We Adapt

Name: Jenifer Haley	**Date:**
Subject: Science	**Grade Level:** 4+
Time Required: 1 class period	**Standards:** Standard 1: Nature of Science

Overview	Students will relate the shape of special animal body parts to how they function.
Goal(s) & Objective(s)	Students will match a rangeland animal's adaptations to the animal. Students will identify the purpose of different adaptations. Students will match adaptations to human tools and inventions that perform the same purpose.
Materials	**Print off pictures of the following from the end of this lesson (or use real objects/book pictures where available):** Evening Grosbeak and Long-billed Curlew, Antelope tail and rump patch, Coyote skull, sheep skull, deer skull, fighting Bighorn sheep , cows eating grass, cow skull. Magnifying glasses Pruning shears Samples of deer hair and wool Piece of a quilted coat or sleeping bag Nutcracker Tooth pick Table knife Vehicle warning triangle Football helmet Crayons or colored pencils.
Teaching Activities: ***Instructional Approaches/Strategies***	**Introduction:** Show the students the pictures of the two birds. Ask "Why do birds have beaks?" (To eat with, to clean their feathers…). What do all animals have to do to survive? (Eat in order to grow and have energy for life processes) Why do you think the beaks of these birds are so different? (They eat different types of food) What do you think they eat? **Procedures:** 1. Hand out the We Adapt worksheet. Explain to students that they will be learning about different adaptations animals have to survive. Lead students in answering the first question together. Have students read the definition of adaptation from their science text or have them write down this definition on their paper: 2. "Adaptation: A set of features such as anatomy or physiological abilities that make a group of organisms better suited to live in their environment." 3. Explain that adaptations are genetically inherited traits that the whole group

	has, not just one animal. Give examples of anatomical adaptations – the Grosbeak from "Introduction" cracks seeds with its beak. The Curlew probes into dirt or mud to find insects, snails, and other invertebrates to eat. Physiological adaptations – some insects (such as Assassin beetles) have a substance like antifreeze in their blood so they can be active at lower temperatures than other insects. 4. Tell students they will be looking at adaptations different animals use to survive on the Sagebrush Grasslands of Idaho. Then they will match the adaptations they have observed to different tools humans use for the same purpose. Divide students into groups so that no more than five students will be at a station at once. Rotate groups through stations. When finished, students are to return to their seats with their completed observations, but do nothing yet on the second page of the worksheet. **Closing:** 1. Have each group describe one observation they made and discuss their observation. Go over each item and discuss what the adaptations and tools are for. Have students state again what an adaptation is. Have students color-code adaptations and tools with the same color to identify which serve a similar purpose.
Assessment:	Show the picture of the cow grazing and the cow skull. Students answer the question – "How is the cow adapted to eat grass?" Show the picture of the fighting bighorn sheep – "How are the bighorn sheep adapted to fight this way and survive?" Show the football helmet – "What purpose does this tool serve, similar to how one of these animals is adapted?"

Preparation: Cut apart the pictures so that each is on a single sheet. If desired, attach pictures to a cardboard box to stabilize. Using the student worksheet to organize, set up the pictures and objects used for this activity around the room with enough space in between for students to make observations as a small group. Place the magnifying glasses at the stations with the deer fur and the wool. Preview the key to the worksheet so you know how to guide students.

Modification: Include any 7 natural items with an analogous human invention.

We Adapt

Name_____

1. What is an adaptation?

Describe your observations of each of the following. Notice anything that surprises you, or things that seem "special" or different from what you would expect.

Deer hair (use magnifying glass)	Quilted stuffed fabric
Wool (use magnifying glass)	Grosbeak bill (picture)
Toothpick	Curlew bill (picture)
Warning triangle	Antelope rump patch
Sheep skull (look at the front teeth)	Table knife
Coyote skull (look at the teeth)	Deer skull (look at the front teeth)
Nutcracker	Pruning shears (caution – sharp!)

2. First, write what you think the purpose of each item is. Leave space and write in pencil so that you can add to or change your answer if needed.

Deer hair (use magnifying glass)	Quilted stuffed fabric
Wool (use magnifying glass)	Grosbeak bill (picture)
Toothpick	Curlew bill (picture)
Warning triangle	Antelope rump patch
Sheep skull (look at the front teeth)	Table knife
Coyote skull (look at the teeth)	Deer skull (look at the front teeth)
Nutcracker	Pruning shears (caution – sharp!)

3. Based on your teacher's instructions, use a crayon or colored pencil to shade or outline items with a similar purpose.
4. Look at the pictures of the rangeland animals.
    a. How is the cow adapted to eat grass?

    b. How are the bighorn sheep adapted to survive this type of fight?

We Adapt (KEY)

Name_____

1. What is an adaptation? A set of features such as anatomy or physiological abilities that make a group of organisms better suited to live in their environment (or appropriate definition from student science textbook)

Describe your observations of each of the following. Notice anything that surprises you, or things that seem "special" or different from what you would expect. **Give credit for all appropriate observations**

Deer hair (use magnifying glass)	Quilted stuffed fabric
Wool (use magnifying glass)	Grosbeak bill (picture)
Toothpick	Curlew bill (picture)
Warning triangle	Antelope rump patch
Sheep skull (look at the front teeth)	Table knife
Coyote skull (look at the teeth)	Deer skull (look at the front teeth)
Nutcracker	Pruning shears (caution – sharp!)

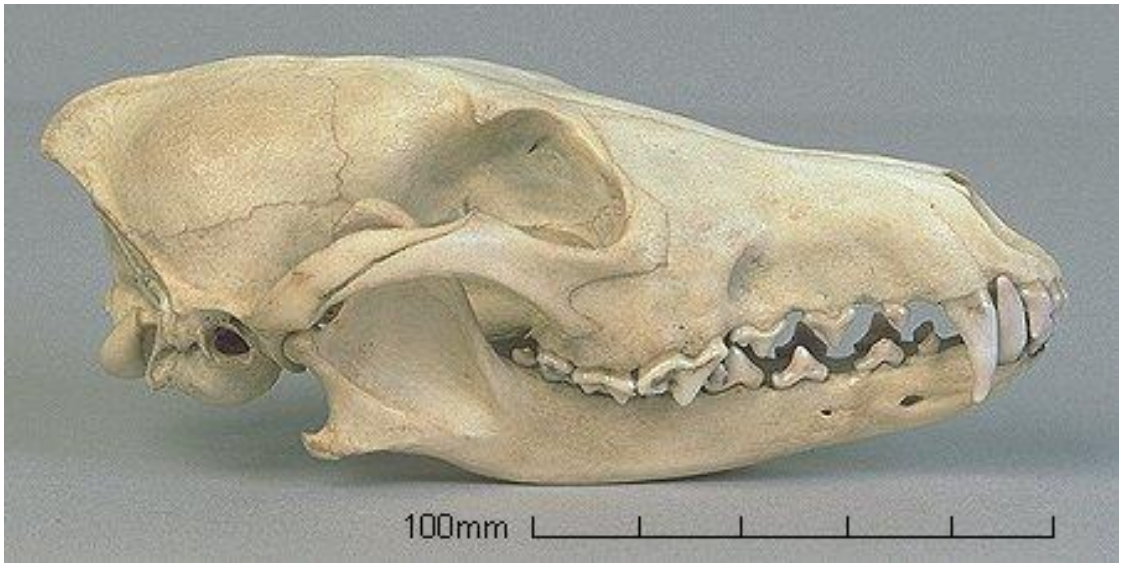
2. First, write what you think the purpose of each item is. Leave space and write in pencil so that you can add to or change your answer if needed.

Deer hair (use magnifying glass) Deer hair is hollow which gives it great insulating properties. It is similar in color to many wild habitats, making it good for camoflauge.	Quilted stuffed fabric – used for insulating sleeping bags or coats. Hollow spaces make it a good insulator.
Wool (use magnifying glass) The crimp in wool makes it stay apart, giving it great insulating value	Grosbeak bill (picture) Used for cracking seeds and nuts
Toothpick –Used for getting things out of small spaces.	Curlew bill (picture) Used for getting invertebrates (bugs, insects, worms) out of small spaces
Warning triangle Used to caution other drivers	Antelope rump patch Used to caution other antelope when danger is sighted
Sheep skull (look at the front teeth) – used to cut off grass or other plants(missing top teeth because the top jaw is just used as a cutting surface)	Table knife – Used to cut up food (meat)
Coyote skull (look at the teeth) – Used to cut up food (meat)	Deer skull (look at the front teeth) used to cut off grass or other plants (missing top teeth because the top jaw is used like a cutting board)
Nutcracker –Used for cracking seeds and nuts	Pruning shears (caution – sharp!) Used to cut off plants (notice flat cutting surface)

3. Based on your teacher's instructions, use a crayon or colored pencil to shade or outline items with a similar purpose.
4. Look at the pictures of the rangeland animals.
    a. How is the cow adapted to eat grass? It has a jaw like a deer or sheep with no upper top teeth so that it can cut off grass against a surface

b. How are the bighorn sheep adapted to survive this type of fight? They have large horns that protect them from an impact

Sheep Skull



Coyote Skull

Long-billed

Curlew

Evening Grosbeak

Pronghorn Antelope (notice the rump patch)

Bighorn Sheep

Grazing Cattle

Cow Skull

Deer jaw bone – notice there are no teeth in the front of this upper jaw

Pruning shears – the upper surface is dull, the lower surface is sharp

Vehicle warning triangle