Act Like an Insect

This suite of activities will give you a peek into the life of an insect and let you try to experience the world from their perspective. This type of activity is great for a variety of reasons – it lets kids learn in an engaged, hands on way, plus it builds empathy and connection to different animals by pretending to be them, all while learning science concepts and having fun!

Materials:

Activity 1: What is an Insect?

- Just your voice and your body

Activity 2: Insect Mouthparts

- Photos of insect mouthparts
- Small bowl of water
- Plastic wrap
- Bottle half filled with water
- Two straws, one full length and one cut at an angle
- Pliers or tweezers
- A piece of wet sponge
- Loose sugar or salt
- A plate or tray
- Some seeds and/or leaves
- Answer Sheet

Activity 3: The Waggle Dance

- Something you can pretend is a flower, or a real flower

Activity 4: Pheromones/Scent Matching

- Opaque containers you cannot see through (even number, 6-10 recommended)
- Something to cover the containers, for example aluminum foil or paper and tape
- Something to poke holes in the covering, like a push pin
- Things that smell, for example, flavor extracts, coffee grounds, shampoo, anything you like (you'll need half the number of smells as you have containers)
- Cotton balls if you have any liquid scents

Activity 5: Flash Matching

- Flashlights (one for each person participating)
- Paper
- Pen/pencil

Process:

1. This activity is actually multiple activities that you can do one at a time or turn into stations to explore back to back with your family
2. Some of these activities require more set up than others, so feel free to pick and choose what you are up for!

Activity 1: What is an Insect?

1. These activities are all about insects, but what exactly is an insect, and what isn't?
2. One fun way to learn the body parts that make an insect an insect is through song and movement!
3. This song is sung to the tune of Head Shoulders Knees and Toes and the lyrics are as follows (modified from lyrics by Cedric Wesley, Toni Casarez and Wendy Garrett):

   Head, thorax, abdomen, abdomen
   Head, thorax, abdomen, abdomen
   Compound eyes, two antennae, and 6 legs
   Don't forget the ones with wings, ones with wings
4. Insects always have three body parts, the head, thorax and abdomen, and 6 legs, all of which are attached to their thorax. They also all have two antennae and compound eyes, which means their eyes are different than ours because they sort of have lots and lots of tiny eyes all clumped together. You can learn more about compound eyes from this NSTA article, if you are interested.
5. If a "bug" does not have 6 legs and 3 body parts when it is an adult, it is not an insect. For example, worms – not insects, spiders – not insects, centipedes – not insects. Butterflies – insect, ants – insects, cockroaches – insects. If you want to learn more about what insects are, you can watch this video from the Royal Entomological Society (entomologists study insects).

Activity 2: Insect Mouthparts

1. This activity is all about insect mouths and how they eat.
2. This one has a bit more setup than others, so grownups you'll want to get this set up in advance, or you could even work together to set it up as a team.
3. The goal of this activity is to use some everyday items to mimic the ways that insects eat and to match the different types of insect mouthparts with the food that they eat (insects' mouths are all shaped differently depending on what they are adapted to eat). If you want to read more about insect mouthparts, you can visit this website from Texas A&M AgriLife.
4. There are photos of the insect mouthparts being replicated so you can get an idea of what these mouths look like in the real world, and what you are pretending to be.
5. Set up 4 simulated foods
    - A bowl with water covered in plastic wrap
    - A bottle half filled with water
    - Sugar or salt poured on a plate or any other surface you want to use
    - Seeds and leaves spread on a plate or other surface
6. Now provide 4 different "mouth parts"
    - plyers or tweezers
    - straw cut at an angle (like a Capri sun straw), can be short or long as long as the tip is cut at an angle
    - piece of wet sponge
    - regular long straw
7. Now, try to figure out which mouthpart would be best suited to eat each of the 4 foods.

8. For discussion – Which insect do you think has each of the represented mouth parts? What kinds of foods do you think these represent? Think about how plants and insects are dependent on one another, can you think of some examples of this?
9. Answer key on page 8.

Activity 3: The Waggle Dance

1. This activity requires at least two people.
2. Honeybees do something truly amazing! They communicate with other members of their hive through an intricate and complex dance in order to communicate the location of a food source. Check out this video to learn more about this Waggle Dance and see some bees in action!
3. Once you've been inspired by the bees, pretend to be them!
4. Choose something to represent a flower – it could be an actual flower, a flower you make out of craft supplies, or any object you have that you want to pretend is a flower!
5. Have one "bee" hide the flower while all the other "bees" close their eyes.
6. Now the bee that hid the flower will dance to communicate to the other bees where the flower is located, just like the honeybees in the video did.
    - Remember to waggle down the middle, the longer the waggle, the farther the flower.
    - Then circle to the right or left to return to where you started your dance and repeat until the other bees know where to find your hidden flower.
    - Remember that the direction of your waggle should help point the other bees in the right direction. (Bees dance on a vertical hive wall where up is the sun and the angle away from up is the angle of the food from the sun when they leave the hive. You can give that a try, or just dance in the direction of your flower).

7. After you try this out you can discuss how it went:
    - Is this type of communication hard or easy for us humans?
    - Do you think bees are using any other clues to describe location of food sources?
    - What are some advantages of this cooperative behavior? Disadvantages?
    - Do you think social insects like bees use cooperation for things other than obtaining food?

Activity 4: Pheromones/Scent Matching

1. In this activity you are going to use your sense of smell. Insects use antennae or even sensors on their legs to smell, but you can go ahead and use your nose.
2. Insects use special scents called pheromones to attract and identify mates, luring other insects to them and identifying insects like them through smell. You can read more about this from the Smithsonian.
3. This activity takes some set up in advance:
    a. Choose an even number of covered containers that you cannot see through – you could use cups covered in aluminum foil, aluminum cans covered in foil or with paper taped over the tops, or anything else you have at home.
    b. Now choose some scents – you can use food extracts – like vanilla, peppermint, lemon, etc.; or smelly items from around the house – perfume, coffee grounds, grass, orange peel, whatever you want.
    c. For liquids you can put a few drops onto a cotton ball and place that in the container, for anything solid you can place it directly into the container.
    d. You need to create matching pairs of scents, so 2 containers with smell A, two containers with smell B, etc. for as many scents as you want to try.

e. Now cover your containers and poke a few pin holes in the covering so the smells can get to your nose without being able to see inside.

4. Once your containers are all set to go, the goal is to sniff each container and find its match, just like insects would do in the wild.
5. Some questions to discuss after you finish matching, or struggle matching:
    a. How easy/difficult was it to find your match. Why?
    b. Do you think this an effective strategy for animals? Why or why not?
    c. How else do insects use smell?

Activity 5: Bioluminescence/Flashlight Matching

1. This activity is best with a group of more than 2 people.
2. In this activity you will be mimicking the way that insects such as fireflies use patterns of flashing lights to find mates in the night.
    a. Fireflies cannot see each other well at night so how do they know how to find a mate, and which insect is the right species to mate with? They use species specific flash patterns to attract one another. One flashes their specific pattern and then the other responds with a matching pattern and they use this flashing to find each other in the dark!
3. Before you start write some numbers on slips of paper
    a. For example, 2 long and 4 short; 3 long 6 short, etc. or you could just use single numbers, 5 flashes, 2 flashes, etc.

   b. You'll need two slips that match so make two slips with each of your number patterns. And make as many number patterns as half the number of people you have. So if you have 4 people playing, create two number patterns and write each one on two separate slips of paper.
4. Now mix up the slips of paper and have every person choose one without looking.
5. Next, give everyone a flashlight and start flashing your light according to the number pattern you selected.
6. Try to find the person, or insect, that is flashing the same pattern as you!

INSECT MOUTH PARTS ANSWER SHEET

1. The bowl with saran wrap matches with the angled straw. This represents the piercing mouthparts of insects like mosquitos and aphids.
    a. Photos number 4 and 5
2. The bottle half full of liquid matches with the long straw. This represents the long proboscis tongue-like mouth part of a butterfly
    a. Photos number 1 and 2
3. The loose sugar matches with the wet sponge and represents the ways flies eat
    a. Photos number 7 and 8
4. The seeds/leaves match with the tweezers/plyers and represent animals with chewing mouthparts, or mandibles, like ants and beetles
    a. Photos number 3 and 6

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Photo 6

Photo 7

Photo 8