them.

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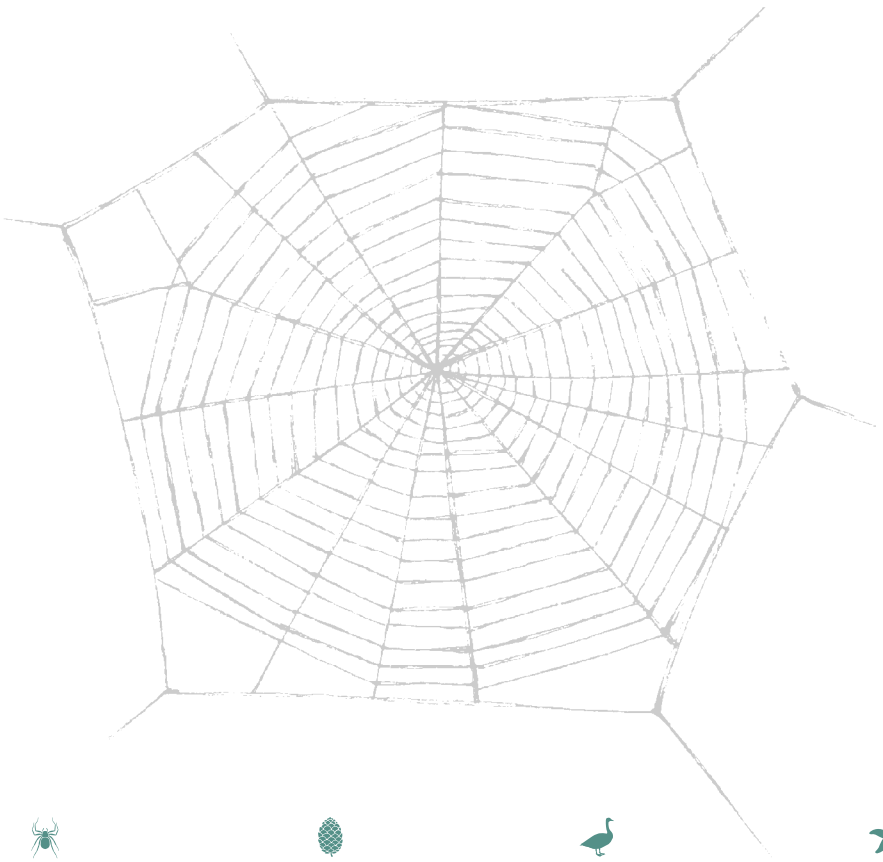

Spider Sensations

WORKSHEET