Insects: Friend or Foe?

3rd grade science unit developed by Jill Kurash
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Essential questions:

What is an insect? (GE S3-4:30, S3-4:38)

What are the characteristics of an invasive insect? (GE S3-4:30, S3-4:39)

What is an insect's lifecycle? GE S3-4:31)

What adaptations do insects have that have allowed them to live on Earth for millions of years? GE S3-4:30,)

How are insects helpful and or harmful? (GE S3-4:36)

Length of study: 4-6 weeks

What is an insect?

1. Begin by giving each student a sticky note to record 1-2 facts they think they know about insects. Post sticky notes on a chart and discuss ideas.
2. Give each pair of students a dead grasshopper or other large insect to observe. Students record observations using drawings and words.
3. After discussing observations and confirming insect characteristics (3 body part: head, thorax, abdomen), 6 legs attached to thorax, wings, antenna, 2 compound eyes, cold blooded, exoskeleton, lay eggs) look at other insects (alive, dead or plastic) an put together the grasshopper puzzle and read "Hurray of Hoppers" (Nature Scope).
4. Next I usually discuss the different types of insects and show a chart of the phylum that includes arthropods and the class of arthopods, insects.
5. Discuss how insects use camouflage or color warnings to protect themselves (Aims activity)
6. Discuss and experiment with different insect mouth types (Aims)
7. Review and move sticky notes along chart (confirmed, misconceptions, wonderings)

Assessments:

Correctly labeling an insect's body parts.

Through discussions or activities, demonstrating an understanding of the different mouth parts insects have and how that effects the food they eat.

Each child should be able to make an insect that is camouflaged or displays color warning, so that when hidden in the school garden, other children might not see it right away, or they know not to touch it.

What is an insect's lifecycle?

1. Grasshoppers change through **incomplete metamorphosis**.

2. Beetles grow by going through **complete metamorphosis.** Show how beetles change by using mealworms (easily obtained at a pet store). **Mealworms** can also be tested to see if they prefer light/dark or wet/dry environments; food preferences (apple/vinegar) and student can also design their own experiments to practice inquiry and the scientific method.
3. Collecting monarch butterflies caterpillars is also another way to show complete metamorphosis.

Assessments:

Each child should be able to describe the difference between complete and incomplete metamorphosis.

How are insects helpful or harmful?

1. Bees are a great example of helpful and harmful insects. Discuss pollination and the important role bees play to our food supply.
2. Bees are also part of the "social insects". Through role play, students can act out the different roles bees have within a hive. They then have a better understanding of why bees sting when there is a perceived threat to them or the hive.
3. Read the "Voyage to Hexatron" and discuss other ways insects can be helpful and harmful.

Assessments:

Compare harmful and helpful insects.

What are invasive insects?

1. Begin by discussing what "invasive" means.
2. Go over the characteristics of invasive insects.
3. Have groups of students act out a characteristic of an invasive insect while the other students try to guess.
4. Discuss invasive insects that are present in your environment or that pose a threat.
5. Visit the USDA/invasive insect web site and invite an entomologists or USDA specialists to visit your classroom. Rhonda Mace (Rhonda.mace@state.vt.us) is really great and is the director of Beetle Busting 101: Survey Vermont Trees for Alien Invaders.

Assessments:

Students create a venn diagram to compare the characteristics of invasive and non invasive insects.

Insect Research:

Students research an insect of their choice.

Students learn how to use non-fiction text by looking at the features of non-fiction books.

Assessment:

My students made step books. On each page, or step, they wrote about one topic such as food, habitat, lifecycle, defenses, predators. Illustrations and diagrams were also included on each page.

Resources:

Critters, AIMS (Activities Integrating Mathematics and Science), 1992 ISBN 1-881431-23-1

Goor, Ron and Nancy, Insect Metamorphosis from Egg to Adult, 1990.

Mason, Adrienne, Mealworms, 1998.

Ranger Rick's Nature Scope: Incredible Insects, 1989. World Wildlife Federation.

Ranger Rick's Nature Scope: Incredible Insects Discovery Pac, 1988. World Wildlife Federation.

Stopthebeetle.info/ - USDA website with great information and activities for students