

# What's an Insect?

## ACTIVITY OVERVIEW

**STEM Focus Area:** Animals

**Facilitator Learning Goal:** Youth will learn about the characteristics of insects.

**Youth Learning Targets:**

- "I can learn about what makes insects unique."
- "I can study insects and other invertebrates in the wild."
- "I can determine if an animal is an insect by counting its legs and body segments."

## LEARNING ENVIRONMENT

**Activity Duration:** 45 minutes

**Class Size:** Any size

**Minimum Group Size:** 2

**Type of Space:** Indoor and outdoor during Spring, Summer or Fall

**Age of Youth:** Grades K-2

**Guiding Question:** What is the question to explore OR the problem or challenge to solve?

What is an insect?

**Through this activity, youth will:**

- Observe animals to determine if they are insects based on their characteristics
- Draw conclusions and relationships about insects and other animals

### Facilitator Prep

Facilitators will need to prepare the construction paper circles & strips in advance. They will also need to create sets of photos for the animal sort activity. Each set should contain 10 photos – 5 insects such as ant, walking stick, bee, fly, grasshopper & 5 non-insects such as spider, centipede, scorpion, tick, and millipede.

**Literacy Connection:** Great books to support learning about insects (*available on Amazon*).

- The Best Bug Parade by Stuart J. Murphy
- Budding Biologist, Am I an Insect? by Kristine Duehl
- The Very Quiet Cricket by Eric Carle
- Bugliest Bug by C.D. Shields & S. Nash

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**DoS:**

**Predict and hypothesize**  
**Develop and use models**  
**Measure materials**  
✓ **Observe**  
**Investigate**  
**Record observations**

Analyze and infer

Share and communicate data

Interpret data

Test and revise

✓ Draw conclusions and relationships

✓ Have voice and agency, make decisions and guide their own learning

## PREPARATION

### Materials

White board or chart paper, Sets of animal photos, trays, white paper, magnifying glasses, Oh Beyond Bugs by Tish Rabe, Construction paper circles & strips (see shape template for examples), glue sticks, crayons, scissors, access to a garden with bushes or tall grasses/flowers

### Room

The introduction and final reflection will take place indoors either at tables, the activity will take place outside in a garden area with bushes or tall grasses/flowers.

### Content

Animals are classified into different groups based on shared characteristics. Insects are a class of invertebrates. Invertebrate means “without vertebrae.” Vertebrae are the small bones that make up what we call our “back bone.” There are many different groups of invertebrates such as worms, arachnids and insects. Characteristics shared by all insects are: 6 legs, 3-part body (head, thorax, and abdomen), compound eyes (thousands of little photoreceptor units which cause poor image resolution but a large view angle and ability to detect fast movements) and 2 antennae.

#### Common misconceptions:

- All invertebrates with 6+ legs are insects – all insects have 6 legs – no more, and only less if they have lost a leg and are waiting for their next molt to regrow it.
- All insects have wings – there are millions of known species of insects (and probably millions of unknown species). Millions of them have wings and millions of them do not.
- Spiders are insects – spiders, and all other invertebrates with more (or less) than 6 legs are not insects. In the classification of animals, insects are a class just like mammals. Spiders are in the class Arachnida or arachnids.
- Insects are bad and should be killed – every animal has its purpose and should be respected. There are some insects we would rather not encounter, such as mosquitos, but most insects are really important to their environment. Whether they are a staple food source for other animals or they pollinate the food we eat, every insect has a part to play in their native habitat.

### Inquiry:

Your primary goal as facilitator is to encourage youth to think about what the characteristics of an insect are. You can prompt those discussions with questions like the following:

- Is this an insect? How do you know?
- What do you notice that these two insects have in common?
- What do you notice that is different about these insects?

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#### DoS:

- ✓ Organization: I practiced the activity/technology, prepared materials/extras/place to record youth ideas, completed an activity (including timings).
- ✓ Materials: Materials are appropriate for teaching the learning goals; youth will be able to use them and will think they are appealing.

- ✓ Space Utilization: The space is set up appropriately for the activity and there will be no safety issues or distractions.
- ✓ Relevance: I have researched why the content matters to youth's everyday lives.
- ✓ Content Learning: I have become familiar with the content.
- ✓ Inquiry: I have become familiar with how authentic, age-appropriate inquiry practices look in this activity.

## INTRODUCTION TO ACTIVITY (10 MINUTES)

With youth either sitting at tables or in a circle, introduce discussion by asking youth for an example of a bird. Then ask how they know it's a bird. Does it have feathers? Does it lay eggs? Does it have wings? Does it have a beak or bill? The answers to all of these questions should be yes. Then explain that scientists group animals together based on their features, or characteristics. All birds have feathers, lay eggs, and have wings and beaks or bills.

Then ask youth for examples of an insect. They will probably give a few examples of insects and a few examples of non-insects like spiders. After they have given their examples, discuss the characteristics of insects. Write these on the board or chart paper. All insects have:

- 6 legs
- Compound eyes
- A 3-part body (head, thorax, abdomen)
- 2 antenna

Read the book: Oh Beyond Bugs by Tish Rabe

### DoS:

- ✓ Space Utilization: I will use the space informally avoiding the lecture hall format.
- ✓ Purposeful Activities: This intro section gets youth on track for the learning goal.
- ✓ Content Learning: If age appropriate, I will accurately present content.
- ✓ Inquiry: In this or another section of the activity, youth carry out one or more inquiry practices.
- ✓ Relationships: I will make each youth feel welcome.
- ✓ Relevance: In this or another section, I will guide the youth in a sustained discussion of how the activity relates to their everyday lives.
- ✓ Youth Voice: In this or another section, I will allow youth the opportunity to make decisions about their learning experiences.

## ACTIVITY ENGAGEMENT (20 MINUTES)

Divide youth into small groups of 2-4. Give each group a set of photos and instruct them to sort their photos into two groups based on characteristics they notice the animals have in common. When they've sorted their photo, ask them how they determined their two groups. What did they notice the animals had in common in each group?

If they didn't come up with sorting into insects and non-insects, discuss with them what the characteristics of an insect are and then sort the photos again into insect and non-insect piles. Ask, how can they determine if the animal is an insect? What are some things that they notice are different about the different insects they have?

After they have completed their photo sort, take youth outside with their trays, paper and magnifying glasses to an area with bushes or tall plants like grasses. Instruct youth to gently shake a plant over their tray for a count of 10. Then, using their magnifying glasses, examine what fell onto their sheet. Do they have any insects? How do they know?

After they have examined their trays, instruct them to gently return any animals to the plants they fell from. Then, if there's time, allow them to explore another bush/plant.

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**DoS:**

- ✓ Space Utilization: I will use the space informally avoiding the lecture hall format.
- ✓ Participation: All youth will have access to the activity.
- ✓ Purposeful Activities: This core section helps youth to move toward the learning goal.
- ✓ Engagement: This activity has youth physically engaged with their hands and their minds.
- ✓ Inquiry: In this or another section of the activity, youth carry out one or more inquiry practices.
- ✓ Reflection: If appropriate, I will ask youth questions during the core activity that will help them make sense of what they are learning.
- ✓ Relationships: I will take steps to share my enthusiasm and create a nurturing, safe learning environment.
- ✓ Relevance: In this or another section, I will guide the youth in a sustained discussion of how the activity relates to their everyday lives.
- ✓ Youth Voice: In this or another section, I will allow youth the opportunity to make decisions about their learning experiences.

## FINAL REFLECTION AND RELEVANCE (15 MINUTES)

Back in the classroom, review with youth the characteristics of insects. Sing the following song to the tune of “Head, Shoulders, Knees & Toes”

*Head, thorax, abdomen (abdomen)*  
*Head, thorax, abdomen (abdomen)*  
*Eyes and mouth, antenna too*  
*Six legs, and that’s an insect for you!*

Provide youth with construction paper circles & strips, glue sticks, crayons and scissors. Instruct them to build their own insects, keeping in mind what characteristics they should have – 3-part body, six legs, and 2 antenna. When bugs are complete, share as a group.

Wrap up with a discussion about how scientists classify animals based on shared characteristics. Are there other things we classify based on shared characteristics? How about food? How do we classify food? Healthy vs. unhealthy? Breads, fruits, proteins? Are there other things we classify in our daily lives?

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**DoS:**

- ✓ Space Utilization: Again, I will use the space informally.
- ✓ Participation: I will prompt youth who do not have access to the activity to participate.
- ✓ Purposeful Activities: The closing section helps youth to reach the learning goal.
- ✓ Content Learning: I will help youth make connections between different ideas. I will create opportunities for youth to ask questions/provide ideas that show a deeper level of understanding.
- ✓ Inquiry: In this or another section of the activity, youth carry out one or more inquiry practices.
- ✓ Reflection. I will provide youth with a sustained opportunity to make sense of their learning.
- ✓ Relevance: In this or another section, I will guide the youth in a sustained discussion of how the activity relates to their everyday lives.
- ✓ Youth Voice: In this or another section, I will allow youth the opportunity to make decisions about their learning experiences.



**Example shapes for Final Reflection:**

