Title: Animal Adaptations

Suggested starter questions:
1. Can anyone tell me what an organism is?
2. So are we organisms?
3. Do we have adaptations?
4. What other animals do you think have adaptations?... Well, let's find out!

Adaptation is a natural process that causes an organism to cope better with the environment than others of its own species do. An organism may evolve a trait that will help it to be better in obtaining food, shelter, or protecting itself.

We are going to study animals with different adaptations for their different habitats.

I. Ocean (picture of a whale)

A. Who can tell us what an ocean is? Do you know what kinds of animals live in the ocean? What about mammals? Could we live in the ocean? Why not?
   - Whales and dolphins are mammals that breath air and are warm-blooded.
   - How do they survive in the ocean?

B. Marine mammals (whales and dolphins) have insulating blubber...
   - Does anyone know what blubber is? [A thick layer of fat and oil, which keeps their bodies warm and buoyant]
   - This layer is thinner in warmer temperatures, and thicker in colder climates.

C. Do whales or dolphins have hands or feet like us?
   - Their limbs evolved into fins and flippers. They have a dorsal fin for balance [the fin on their back], and the side flippers for balance and steering.
   - Their tail’s up and down movement provides a powerful ‘push’ through the water.
D. Whales are also different colors. They have a dark top that blends in with the deep water when seen from above, and they have light bellies that blend in with the sunlight if seen from below.
   - This adaptations allows the whales to be camouflaged from predators and other danger.

II. Riparian (picture of a Great Egret)
   A. Wetlands are areas that are covered with water at least part of the year. The soil in the wetland areas contain less oxygen than other soils because it is water logged.
   B. Can anyone tell us what an Egret is?
      - The Great Egret is a large (36-42 inches long) bird that lives in marshes and wetlands.
      - Because it’s so big, it’s plumes (feathers) help support its weight while moving and flying. Would you consider this an adaptation?
   C. How would you describe the Egret's neck?
      - Right, it’s very long. Does anyone know how his long neck could be a useful adaptation? [It allows the Great Egret to see over the tall plants in the marshes and wetlands]
   D. What about his bill? How would you describe it? It’s long as well, right?
      - It makes it much easier to snatch his prey. He has to be able to catch fish beneath the surface of the water (underwater), and his bill keeps the prey from escaping.
   E. What else about the Egret’s body do you think could be an adaptation?
      - [They use their large feet to stir up the mud. This disturbance causes a fish [or invertebrate] to move and the Great Egret can spot its prey.
   F. Has anyone seen an Egret before? Maybe you have, maybe you haven’t.
      - But the Great Egret has also adapted to living within close proximity to us, humans.
      - Does anyone know where Illinois is? In Illinois, it is not uncommon to see Egrets in parks, golf courses, and even backyards, just like the blackbirds/ravens that we see in Davis.

III. Desert (picture of a desert tortoise)
   A. Has anyone been to a desert? What is the weather like? Hot? Dry? How many think a tortoise can survive in the desert?
- Well, there actually is a special desert tortoise, who has unique characteristics that let him survive in the desert environment.
- Has anyone looked at an elephant's foot? The desert tortoise has thick legs like those of elephants, and strong claws that let the tortoises burrow into the desert soil.
- Have you ever dug in the sand at the beach? Even if the sun is out, what does the sand feel like? It's damp and cool, right? Well, the tortoise digs in the desert soil since it's cooler than the heat on the surface of the desert. The tortoises stay under the soil for about four months; from Thanksgiving to almost [St. Patrick's Day] Easter. (November to March).

B. The only time he comes out is to get more water. How long do you think we can live without drinking water?
- Water is very important to us, so we can only last a few days without water. However, an adaptation desert tortoises have developed is to survive without water for much longer than us humans.
- How long do you think a desert tortoise can survive without water? A desert tortoise can go for many years without drinking, ingesting most of their water from plants and then storing it in their bladders. Can you imagine storing all the liquid you drink in your body? I don't think animals of the Arctic could think or worry about it like the tortoise does, because they have other adaptations that protect them from the extreme weather of their own habitat.

IV. Arctic (picture of a seal, penguin, and/or sea bird)
A. When you think of the Arctic, what kind of weather do you think of? What kind of animals do you think live there?
B. Do you know what seals and penguins have in common besides living in their cold habitat?
- They are warm-blooded, but they keep their body temperature above freezing under a thick insulating layer of fat or blubber beneath the skin to keep the heat in! Do you remember what other animals had a layer of fat? [Whales and dolphins]. Thick blubber and dense fur help maintain their internal temperature.
- Seals and penguins also have fur and feathers, as well as a blubber layer. (Weddell seal blubber can be up to 10 cm thick).
C. Sea birds have a thick insulating layer of feathers and fat deposits. Most sea birds also have preen oil on their feathers which acts as a waterproof surface.
- In the winter do you ever feel cold getting into or out of the bathtub? That’s how birds feel, but this oil on their feathers keeps the water out and reduces their heat loss.

V. Activity (game) NEED: 3-piece animal cards (head, torso, legs)
A. “Now that we’ve learned about whales, the desert tortoise, Great Egrets, penguins, seals and their adaptations, how about making up your own animal?”
B. Break the class up into groups, according to how many sets of animal cards you have. Ask the kids to create their own “wonder-animal.”
   - Be sure they think of what kind habitats their animal might live in, and what kinds of adaptations it has (or would need).
   - They can even make up a name for their animal.
C. Go around the room and have the different groups share their animals.
   - To make sure the rest of the class is paying attention, occasionally call on someone for recall (what habitat the animal lives in, what adaptations it has, what its name is, etc).