

Classifying Animals

Science

Primary Grades PreK–2

Purpose

This set of learning activities provides students with an experience in observing and classifying animals found at home and in zoos. As they increase vocabulary and critical-thinking skills, students will focus on the characteristics of animals, including adaptations.

Description

Most children have an affinity for animals as pets and imaginary creatures. Students begin by investigating the characteristics of their own pets as well as familiar ones in their neighborhood. They make a preliminary set of generalizations about the animals, thereby creating an initial classification system. Students then look at zoo animals, comparing their characteristics with the classification system developed. In the end, students are guided to the general scientific classification system.

Activities

PREPARATION

- ▶ Contact a local zoo to obtain resources for classroom use. Many zoos have kits of lesson plans, children's literature, and accompanying materials.
- ▶ Make arrangements for a field trip to the local zoo.
- ▶ Search the Web for sites depicting regional animals. Local zoos, humane societies, the SPCA, and animal parks may have Web sites and archives of materials for classroom use.
- ▶ Meet with the library media specialist to assist in planning. Determine available videos, software, and literature that will support the study of animals.

PROCEDURE

- 1 Students brainstorm all the pets in their homes and neighborhoods. List those pets on the board in writing, or with pictures, or both. Some students may be able to bring pictures of their pets to class. Create a chart based on the characteristics they describe. (Classifying by color is a typical first start that groups eventually abandon.) When the class has decided on a classification system, students record and illustrate the chart with example animals for each category.

SCIENCE STANDARDS	NETS PERFORMANCE INDICATORS GRADES PREK–2
*K–4 SCI A1, C1	1

* Science standards indicate grade levels (K–4, 5–8, and 9–12) in front of the actual standard(s) number (e.g., K–4 SCI A2, C3, E1).

- 2 VERTEBRATE INVESTIGATION: Obtain chicken bones that have been boiled, stripped, and cleaned. In small cooperative groups using skeletal drawings of a chicken, students attempt to identify the location of the bones they have been given. Have them focus on the legs (upper and lower), back and breast bones, wings, and ribs. (Head and feet bones are usually not provided with chickens bought in grocery stores.) Consider asking students to bring chicken bones to school for further identification. Discuss the purpose of the bone structure in the animal. Why are some bones thick or thin, short or long, curved or straight? Which bones seem to be missing? Point out the backbone and its structure. Tape the bones to cardboard or paper.
- 3 INVERTEBRATE INVESTIGATION: Using a shoebox lid, place a mealworm in the lid for observation (or place one on an overhead projector for observation using the light. However, be careful: The can becomes very hot). Using a spoon and card, have students control where the mealworm goes. How many legs does it have? How many feelers? What is on its tail end? How many body segments are there? Use a magnifying glass to observe how the mealworm moves. The focus of this activity is the structure and lack of backbone in the mealworm. Among the many questions to ask while observing mealworms are:
 - ▶ Does it move best on rough or smooth paper?
 - ▶ After placing more mealworms in the box, how can students tell the difference between them?
 - ▶ What food do mealworms like best? Cornflakes? Flour? Bread? Crackers?
 - ▶ Do mealworms like moisture? How can students find out?
 - ▶ Do mealworms like cold or warm places?
 - ▶ Do they like light or dark?
- 4 Ask students to bring a few of their favorite stuffed animals to school (be sure they are clearly labeled with owner's name). Discuss where students think the animals should be placed in their classification system. Differentiate between imaginary or stuffed animals and real animals. Use the Web sites for stuffed animals (see Tools and Resources) to look at the differences between real animals and stuffed animals. List differences between real and stuffed animals in the general information on the classification chart. (It is important that very young children recognize the difference between the two before proceeding with the lesson sequence.)

SCIENCE STANDARDS	NETS PERFORMANCE INDICATORS GRADES PREK–2
K–4 SCI A1, A2, C1	
K–4 SCI C1	1, 3
K–4 SCI A1, A2, C1, C3	10

- 5 Connect with another classroom, either in the school or remotely through a keypals-matching project. Poll the other class's students about the types of animals they have in their homes and neighborhoods. Have the class place these new animals in their classification system. What does not fit? Why? Can the class explain why some categories seem to be very full? Alter the classification system, as needed.
- 6 Students brainstorm about animals they are aware of but do not have as pets. These animals might be those they have seen on television or in movies, and are too big or too small to keep as pets. Classify these animals according to the class's classification system. Use the Web sites to examine pictures of animals. Do additional alterations in the system need to be made? (By this time, students should be able to classify vertebrates as mammals, birds, reptiles, amphibians, or fishes.)
- 7 Use zoo Web sites or CD-ROMs on animals to examine more animals. As pictures of animals are obtained, students classify the animals, providing justification for why each animal fits in a given category. Students record their favorite new animal in each category in a science journal.
- 8 As students discuss the various characteristics of animals, consider inserting a minilesson on ways in which animals adapt to their environments. This is an important characteristic of each animal and one that should be an integral part of the upcoming zoo visit. Revisit the familiar animals that are on the classification list. Discuss adaptation by looking at commonalties and differences.
- 9 Plan a visit to the local zoo. As students visit the various exhibits, have them classify and record the animals on their chart. For younger children, this can be done with pictures or symbols. Take digital pictures of animals for the classification chart and as a record of the zoo visit.
Note: Some zoos are initiating electronic connection programs between school-aged children and scientists in the field. Ask the local zoo about such programs.
- 10 Assign students to groups by classification area:
 - ▶ Animals with backbones: mammals, birds, reptiles, amphibians, and fishes
 - ▶ Animals without backbones: echinoderms (spiny skins), arthropods (jointed legs), mollusks (soft bodies), corals, and sponges
 - ▶ With the assistance of an adult or cross-age mentor, have each group prepare a presentation on its category. The presentation should include the characteristics of the category, animals that fit the category (in various sizes), and selected animals that do not fit the category (and why).

SCIENCE STANDARDS	NETS PERFORMANCE INDICATORS GRADES PREK–2
K–4 SCI C1	1, 3, 10
K–4 SCI C1	10
K–4 SCI C1	10
K–4 SCI C1, C3	9, 10
K–4 SCI A1, A2, C1, C3	
2, 8	

Tools and Resources

SOFTWARE:

- ▶ Word-processing, multimedia-authoring, San Diego Zoo Presents: The Animals! (Mindscape)

WEB SITES:

Denver Zoo:

www.denverzoo.org/

Philadelphia Zoo:

www.phillyzoo.org/

Cleveland Metroparks Zoo:

www.clemetzoo.com/

San Diego Zoo:

www.sandiegozoo.org/

Los Angeles Zoo:

www.lazoo.org/

The Electronic Zoo:

<http://netvet.wustl.edu/e-zoo.htm>

- ▶ Related lesson sites:

Dakin:

www.applause.com/dakin.htm

Beanie Babies®:

www.beaniebabies.com/

How Big Was That Animal?:

www.fmnh.org/education/LOTguide3.htm

- ▶ For finding keypals/project partners:

epals Classroom Exchange:

www.epals.com/

Global Schoolhouse:

www.gsn.org/

Intercultural E-Mail Classroom Connections:

www.stolaf.edu/network/iecc/

Global Rigby:

www.reedbooks.com.au/rigby/global/keypal.html

Web66:

web66.coled.umn.edu/

Kids' Space Connection:

www.ks-connection.org/

Assessment

Given a set of cards that each depict an animal, students should be able to classify each animal as invertebrate or vertebrate (and within one sub-area of vertebrate).

Students should be able to use the scientific vocabulary appropriate to the grade level in describing animals.

Students should be able to describe some of the adaptive characteristics of specified animals, making conjectures about the adaptive behaviors of unfamiliar animals.

Multimedia presentations should be evaluated both on meeting the content standards as well as for clarity of presentation.

Credits

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Comments

Classification of animals is a skill that even PreK students are successful at when presented in multiple ways. I have found that the younger the children, the more likely they will be to focus on attributes that are common to many animals, making it difficult to separate the animals into categories. Once it becomes clear to them that attributes such as size and softness are not helpful, they seem to arrive easily at the vertebrate classifications. Introducing invertebrates has been difficult. The easiest have been worms and arthropods.

The technology has really made a difference in connecting classroom learning about classification to the zoo experience with exotic animals. This has been especially true as we have extended the lesson sequence into issues of adaptation. Being able to see the images of animals they visit, both in their zoo habitat over the Internet as well as in natural settings, has helped focus students' attention and increase their retention. Even with PreK students, the recording journal hung around their neck made the visit "more scientific" and valuable.

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