

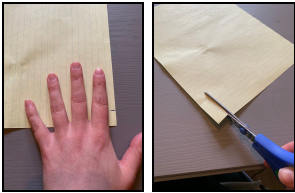
Skeletons Inside and Out		Grade 2 Life Systems	
Lesson Plan		Safety Notes	Adult supervision with scissors.
<p>Description</p> <p>In this lesson, students will explore the difference between an endoskeleton and an exoskeleton, as well as why some animals have one over the other. Students will have the chance to build their own exoskeleton.</p>			
<p>Materials</p> <ul style="list-style-type: none"> ● Scissors ● Scrap Paper ● Tape ● Pen or Pencil ● String - optional ● White craft glue 			
<p>Science Background</p> <p>Skeletons provide support and protection, and help us move. Humans have their skeleton on the inside of our body. When a skeleton is inside of our bodies, it is called an endoskeleton! Endo means ‘in’ so the skeleton is inside the body.</p> <p>Not all species have their skeletons inside their bodies. Insects, arachnids (like spiders), and crustaceans (like crabs and lobsters) have an exoskeleton, exo means ‘out’, so their skeletons are on the outside of their bodies. Think of this like a suit of armor protecting them!</p> <p>There are some animals that don’t have bones at all! Can we think of some animals that don’t have any bones? Jellyfish, slugs, and worms have no bones!</p> <p>Why do some animals have endoskeletons and why do some have exoskeletons? Endoskeletons provide enough support to hold considerable weight. Think of the largest animals on earth like elephants, whales, and moose, they all have endoskeletons. Exoskeletons are strong but flexible and allows the animals to move fast, and allows for more complex movements. Like grasshoppers and spiders.</p> <p>Our human bones (endoskeletons) grow with us, but exoskeletons don’t grow!</p> <p>It’s like your clothes or your shoes, what happens when you out-grow your clothes or shoes? You get rid of the old ones and get new ones. But animals don’t just buy new exoskeletons, they have to grow new ones. These animals are left with little to no protection against predators until their exoskeleton grows back! The old skeleton breaks away and is left behind. This is called molting! These molt get left behind all the time. Keep an eye out for some insect molts outside on some trees!</p> <p>Do humans molt our skin every time we grow? Well we do shed our dead skin every 2-4 weeks but not all at once! What about snakes? Do they molt or shed their skin? They do, but unlike humans, they</p>			

do shed their skin all at once! They only shed their skins (like humans) they do not shed their skeletons (like spiders).

Activity Procedure

Procedure:

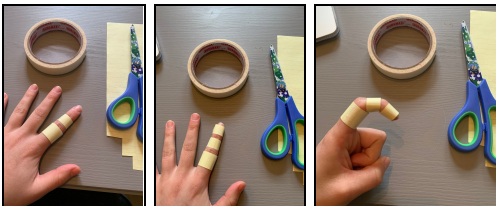
1. Before we start building our exoskeleton we need to do a control test. On a piece of paper or on your handout if you have it printed, write your name with your dominant hand. Put it to the side for later.
2. Measure the lengths of the various segments on your finger and cut paper strips to the appropriate size. *Note you have three sections on each finger and two on your thumb.



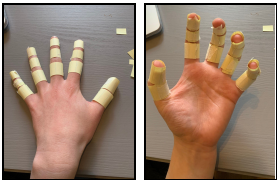
3. Wrap the paper strip around the section of your finger that you want to start with and tape it in place.



3. Repeat this for the other two sections on your finger. Leave space at the joints so your finger can still bend.



4. Repeat for the rest of your fingers.



Note* If you want all the segments to be attached you can tape some string to each segment. This way the exoskeleton can be removed as one piece just like a real exoskeleton.

5. Compare your paper exoskeleton hand with your normal endoskeleton hand. Try some basic activities like writing your name or picking stuff up.



Extra Activity:

Now if you want to try to molt/shed like a snake, grab some liquid white glue, and rub it onto your hand.

Let it dry, and peel it off! It may not come off in one piece and that is okay! This is similar to how snakes shed their skin.

Debrief

To continue learning about endoskeletons and exoskeletons, please complete the attached worksheet.

Handout

1. List or draw some animals with an Endoskeleton.

Example: A Moose

2. List or Draw some animals with an Exoskeleton

Example: A Spider

3. Using your exoskeleton build during the activity write your name:
 - a) Without your exoskeleton
 - b) With your exoskeleton