



The Monarch Butterfly

GRADE
K-2

TIME
(3-4) 30 minute periods of time

SUBJECTS
Science, Math, Reading, Engineering, Writing

LESSON OBJECTIVES

Students will

- *Identify* insects and their common characteristics
- *Build* an insect
- *Construct* the Monarch butterfly life cycle
- *Act out* the Monarch butterfly life cycle

Questions should be answered in student science notebooks and can be discussed in pairs, small groups and with the whole class. Building science literacy starts in pre-k. Help students build their skills in reading, writing, listening, and responding to science.

MATERIALS

- Science notebook
- Activity 2 Engineering: A variety of consumable materials along with scissors and glue
- Activity 2-1: Pictures of common insects via magazines or online resources
- Activity 2-3: Book – *On Beyond Bugs: All About Insects*
- Activity 3-1: Copies of Evidence-Monarch Butterflies. Make one copy per pair or per group of four. Provided
- Activity 3-2: Life Cycle Cards. Make one set per students or pair of students - provided
- Activity 3-3: Life Cycle Worksheet – provided
- Activity 3-4: Butterfly Ballad – provided
- Optional: slides of insects and insect parts – create a center where students can see insects in detail through a microscope or detailed microscope images from the internet.

THE MONARCH BUTTERFLY - FEATURES

Brilliant orange and black monarchs are among the most easily recognizable of the butterfly species which call the Americas home. Monarch butterflies are bright orange with black and white markings. The body of the monarch is black. The head has a set of antennae. The wings are mostly orange with black veins running throughout. The outer edge of the wings has a thick black border. Within the black border are white spots. The white spots can range in size and they decorate the wings. At the upper corner of the top set of wings are orange spots. The underside of the monarch butterflies' wings can be seen when the butterfly is at rest or when it is feeding on a flower. Instead of bright orange, the underside is more drab and orange-brown.

Males and females can be told apart by looking at the top of their hind wings. Males have a black spot at the center of each hind wing, while the females do not. The spot is a scent gland that helps the males attract female mates. Another less accurate way to tell males from females is that the females usually have much thicker veins than the males.

Monarch butterfly caterpillars are also easy to identify. The caterpillars have many yellow, black and white bands. There are antenna-like tentacles at each end of the caterpillar's body.

Size: Monarch butterflies have a wingspan of 3 ½ to 4 inches.

Lifespan: Most monarch butterflies do not live more than a few weeks. There are about 3 to 5 generations born each spring and summer and most of the offspring do not live beyond 5 weeks. The lone exception is the last generation born at the end of the summer.

The last generation of each year is the over-wintering generation that must make the journey back to Mexico. Rather than breeding immediately, the over-wintering monarchs fly back to Mexico and stay there until the following spring. In the early spring, they fly north to the southern United States and breed. Over-wintering monarch butterflies can live upwards of 8 months.

STANDARDS

ETS1-1 Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

ETS1-2 Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats. Emphasis is on diversity of living things and not specific animal/plant names



ACTIVITIES



ACTIVITY 1 – INSECTS I KNOW

1. Go outside on a ten minute nature walk. Provide students with your outside expectations. The nature focus will be on insects. Student may take mental notes, make a list or sketches in their science notebook. Option: Provide students with a temporary notebook they can wear outside. Just attach some notecards to their student lanyard and bring out a box of golf pencils for them to use on the walk.
2. Have students write or help you write a list of every insect they can think of. Students can also make a picture list by drawing insects they are familiar with.
3. Have students begin compiling a list of traits or characteristics that make insects, insects. (My list of insects all have eyes.)

NOTE: Students may have named or drawn spiders, roly pollies and/or centipedes and that is okay. Later they will understand why not all insects on their list are true insects.



ACTIVITY 2 – IS THAT REALLY AN INSECT?

1. Have students look through magazines, such as *Ranger Rick Jr.* or *Ranger Rick* and/or browse online repositories of image by typing “insects” into the search bar. Option: You may choose to have several images available for students to look at versus having students browse the net. Please use your discretion.
2. Talk as a class about the various trait lists students have compiled. Are their similarities? Differences? Have your students come up with a final list of five traits that help scientists identify insects and then compare them to the actual list.
 - Exoskeleton
 - 3 body regions: head, thorax, and abdomen
 - 3 pairs of segmented legs
 - 1 pair of antennae
 - Most have 2 pairs of wings – NOTE: a few insects, such as ants, don’t usually have wings; some insects, such as flies, only have 1 pair of wings.
3. Read: ***On Beyond Bugs: All About Insects*** (Cat in the Hat’s Learning Library) by Tish Rabe. If this book is not available to you then work with your librarian to find a suitable alternative.

Question 2-1: Do the insects in the images share the same characteristics from your first list? Are there new traits you want to add to the list or are there traits you want to take off your list?

Questions 2-2: How do you think scientists determined or came up with the one list all scientist would use to identify insects?



Engineering Option: What purpose do wings serve an insect? Provide students with a variety of consumable materials and have them construct an insect that has movable wings. Materials can include but are not limited to: pipe cleaners, egg cartons, paper (a variety of types), Wiki Stix, buttons, beans, pebbles, googly eyes, pom-poms, colored dots, straws, popsicle sticks, etc.



ACTIVITY 3 – Butterflies are Insects

1. Provide student pairs or small groups of students with the set of images, titled, Activity 3-1. Have them write in their science notebook or draw pictures providing evidence for the following statement, “Butterflies are Insects.” Students need to prove that butterflies are insects using their knowledge from the previous two activities.
2. Pass out sets of the Life Cycle Cards to students. Have each student work alone to construct the cycle in the correct order. Next have them describe or tell their neighbor why they put the cycle in the order they did. Once confident with their cycle check their work.
3. Students may now draw the Monarch Butterfly Life Cycle into their science notebook or students can trim and glue the Monarch Butterfly Life Cycle into their notebooks using the worksheet.
4. Sing *The Butterfly Ballad* to the tune of “Mary had a Little Lamb”. Then teach the students how to act out each stage in the life cycle.
 - Verse 1: roll up in a ball on the floor
 - Verse 2: crawl like a caterpillar
 - Verse 3: act like you are eating and gobbling up as much food as possible
 - Verse 4: act like you are growing, stretch long and tall
 - Verse 5: pull your knees up to your chest and be as still as possible
 - Verse 6: fly like a butterfly

NOTE: There are limits to the evidence the photos can provide, for instance, students cannot tell from the photo whether or not the Monarch has an exoskeleton.

