No Bones About It  
Grades 3-5  

PROGRAM OVERVIEW  
Welcome to Cosley Zoo! This class will give your students an overview of the differences between vertebrates and invertebrates. No Bones About It is appropriate both as an introduction to vertebrates and invertebrates and as a review for those who have already studied this material in class. During the class, we will meet live animals which will help to demonstrate the characteristics of these different animal groups.

Program Objectives:  
- to review the differences between vertebrates and invertebrates  
- to discuss the functions of a backbone  
- to view live examples of a vertebrate and invertebrate

This class corresponds with the following Illinois learning standards for late elementary students: 4.A.2a, 4.A.2b, 4.B.2b, 12.B.2b, 24.A.2b

PRE-VISIT INFORMATION  
Here are some suggested activities for your class to complete before your visit to Cosley Zoo. Many of these activities correspond with Illinois learning standards, which are listed after the appropriate activities.

1. Purchase some owl pellets and let your students dissect them individually or in groups. Ask them to use the bones they find inside to try and reconstruct the skeleton of the animal that was eaten by the owl. If you are unable to purchase real owl pellets, there are some virtual dissections available at [http://www.kidwings.com/owlpellets/index.htm](http://www.kidwings.com/owlpellets/index.htm). There is a key to help you identify the bones you find at [http://www.edb.utexas.edu/faculty/jackson/pdf/Bone_Chart.pdf](http://www.edb.utexas.edu/faculty/jackson/pdf/Bone_Chart.pdf). When your students have completed the activity, let them take turns telling the class what animal skeleton they think is inside their pellet, and what evidence they have to support their guess. (4.B.2a, 4.B.2b, 5.C.2b, 11.A.2c, 12.B.2a)

2. Tell your students to imagine that they were able to live without bones. Ask them to write a paragraph about how their lives would be different if they had no bones in their bodies. (3.A.2, 3.B.2c, 3.C.2a)

3. Direct your students to one of the following websites, where they can play educational games related to animal bones and skeletons. (12.B.2b)
   - [http://www.bbc.co.uk/nature/animals/mammals/challenges/flash/maker.shtml](http://www.bbc.co.uk/nature/animals/mammals/challenges/flash/maker.shtml) Put animal skeletons back together while learning how different types of bones are adapted for different functions.
   - [http://www.childrensmuseum.org/special_exhibits/bones/kids_mazeGame.htm](http://www.childrensmuseum.org/special_exhibits/bones/kids_mazeGame.htm) “Boney or Boneless” is a quiz about vertebrates and invertebrates

4. Divide your class into small groups and give each group a copy of the “Animal Sorting” worksheet. Give each group 5 minutes to figure out how many ways they can sort the animals into groups based on common characteristics (body covering, number of legs, habitat, etc.). When time is up, have them share their results. If you have not yet introduced the topic of vertebrates and invertebrates, this activity might be a good segue into that discussion. (12.B.2b)
POST-VISIT INFORMATION
The following post-visit activities will help you to extend your visit to Cosley Zoo. Corresponding learning standards are listed after each activity.

1. Distribute the “Backyard Animal Walk” worksheets to your students. They will use the worksheets to record information about vertebrates and invertebrates that they find in nature. (6.B.2, 6.C.2a, 10.A.2a, 10.A.2c, 10.B.2b, 10.B.2d)

2. Make pasta skeletons for a fun art project! Provide the class with a variety of uncooked pasta shapes. Look up pictures of different animal skeletons in books or on the internet, and recreate them by gluing the dried pasta shapes onto black construction paper. (26.B.2d)

3. Distribute the “World of Invertebrates” worksheet, which asks each student to research a non-insect invertebrate. Have the students share the results of their research with the class to expose them to the diverse types of invertebrates in the world (1.B.2a, 4.B.2a, 5.A.2b, 5.B.2b, 5.C.2a, 5.C.2b)

4. Bring some live earthworms into class so your students can observe how they move. Put the worms on damp paper towels or in a small amount of dirt and watch their movement. Distribute the “Earthworm Observations” worksheet and ask the students to complete the listed activities. Remind your students that earthworms are living things and should be handled gently. When not directly observing their worms, they should keep them covered with damp paper towels to keep the worms from drying out (1.B.2a, 5.A.2a, 7.A.2a, 11.B.2a, 11.B.2b, 12.B.2b)

If you have questions or comments about your visit to Cosley Zoo, please share them with us. Call 630-665-5534 or send them to:

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