Focus on Features

Key Concepts:
• Observations involve noticing and explaining what you see

Skills:
• Brainstorm and create lists
• Make detailed observations
• Make comparisons

Materials:
• 3rd-5th instar larvae in observation containers (with milkweed)
• Magnifying lenses
• Large paper (or digital equivalent) to
  1) list and poss class descriptor pool;
  2) list class questions
• Egg cartons
• Paint, markers, or crayons in black, yellow and white
• Yarn or pipe cleaners

Objective
Introduce students to the monarch butterfly and practice making detailed observations. Use brainstorming and list making techniques to find out what they already know about monarchs. Then let them conduct hands-on observations of live monarch larvae. Students can make comparisons between monarch larvae and other stages of the monarch life cycle, such as chrysalis and adult.

Background
This lesson is divided into two sessions that will allow the teacher to 1) assess what the students already know and what they would like to find out about monarchs and 2) provide an opportunity for students to make detailed observations of their monarchs. We recommend doing the first session before showing students the larvae and the second session as soon as the students receive the larvae. In K-2 classrooms, teachers rather than students should probably be responsible for rearing the larvae (e.g., ensuring that the larvae are fed, their cages cleaned, etc.). You can raise all the larvae in one large cage. To make your own, see the How-To section on Making Cages.

Be sure to read the section on Monarch Butterfly Rearing and Observing Techniques in the How-To’s section of our website for tips on how to raise monarchs in your classroom. If your room is organized around tables or groups of desks, you may want to divide the larvae into several smaller separate cages, such as a milk-carton or ice-cream bucket cage (see Larva Containers in the How-To’s section on our website). Each table or group of desks would receive one or two larvae and could watch them grow.

Procedure

Session 1: What do you know and want to know about monarchs?
1. Before showing students the larva, brainstorm and list on chart paper: What do you know about monarchs?
2. Brainstorm and list on chart paper: What do you want to learn about monarchs?
3. Read a story about monarchs (example: Monarch! Come Play with Me by Ba Rea).

Session 2: Observing monarchs
1. Divide students into small groups or pairs and pass out a larva to each group. The larva can be in a small container like a plastic or paper cup or petri dish with milkweed.
2. Record on chart paper the students’ observations of colors, patterns, what the caterpillars feel like, behavior, their size, what their legs look like, and their weight. Have magnifying lenses available. Encourage students to use as many of their senses as possible (except taste!). At this point, you may want to stress to the students that they should try to make accurate and detailed observations of what they see. Guide students to think like scientists and avoid value statements (i.e.: The caterpillars are pretty [or ugly]). They will learn more about accurate observation in the Data Collecting activities. Sample questions to facilitate the observation session are:

- Describe the size of the caterpillar.
- How do you think the caterpillars move? Do they have legs? Do the legs all look the same?
- What are they eating? How do they eat? Can you see teeth?
- What do the caterpillars do when they touch each other?
- What do they do in your hand? What happens when you touch them?
- Look at the black things sticking out of the front and back of the caterpillar? What happens when you touch these?
- Can you tell the front from the back of the caterpillar? How?
- Can you see eyes on the caterpillar?

3. Add observations to your list over time. This list represents what students have learned. Refer back to the list of what they wanted to learn! What can students answer?

Additional Ideas for Practicing Observation Skills

1. Use the same techniques to observe the pupae, or chrysalises.

2. Create a comparison chart.

3. Use the same techniques to observe the adults when they emerge. Keep adults in a cage, not a dish, but let the students handle them. Monarch Butterfly Rearing and Observing Techniques in the How-To’s section on our website includes instructions on how to hold an adult without damaging its wings. Monarch scales do not come off as easily as those of many moths and butterflies, but the children will probably see some scales on their fingers. If you hold an adult close to a child’s finger or arm, they will be able to feel the feet, or tarsi, clinging to their skin. Sample questions to facilitate a brainstorming session on adults are:

- List similarities and differences between the adults and the caterpillars. Are their legs different? Are their eyes different? Do they both have a head? Do they have the same number of legs?
- What does it feel like when the butterfly holds on to your finger with its feet?
- How do the adults eat? Can you see their proboscis?
- Can you tell the difference between a male and a female monarch? (see Butterfly and Moth Life Cycles in the Monarch Biology Section.)
- What colors can you see on an adult?
- Describe the adult antennae.

3. Have students make a model of caterpillars out of egg cartons joined with yarn or pipe cleaners. Kindergartners can paint or color them yellow, white and black; older students can make accurate representations of the color patterns.

4. Use paint, markers, or crayons to copy the pattern on the larvae. How do the widths of the stripes vary? How many stripes are there before the pattern repeats itself?
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