Animal Adaptations II

Grades: 7 and 8
Length: 50 minutes

South Dakota Content Standards

♦ 7th Grade Life Science; Nature of Science: Students will investigate interactions among populations in a biological community.
♦ 7th Grade Life Science; Nature of Science: Students will interpret to justify conclusions.

♦ 8th Grade Earth/Space Science: Students will investigate how animals adapt to biotic and abiotic factors in a biome.
♦ 8th Grade Earth/Space Science: Students will describe interactions that exist among members of a biological population.

Primary Theme

Studying and restoring the mixed grass prairie ecosystem and humans' relationship to it will help us understand the changing grassland ecology of the Midwest, and ensure the protection of this fragile and remarkably diverse ecosystem.

Vocabulary

Herbivore: eats only plants
Carnivore: eats only animals
Omnivore: eats both plants and animals
Insectivore: carnivore that specializes in eating insects
Frugivore: herbivore that specializes in eating fruit
Monocular vision: each eye looks a different way (on side of the head)
Binocular vision: both eyes look and focus in the same direction (on front of the head)
Predator: organism that kills and eats another organism
Prey: organism that is killed and eaten by a predator

Materials

♦ Laptop
♦ Projector
♦ Variety of skulls
♦ Specimen data sheets
♦ "Animal Adaptations II" slide show

Procedure

1. Introduce Badlands National Park.

2. Quiz! Write (or project) the vocabulary words on the board. Read the definitions. Have students write the difinitions down. Note: 7th and 8th graders should know these words, so use this activity as a warm-up and keep it moving.

3. Present the slide show. Use the notes below and on the slide show to give an interpretive presentation.

4. Discuss that biologists study bones to discover what and how the animals eat or how they move. This lesson will focus on feeding and diets. An animal's tooth structure in very important! By examining the structure of the teeth, we can tell what kind of diet the animal had.

5. Encourage the students to come up with vocabulary words that describe the diet of imaginary animals (i.e. ones that eat computers, or garbage, or fast food, etc.) Who can come up with the funniest one?

6. Ask the students to feel their back teeth with their tongue. What is the chewing surface of your back teeth shaped like? What kind of diet do humans have?

7. Place the five animal specimens around the room. Do not tell the students which animals these are from - only that they are common to the prairie.

8. Divide students into groups.

9. Each group starts at one specimen and fills out their *Specimen Data Sheets* (page 52). After a few minutes at each specimen, rotate the groups. Repeat until each group has worked with each specimen.

10. Have each group talk about one specimen.

11. Discuss their findings.

12. Facilitate the "Peripheral Vision" activity for the students to determine their own peripheral vision.

13. Break the students into their five groups again. Assign each group a skull and have them measure/estimate the animal's scope of vision.

14. Compare the results between specimens and with humans.

15. Review binocular versus monocular vision. Binocular vision means good depth perception, but poor scope. Monocular vision means no depth perception, but excellent scope.

16. Have groups switch specimens. Ask each group to describe their specimen's nasal cavity. Share/discuss how each cavity benefits the specific animal. A short nasal cavity means good smelling and efficient breathing. A long, tapered nasal cavity means excellent smelling, sensitive to minute detail, and efficient breathing.

17. Review and solicit questions.

Additional Information

Searfos, Glenn. Skulls and Bones: a guide to the skeletal structures and behavior of North American mammals. Stackpole Books: Mechanicsburg, PA, 1995.

SPECIMEN DATA SHEET

Description of Teeth and Jaw

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Type of Vision --- monocular OR binocular

Description of the nasal cavity

_____
_____
_____
_____
_____
_____
_____

Do you think this animal was an herbivore, carnivore, or omnivore? Please explain why.

_____
_____
_____
_____
_____
_____
_____
_____
_____

COMMON SKULL ADAPTATIONS OF MAMMALS

	Carnivores	Herbivores	Omnivores
Dentition	Sharp points and serrated edges	Flats molrs and canines are usually not pointed	Combination
Jaw	Curves lower jaw	Long, tapered lower jaw	Combination
Nasal Cavity	Short and blunt OR short and narrow	Long and wide OR long and narrow	Combination
Orbits	Forward or slightly forward	Forward or sideways	Forward or slightly forward
Zygomatic Arches	Large	Small, except for rodents, which are large	Combination
Examples	Cats, weasels, skunks, badgers, and ferrets	Bison, deer, pronghorn, rodents	Humans, dogs, bears, racoons