WHAT'S FOR DINNER?
DENTAL DETECTIVES

Description:

Through scientific observation of carnivore, herbivore, and omnivore skulls, students determine what types of foods animals eat to learn more about food chains and energy transfer in the urban ecosystem.

Objective:

- Participants will make scientific observations of animals and record them on data sheets.
- Participants will understand the biodiversity in their urban natural environment.

Standards:

All Grades
- LA.X.1.5 - Acquire new academic and content-specific grade-level vocabulary, relate to prior knowledge, and apply in new situations.
- LA.X.2.2 - Writing Modes: Students will write in multiple modes for a variety of purposes and audiences across disciplines.

Kindergarten
- SC.K.7.2 - Gather, analyze, and communicate evidence of interdependent relationships in ecosystems.
- SC.K.7.2.A - Use observations to describe patterns of what plants and animals (including humans) need to survive.

2nd Grade
- SC.2.7.2.C - Make observations of plants and animals to compare the diversity of life in different habitats. Assessment does not include specific animal and plant names in specific habitats.

3rd Grade
- SC.3.7.2.C - Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

5th Grade
- SC.5.8.2 - Gather and analyze data to communicate understanding of matter and energy in organisms and ecosystems.

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Materials:

- Coyote Skull Replica
- Red Fox Skull Replica
- Raccoon Skull Replica
- Opossum Skull Replica

- Squirrel Skull Replica
- Rabbit Skull Replica
- Student data sheets
- Writing utensils

Background info:

Animal skulls are built to support specific functions, including obtaining food, gathering sensory information, and protecting the brain from trauma. It is possible to understand an animal's dietary and social patterns based on the design of its skull.

There are four main kinds of teeth in mammals: incisors, canines, premolars, and molars.

Carnivores tend to have long canine teeth which are used to rip and tear meat. In addition, carnivores have sharp molars toward the back of the mouth, used to further rip and shred meat. Carnivores tend to have binocular vision, where their eyes are at the front of the head, which results in a smaller field of view, but allows for depth perception, needed to catch prey.

Herbivores tend to have flat premolars and molars, often with sharp ridges on the tops. Herbivores usually do not have canine teeth and their incisors are usually large so they can use them to snip off foliage from branches. Herbivores are often prey for other animals, so they generally have their eyes on the side of their head. This provides them with a wider field of view, so that they can detect predators earlier and have a chance to flee.

Omnivores usually have a variety of all kinds of teeth. Humans, opossums, and raccoons are omnivores, since they eat all kinds of food (both meat and plant material) they need all kinds of teeth. Generally omnivores have eyes on the front of their heads like carnivores.

Carnivore

Carnivores, such as members of the dog and cat families, generally have large, pointed incisors and canines that can be used to kill prey and rip or cut away pieces of flesh. The jagged premolars and molars crush and shred food.

Herbivore
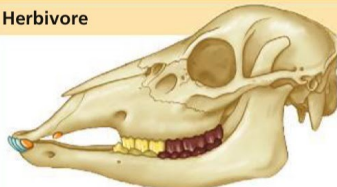
Herbivores, such as horses and deer, usually have premolars and molars with broad, ridged surfaces that grind tough plant material. The incisors and canines are generally modified for biting off pieces of vegetation. In some herbivores, canines are absent.

Omnivore
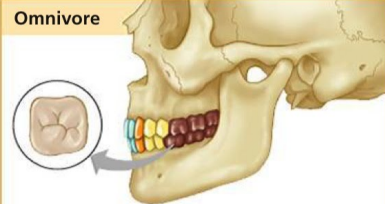
As omnivores, humans are adapted to eating both plants and meat. Adults have 32 teeth. From front to back along either side of the mouth are four bladelike incisors for biting, a pair of pointed canines for tearing, four premolars for grinding, and six molars for crushing (see inset, top view).

Key   Incisors   Canines   Premolars   Molars

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Keep Omaha Beautiful

Activity:

There are several options on how to organize this activity. Select one of the options described below which works best for your classroom and students. Ideally, students will have the opportunity to make detailed observations of 3 skulls – one carnivore, one omnivore, and one herbivore. However, it is possible to do this activity with each student or student group observing only a single skull and then sharing their work with other students.

- **Option A** – Students make detailed observations (drawings and answering questions) of 3 skulls. Students complete this activity in small groups (any size you determine). For this option, students will need to take turns with materials.

- **Option B** – Students make detailed observations (drawings and answering questions) of 1 skull. Break the students into 6 groups, each group has one skull to observe. After completing student sheets, each group presents their skull to the class. With this option, if you have 24 or fewer students, you can break your students into groups of 4 and do this activity as an entire class.

- **Option C** – The teacher shows the entire class all the skulls and points out the differences that show if the skull belonged to a carnivore, herbivore, or omnivore. Then students are broken into small groups and make detailed observations (drawings) of one skull, intentionally drawing the features pointed out by the teacher. This option is particularly good for younger learners.

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Activity:

- Skull replicas are fragile - please instruct students to be careful with them. However, they are intended to be handled (with care) for this activity. Skull replicas are not real – no animals were harmed to provide your class with these skulls. Each skull fits into a box that is marked with the species of the animal. Please be sure to return skulls to the appropriate box and wrap them carefully after their use.

- The skulls are marked with initials to provide the teacher with the ability to identify them after they are removed from their box. Please note: although we are listing Coyote and Red Fox as carnivores for this activity because they usually are, they are both actually omnivorous and will sometimes eat berries, fruit, and other vegetation when they cannot find meat.

  Carnivore:
  - C – Coyote
  - RF – Red Fox

  Omnivore:
  - O – Opossum
  - R – Raccoon

  Herbivore:
  - ECR – Eastern Cottontail Rabbit
  - G – Gray Squirrel

- Conduct a short discussion with students to help them understand the information on the first two pages of the student data sheet handout.

- Provide students with skulls (according to the option you select) and allow them to complete the student handout page on their own or in small groups.

- Discuss student observations

Assessment:

- Completed student data sheets
- Class discussion and/or small group presentations