

GRADE LEVEL:

3-4

DURATION:

60 minutes

NGSS STANDARDS:

3-LS2-1

Construct an argument that some animals form groups to help members survive

- Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size.

NE STANDARDS:

SC5.3.1.b

Identify how parts of animals function to meet basic needs (e.g. eyes, antennae, pheromone glands aid in survival by facilitating communication)

MATERIALS:

- Termites
- White paper
- Bic pens
- Sharpie markers
- Pencils
- Small paintbrush

VOCABULARY:

- Pheromones



INSECT COMMUNICATION

BACKGROUND:

Some insects (such as crickets or cicadas) communicate by producing sounds while others (like fireflies) emit light to communicate. Many rely on body color and others use chemical cues to communicate. Insects use chemical cues, called **pheromones**, to find mates, warn other insects about danger, and mark trails that can be followed by other insects.

OBJECTIVES:

- Describe ways that insects communicate
- Define pheromones and explain why they are important in insect communication

FOLLOW THE LEADER (TERMITES)

Assess prior knowledge of termites. Important points:

- **Termites are an important part of the community of decomposers** - they help break down and recycle dead wood and plants
- **Termites become important economic pests when their appetite for wood and wood products extend to our homes, building materials, and forests.**

Termite Experiment

- “Let’s learn about how termites use pheromones to communicate.”
- Draw large loops on a piece of white paper using the pencil, sharpie marker, and Bic pen. Have students make predictions:
 - **Will the termite follow one of these paths?**
 - **If yes, which one?**
 - **How does the termite know where to go?** (Students may suggest the termite can see the path, can follow an indentation from a pencil marking, or can smell the sharpie)
- Using the small paintbrush, place a termite on the paper.
- Explain to the children that chemicals reside in the ink of the Bic pens that mimic the termite’s pheromones. Show the students that color does not make a difference - the workers are blind. Also demonstrate that termites will not follow lines draw by pencils, other types of pens, or markers - their ink composition does not mimic the termite’s pheromones.

Discussion

- **“Considering what we learned about termite pheromones, has anyone observed ants walking one after another? How do they communicate to one another where to go?”** Discuss student responses.