



Virtual Academy Investigating Insects

Goal: Students will learn the characteristics of insects and why they are an important part of the ecosystem.

Standards and Correlations:

- *Cognition and General Knowledge Domains*
 - Science Inquiry and Application-Inquiry- C39 to C43 and C46
 - Earth and Space Science- Explorations of the Natural World- C49
 - Life Science- Explorations of Living Things- C52 to C55
- *NAEYC Accreditation Criteria (2A.2, 2B.4, 2C.1, 2D.1, 2D.2, 2E.2, 2E.3, 2E.6, 2E.15, 2E.17, 2F.5, 2F.7, 2F.8, 2F.9, 2F.13, 2F.16, 2G.3, 2G.4, 2G.9, 2G.10, 2G.11, 2H.1, 2L.2, 2L.3, 2L.9, 3B.1, 3D.3, 3D.7, 3F.1, 3G.3, 3G.5, 3G.6, 3G.8, 3B.1)*

Overview: Arthropods are animals that have segmented bodies, jointed legs, no backbone (invertebrate) and a hard outer shell called an exoskeleton. Insects, spiders, millipedes, centipedes, mites, crabs, and lobsters are all arthropods. Even though they share common characteristics they differ greatly.

There are over 1 million species of insects on Earth. They come in different shapes, colors, sizes, and live in different habitats. Insects have three body parts: head, thorax, and abdomen; two antennae (used to touch and smell); six legs; compound eyes; and some have wings. Their body temperature changes with their surrounding temperature (cold-blooded). Most insects are herbivores (eating only plants such as leaves roots, seeds, wood, or nectar from flowers), but some are carnivores (feeding on other small insects and animals). All insects hatch from eggs and go through metamorphosis in their life cycle. Insects can be loved or feared by people, but are very beneficial to us by producing honey, wax, silk, and other products. Without them pollinating, many crops and flowers would not exist.

Vocabulary:

- **Insect** - a small arthropod animal that has six legs and usually one or two pairs of wings.
- **Arthropod** - an invertebrate animal having an exoskeleton, a segmented body, and paired jointed appendages.
- **Metamorphosis** - the process of transformation from an immature form to an adult form in two or more separate stages.
- **Thorax** - the middle section of the body of an insect, between the head and the abdomen, including the legs and wings.
- **Abdomen** - the segments of an insect's body behind the thorax.

- **Exoskeleton** - a rigid external covering of an insect body that provides support and protection.
- **Life Cycle** - a series of changes in the life of an organism including reproduction.

Materials: recorded lesson and lending kit (Real bug kit, magnifiers, plastic insects, nets, fly eyeglasses, life cycle figurines, bug viewers, plastic containers, two-way bug viewers, pictures of insect body parts)

Warm Up: Have the students sit in a circle. Ask the students if they like or dislike insects and why. Ask the students to name some insects. Write the student's answers on the board/flip chart. Go over what makes an insect an insect? (use pictures). Check answers on the board/flip chart and for each one and give a reason why the answer is or is not correct. Explain to the students that they are going to learn more about and observe actual insects.

An insect has:

- Three body parts (head, thorax, and abdomen)
- Two antennae
- Six jointed legs
- Two compound eyes
- Wings (not all insects)
- Exoskeleton

Main Activities: Show students the recorded lesson. After the recorded lesson, go over the difference between insects and other arthropods (non-insects), discuss insect life cycles, and observe actual insects.

- Pass out plastic insects and other arthropods (one for each student). Explain that some of the plastic animals are not insects. Discuss how the non-insects are different. Make two piles with the plastic animals one for insects and one for non-insects.
 - Spiders: two body parts (cephalothorax and abdomen), eight legs, many eyes, pedipalps, and no antennae
 - Pill bug: antennae, thick exoskeleton, and at least four pairs of legs
 - Centipede: antennae, segmented body, and one pair of legs per body segment
 - Millipede: antennae, segmented body, and two pair of legs per body segment
- Explain that insects grow and change just like us in their life cycles. But insects go through a process called metamorphosis. Split the students into five groups or work as a class to put the five-insect life cycle figurines and cards in the correct order.
- In the classroom, observe insects using the real bug kit and magnifiers from the lending kit.

Wrap Up: Review what an insect is, their life cycles and the benefits of insects.

Extended Activities: Use items from lending kit.

- Go outdoors to collect and observe insects (nets, bug viewers, and plastic containers). Instruct students to be careful with the insects so they can be released after observation.

Sing the "head, thorax, abdomen" song to bring it all back together (to the tune of 'Head, Shoulders, Knees and Toes')

"Head, thorax, abdomen" (tune: head, shoulders, knees, and toes)

*Head, thorax, abdomen, abdomen
Head, thorax, abdomen, abdomen
Eyes, antennae, and maybe some wings
Head, thorax, abdomen, abdomen*

*Head, thorax, abdomen, abdomen
Head, thorax, abdomen, abdomen
Hard shell, no bones and then six jointed legs
Head, thorax, abdomen, abdomen*