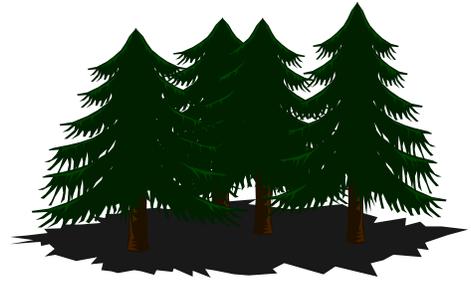

A Skull to Match



Objective

This activity provides the student with an introduction to the different types of mammal skulls and their varying types of teeth. The student will learn the many varieties, shapes and sizes of mammal skulls, how to apply tooth structure to feeding style/categories, and how to relate skull characteristics to mammal identification.

Materials

Each Mammal Kit has one large plastic bag labeled “A Skull to Match-Activity.” Within the bag are 5 individual plastic bags for a total of 5 activity groups per classroom. Each plastic bag contains 15 mammal skull cards-a laminated card with a picture of a mammal skull. There are also 15 individual identification cards with the name of each mammal skull. The names are: domestic dog, English bulldog, cougar, bobcat, mink, rabbit, beaver, opossum, skunk, raccoon, black bear, grizzly bear, common bat, mole and fruit bat. Finally, each plastic bag contains a total of 5 feeding category cards: herbivore, omnivore, carnivore, frugivore and insectivore.

Background Information

This activity can be as simple or complex as the teacher would like it to be. The more material that is conveyed in a prior classroom lecture, the easier the game. The teacher should be knowledgeable of the five mammal feeding styles: herbivore, carnivore, omnivore, frugivore and insectivore. S/he should also convey information about teeth structure and the four types of teeth: incisors, canines, premolars and molars (which can be simplified or detailed-see glossary for definitions). Each type of tooth provides a particular function - incisors are used for grooming, cropping, cutting and other functions. Canines are stabbing teeth (more exaggerated in carnivores) and are used for

Appropriate Grade Level: 6th-10th

Time Required: 30 minutes+

Curriculum Benchmarks: Life Science, Organisms: group or classify organisms based on a variety of characteristics.

Diversity/Interdependence: describe the relationship between characteristics of specific habitats and the organisms that live there. Unifying Concepts: diagram and explain a cycle. Identify interactions among parts of a system.

Activity Inventory: Five plastic bags per Kit, stored in a “A Skull to Match-Activity” large plastic bag. Each plastic bag contains 15 mammal skull cards (mounted and laminated), 15 identification cards (names of each individual skull-laminated), and 5 feeding category cards: herbivore, omnivore, carnivore, insectivore and frugivore.

tearing and shearing flesh. The tusks found in many mammals are usually modified canines. Some mammals, particularly herbivores, lack canines (beaver) and have a large gap, or diastema, between the incisors and the premolars. In other mammals, the canines are present, but poorly developed (some members of Insectivora). The cheekteeth contain the premolars and the molars. They tend to be high-crowned (hypsodont) in mammals with course diets, such as grazers, and low-crowned (brachyodont) in mammals with soft diets, such as frugivores and insectivores. In carnivores, the last upper premolar and the first lower molar combine to form the principal shearing teeth (the carnassials). Finally, the molars are used for chewing, and can be extremely variable in pattern. Molars can be three cusped or four cusped and have numerous different crown patterns. Bunodont, secodont, lophodont and selenodont are some of these patterns -see Mammal Terms Glossary for term definitions. Teeth are important tools for scientists, since the identity of a mammal and its feeding habits, along with its lifestyle and even habitat can be concluded from them. The dental formula is an extremely helpful tool in identifying mammals and is quit easy to learn. Refer to the mammal key for how to use this formula –this easy formula gets kids directly involved in the identifying process! If time permits, information on cranial structure and characters may also be taught (varying degrees of detail are possible). The three main cranial parts include the braincase, the rostrum (nasal bones-passageways) and the lower jaw. Information on cranial structure can be found in taxonomy books and numerous websites. Some helpful sites are: <http://www.lclark.edu/~clifton/landverts/labstuff/mamlab.htm>; <http://www.howe.k12.ok.us/~jimaskew/zomammal.htm>. The class should be presented with material about individual mammal species (the skull specimens found in the Kit), their relative sizes and the sizes of their skulls in relation and proportion to their bodies, for additional methods of identifying mammals.

Activity

To begin, divide the class into five separate groups. Give each group a plastic bag of the skull game materials. Have the students lay the skull cards, identification cards and feeding category cards out on the table. The students are to separate all of the feeding category cards and use them as headings. Next, the students will look at each individual card and do their best to decide what feeding category or “heading” the skull picture belongs under. They can simply line the cards under the feeding categories. This is where it is important for the students to look at teeth structure and use the information that the teacher previously provided about teeth structure, feeding styles, etc. Once they have separated the skulls into feeding categories, they can attempt to identify each of the skulls. This may not be easy and students may benefit more if actual skulls from the mammal kit are used as examples in a prior classroom lecture.

After the matching activity has been completed, have the students explain their results. This can either be done by the teacher holding an individual card and calling on students for the feeding category and the name of that skull. A class discussion of the group results can be formed in numerous different ways and should not be limited to these ideas. A review of the material learned should complete the activity.

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Assessment

Have the students write responses to the following questions: What are the five mammal feeding styles? Explain each one (i.e. Insectivores eat insects.”), and give at least two examples of mammals for each feeding style. What are the four types of teeth, and what functions are they adapted for? (i.e. “Incisors are used for grooming and cutting.”)

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