Animal Teeth and Diet

Lesson Overview

Animal teeth are a perfect example of structure and function in nature. The shape and size of animal teeth are directly correlated to its specific type of diet. What are the characteristics of carnivore teeth? Herbivore teeth? Omnivore teeth? How are their teeth similar or different? How does the specific size and shape of teeth help these animals to consume their food? Students will investigate these questions and more in this lesson.

Objectives

- Observe and analyze the teeth of carnivores, herbivores, and omnivores
- Compare and contrast their teeth to discover similarities and differences
- Build models of carnivore and herbivore teeth
- Construct an argument with evidence that shows the relationship between teeth structure and function

Standards (NGSS and Common Core)

For state specific standards visit edu.zspace.com

Next Generation Science Standards

- Life Science - From Molecules to Organisms: Structures and Processes
  - 4-LS1-1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

Common Core Connections

- Language Arts
  - W.4.1 Write opinion pieces on topics or texts, supporting a point of view with reasons and information.
  - W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic.
  - SL.4.5 Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes.

- Mathematics
  - 4.G.A.3 Recognize the line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts.
Differentiation (Δ)
○ Group students heterogeneously to allow students with a strong command of the English language to assist in reading or interpreting questions
○ Give students a variety of presentation styles to choose from (using charts/graphs, PowerPoint, making 3D presentations, creating videos/movies, making posters)
○ Work as partners or in small groups (younger children could partner with older buddies)

Introduction
The teacher will tell the students to imagine their favorite animal in the wild. The teacher will start by asking the students about their animals' diets and whether the animals are carnivores, herbivores, or omnivores. The teacher will ask the students to consider how the animals' teeth might relate to the animals' diets.

Activity
Animal Teeth and Diet
This section will be completed in Studio.

Scene 1
Animals have specifically shaped teeth to help them eat their food.

Carnivores: Carnivores eat meat. They usually have long, sharp teeth to help them tear the flesh and bones of other animals. In particular, carnivores have sharp front incisors and long canine teeth.
  ○ Open the Model Gallery. Find models of other carnivores and add them to the scene.
  ○ Take a screenshot.

Scene 2
Herbivores: Herbivores eat plants. They usually have flat broad molars to grind tough vegetation. Many herbivores also have large front incisors to bite or tear away vegetation.
  ○ Find models of other herbivores and add them to the scene.
  ○ Take a screenshot.

Scene 3
Omnivores: Omnivores eat both plants and animals. What kind of teeth do you think these animals have?
  ○ Find models of other omnivores and add them to the scene.
  ○ Take a screenshot.
Scene 4

Humans: Would humans be considered herbivores, carnivores, or omnivores?

- Analyze the human teeth. Pay special attention to the shape of human’s incisors, canines, and molars.

Animal Research and Teeth Models

Students will work in pairs to conduct research about two different animals of their choice (one carnivore and one herbivore). Students will record information about these two animals’ teeth structure and diet on the Animal Teeth and Diet worksheet. Students will make 3D models of the herbivore and carnivore teeth using clay, Model Magic, Play-Doh, or another similar material. As a math extension, students will also identify the line of symmetry for both animals’ teeth.

Student Presentations

Students will give presentations to the class about their chosen herbivore and carnivore. Students will use their models as evidence of the correlation between the structure of animal teeth and their function for their diet.

Closing

Students will share what they liked about each other’s models and presentations.

Questions for Discussion

1. Based on your research, how is the structure of animal teeth related to its function?
   
   *Answers will vary. Sample Answer: Animals have teeth that are tailored to help them eat a specific diet. Carnivores eat meat and need long, sharp teeth to rip and tear the flesh and bones of their prey. Herbivores eat plants and need sharp front teeth for biting and flat back teeth for grinding up vegetation.*

2. Why do you think human teeth are not particularly long or sharp like those of wild animals?

   *Answers will vary. Sample Answer: The invention of fire (for cooking) and tools (for cutting, pounding, and grinding of food) have influenced the evolution of human teeth, specifically their reduction in size.*

Δ Investigate Further

Follow-up Activity: Students could complete the Predators and Prey lesson in Studio.

Extension Activity: Students could research the evolution of human teeth and make models that demonstrate the changes that have occurred over time. Students could share conclusions about why human teeth have evolved.

Extension Activity: Students could research the human digestive system.
Extension Activity: Students could research the digestive systems of one carnivore and one herbivore and look for similarities and differences.

**Answer Key**

Activity Questions Provided in Studio

1. Describe the structure and function of carnivore teeth.
   *Answers will vary. Sample Answer: Carnivores usually have sharp front incisors and long canine teeth to help rip and tear the flesh and bones of their animal prey.*

2. Describe the structure and function of herbivore teeth.
   *Answers will vary. Sample Answer: Herbivores usually have large front incisors and flat broad molars to bite and grind tough vegetation.*

3. Omnivores eat both plants and animals. What kind of teeth do you think these animals have?
   *Answers will vary. Sample Answer: Since omnivores eat both plants and animals, they usually have teeth that resemble carnivores.*

4. Would humans be considered herbivores, carnivores, or omnivores?
   *Answers will vary. Sample Answer: Humans would be omnivores because we eat both plants and animals.*
Animal Teeth and Diet
Complete this worksheet after completing the Animal Teeth and Diet activity in Studio.

Herbivore: ____________________________  Carnivore: ____________________________

Diet:
____________________________________
____________________________________
____________________________________

Detailed description of teeth:
____________________________________
____________________________________
____________________________________

Common Features

Drawing of Herbivore Teeth

Drawing of Carnivore Teeth

Detailed description of teeth:
____________________________________
____________________________________
____________________________________

Diet:
____________________________________
____________________________________
____________________________________