BUILD A BUG

K-3RD

OBJECTIVES

- Introduction to adaptations found in insects.
- Explore how adaptations help an insect survive in their environment.

BACKGROUND INFORMATION

Any organism that lives underwater is considered an aquatic organism. Examples of aquatic organisms include fish, worms, snails, crayfish, and even baby dragonflies! Aquatic organisms have different specialized body parts that help them survive and thrive in their environment. These traits are called adaptations. Organisms that live in fast moving waters may have an adaptation that helps them attach to surfaces. Organisms that attach to surfaces might also have an adaptation that helps them to filter the water that passes by for food particles!

MATERIALS

Materials for the Game "Cooties"

- Game instructions
- 1 Dice Per Group of 4 Students
- 1 Piece of Paper and Pencil Per Student

Assorted Materials including (but not limited to):

- Pool Noodle
- Rope
- Sunglasses/Googly Eyes
- Furry Hat/Wig
- Pipe Cleaners
- Feather Boa
- Play-Doh
- Vampire Teeth
- Fishing Net
- Googly Eyes
- Feathers
- Puff Balls
- Beads
- Toothpicks
- Straws
- Paper
- Markers
- Balloons

ANTICIPATORY SET

Play the game, "Cooties" as a class. This fun game will review the body parts of a typical insect. You can find the instructions for this game on the next page.

"COOTIES" GAME INSTRUCTIONS

WRITE THE FOLLOWING ON THE BOARD

1=head	2=body	3=antennae	4=eye	5=wings	6=legs

RULES OF THE GAME

Divide the class into groups of four students. Give each student a piece of paper and a marker. Each group of four students will also need a six-sided die.

- Each student will take turns rolling the die. The number they land on will tell them which body part they get to draw on their paper. If they already have that body part, they must pass the die to the next student. They do not get to roll again.

Emphasize that they MUST get a head and body before they can draw the remaining body parts!!

- The team member who gets all the necessary body parts first is the winner! If you would like to play this game "tournament-style," you can have the winner from each group play against each other.

STUDENTS WILL NEED ALL OF THE FOLLOWING IN ORDER TO WIN:

- 1 head
- 1 body
- 2 antennae
- 2 eyes
- 2 wings
- 6 legs

WHAT IS AN ADAPTATION?

1. Ask your students, "Why do bears have thick fur?" *Answer: It helps keep them warm!* "Why do fish have gills?" *Answer: It helps them breathe under water!*
2. Each of these body parts are examples of an adaptation. Adaptations are physical traits that help animals survive in their environment.
3. Show your class the "Example of Aquatic Insect Adaptations" page found at the end of the lesson. As a class, discuss the different body parts that help those insects survive in their environment.
4. Watch the video: Adaptations. Link found under Resources.

DRESS THE CLASS PET!

1. Before class, place an assortment of items on your desk to be used in this activity (feather boa, sunglasses, pool noodle, wig, etc)
2. Tell your class that we are going to imagine we have a new class pet that happens to be an aquatic insect.
3. Ask the class to help you create a list of adaptations for our make-believe class insect. *Ex: sharp teeth for eating other insects, a long tail for balancing, etc.*
4. Ask for a student volunteer to be the "class insect."
5. One student at a time will walk up to the items on your desk to find an item to represent on of the adaptations on the class list. Once they found an item, they can carefully place it on the volunteer "Class Insect."
6. After about 5 volunteers, your insect will be ready to show off their adaptations! Have them do a little strut across the room to show off their adaptations!
7. Have a class discussion about why these adaptations would help this insect survive and thrive underwater.

CREATE YOUR OWN INSECT

Using assorted craft materials, instruct each student to create their own insect. Organize a Show-and-Tell so that each student can present their insect to the group. Students should explain why each adaptation is important for their insect.

PONDER

Ask your students to ponder the following question. Students can answer this question through an essay, short story, or picture.

"If you could have any adaptation, what would it be and how would it help you?"

RESOURCES

- Bugs Don't Bug Me, Retrieved from https://extension.usu.edu/waterquality/files-ou/Publications/Bugs-dont-bug-me.pdf
- Generation Genius Video, Adaptations: Retrieved from https://www.youtube.com/watch?v=s-OMDnCFf2g

TEKS ALIGNMENT

Science, Adopted 2021:

- Kinder: (a) 1Ai, 1E, 3B, 5. (b) 1C, 1D, 1G, 2D, 3B, 3C, 5D, 5F, 5G, 12B, 13B.
- 1st: (a) 1Ai, 1E, 3B, 5. (b) 1C, 1D, 1G, 2D, 3B, 3C, 5D, 5F, 5G, 13A.
- 2nd: (a) 1Ai, 1E, 3B, 5. (b) 1C, 1D, 1G, 2D, 3B, 3C, 5D, 5F, 5G, 13B.
- 3rd: (a) 1Ai, 1E, 3B, 5. (b) 1C, 1D, 1G, 3B, 3C, 5D, 5F, 5G, 13A.

SUGGESTED ITEMS FOR INSECT TRAITS

Adaptations	Use	Items Representing Adaptions for Build A Bug	Items Representing Adaptions for Make An Insect
Legs, Claws, Hooked Feet, Suction Cups, Hairs on Legs	Holding on to rocks and hard substrate, scraping algae off rocks, attacking prey	water noodle with hooks on the end	Pipe cleaners
Tails	Swimming and maneuvering	Garland or rope	Pipe cleaners
Compound Eyes	Helping insects detect motion	Sunglasses with googly eyes glued on	Google eyes
Hairs on head or body	Help detect movement or chemical changes in water	Wig or furry hat	Puffy balls, feathers
Antennae	Sensing food, water, surroundings	Store bought or homemade antennae	Pipe cleaners
Gills	Breathing dissolved oxygen in the water	Feather boa	Feather
Air Bubbles	Breathing oxygen from the surface air	Balloon	Plastic necklace beads, bouncy ball
Breathing Tube	Breathing oxygen from the surface air	Straw	Straws
Specialized Mouth Parts	For scraping, piercing, shredding, etc. The mouth parts reflect food choices of the insect.	Vampire teeth	Toothpicks
Device for catching food, i.e., net (made by the insect or part of their body structure) or special hairs	Catching food in the current	Fishing net	Fabric netting and toothpicks, feathers

EXAMPLES OF AQUATIC INSECT ADAPTATIONS

The **Blackfly larva** has a net on its head for collecting food.

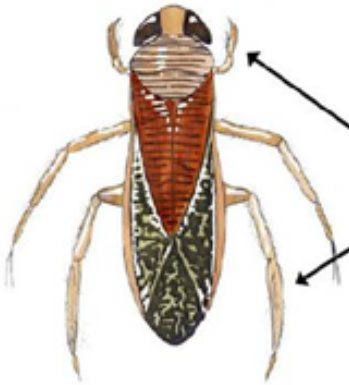
The **Stonefly** nymph has claws for capturing prey and holding on tight to rocky substrates.

The **Stonefly** nymph has gills in its "armpits" for breathing dissolved oxygen in fast flowing streams.

The **Cranefly larva** has tiny hairs and suction cups along its body so it can hold on to rocks and hard substrates in fast flowing water.

The **Mayfly** nymph has hooks for holding on tight to rocky substrates.

The **Mayfly** nymph has gills on its abdomen for breathing dissolved oxygen in fast flowing streams.



The **Water boatman** has paddle-like legs for swimming in slow moving water.

The **Dragonfly nymph** has claws on its legs for capturing prey and for climbing emergent vegetation.