

ArtReach Curricular Connections & Extensions (with State Standards)

Birds: Nature and Symbolism

Math

Measurement and Data

- Set up a permanent bird feeding station at school. Keep phenological records on a chart and, after a period of time, compare recent records with preceding years. Consider the best form to represent the data (bar graph, line graph, frequency table, etc.)
- Make schoolyard bird observation charts with date/time, species, quantity, and observations. An example lesson plan is provided here:
<http://teresacoppens.hubpages.com/hub/Bird-Behaviour-at-Bird-Feeders-Lesson-Plan-for-Elementary-Students>
- Use birds as an inspiration for building math skills
 - Number of one kind of bird/total number of birds; number birds/area; number of birds/food source; number of birds/trees; number of birds to water sources
 - Volume: given nest shape and size, how many eggs can fit?
 - Population estimates
 - Proportion: wing length to body weight, beak size to body size

Construction/Art

VA:Cr1.1 Generate and conceptualize artistic ideas and work.

Enduring Understanding: Creativity and innovative thinking are essential life skills that can be developed.

VA:Cr2.1 Organize and develop artistic ideas and work.

Enduring Understanding: Artists and designers experiment with forms, structures, materials, media, and art-making approaches.

- Create bird feeders using a variety of materials. Create a bird habitat or garden. Consider giving your feeders to nursing homes and children's homes.
 - Bottle Bird Feeder – Cut a large rectangle from both sides of a large, plastic bleach bottle or a 4L milk jug. Fill the bottom with birdseed. Tie string through the handle and around the neck of the bottle. Hang outside.
 - Milk Carton Bird Feeder – Cut windows from the opposite sides of a milk carton leaving 2" at the bottom. To make a perch for the bird, place a pencil through the sides of the carton at the bottom. Punch a hole in the top. Tie string through hole and make loop. Paint if you would like. When paint is dry, place birdseed in the bottom of carton. Hang outside

- Pine Cone Bird Feeder – Tie a piece of string to a pine cone and form a loop with the remaining string. Roll tips of pine one in peanut butter or honey. When covered, roll the pine one in some birdseed. Cover it with plastic wrap if children are going to take the bird feeder home. Hang outside.
 - Doughnut Bird Feeder – Punch a tiny hole in the center of two plastic lids. Place a doughnut in between the lids. Tie a knot in one end of a piece of string. Thread other end through lids and doughnut. Tie the loose end of the string to a tree.
 - Potato Chip Can Bird Feeder – Cut two triangular-shaped holes in the opposite sides of a potato chip can. Make bottom sides of the triangles parallel to the bottom and 1” from the bottom of can. Punch two holes in the top of the can on the opposite sides. Lace string through the holes. Tie string in a loop. Place birdseed in bottom of can. Hang outside.
- Provide students with crayons, markers and paper cut into squares. Show students how to make an origami bird – duck or crane, etc. Have students take turns writing the steps on the board for the class to follow again later. Ask students to make as many as they wish during the class period, leaving enough time to decorate with the crayons or markers.

Environment

ESS: Earth and Human Activity

- Provide year-round water sources for birds. Make sure your containers are scrubbed and refilled each day to reduce chances of bacterial growth.
- Place nesting material outdoors such as short pieces of yarn (6 inches or less), hair or grass clippings.
- Construct life-sized silhouettes of birds of prey and affix them to windows. Birds often fly into windows because the reflection of trees and clouds makes windows appear to be openings in the walls. This is an excellent way for students to learn about the actual sizes of these formidable birds.
- Discuss the effect of pollution on birds. Obtain one large bowl, one measuring cup, water, cooking oil, different dishwashing detergents, paper towels or a piece of cloth, sponges, string. Have students divide into groups of three (or as class size logically permits). Each group will do the following: Fill half of the bowl with water. Measure $\frac{1}{4}$ cup of oil and pour into the bowl of water. Gently shake the bowl to create ‘waves.’ Did the oil and the water mix? The first group should try to clean up the oil using paper towel or cloth. The second group should use string to make a border around the oil and try to drag the oil to one side of the bowl. The third group should use the sponge to try to soak up the oil. The fourth group should try to clean up the oil with each kind of detergent. Have students discuss some things they can do to reduce pollution. As an extension, introduce some feathers into the oil and discuss oiled birds and how they can be cleaned.

Language Arts

CCRA.R.4: Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.

CCRA.R.1: Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

CCRA.W.2 Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

CCRA.W.3: Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

- Learn new vocabulary words related to birds: thermoregulation, incubation, dehydrating, shaft, contour feather, vane, molting, preening, barbs, barbules, cavity, warm-blooded, camouflaged, metabolic rate, down feather, calcium carbonate. Create a space where students can post terms and phrases and draw attention to new words. Possible topics include: identification and nomenclature, territory, courtship, nest-building, breeding, plumage (molts), seasonal movement, bird and human interactions (urban, pollinators, agriculture).
- Write letters to ornithologists, gardeners, companies, etc., to find out more information. Present new information in the form of a radio show, journal article, newspaper, letter to the editor or a web site. Researching about a bird can lead to writing a children's story, poem, or creating a puppet show based on factual research.
- What are students seeing in the media about birds? Look in newspapers, television, the radio, and internet. Create a bulletin board where students can post their findings.
- Write a story or develop a journal where the author is a migrating bird. Include illustrations. Some suggested point to include could be:
 - The urge to fly
 - Numbers of birds preparing for migration; mostly young, inexperienced flyers that may not complete the migration
 - Eating like crazy to increase fat reserves
 - Waiting for proper weather (low pressure – rain and cold) to head south
 - Losses of flock before heading south due to predation, starvation, poisons, etc.
 - Cruising at heights around 4,000 feet and appearing on airport radar screens
 - Flying at speeds up to 30 mph and distances of 270 miles per day
 - Reviewing a map and selecting resting locations that include food and cover
 - Hazards encountered during flight such as power lines and ice storms

- Arrival on the winter grounds; where; when; losses occurring due to starvation, loss of habitat, predation (animals) and hunting (man)

Science

LS: Ecosystems

LS: Biological Adaptation

ESS: Earth and Human Activity

- Conduct a visual exercise to compare and contrast two birds. Using a Venn Diagram, note shared features in the overlapping section and unique features of each bird in the non-overlapping sections of the circles.
- Practice scientific observation skills with your students. Take them outside into the schoolyard or on a bird watching walk or hike. Adapt the material on this website to your area and give each student a bird observation chart http://www.blm.gov/or/resources/recreation/tablerock/files/Feathered_Friends.pdf
- Learn about the classifications and families of birds. Using field guides, show how birds are split into families based on physical characteristics. The most 'primitive' birds are depicted first in the books; ducks are more primitive than owls, which are more primitive than sparrows.
- Have students classify and sort the birds commonly seen on the school ground. Discuss similarities and differences of the birds such as habitat needs and how they obtain food.

Research

CCRW.7: Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

- Wildlife populations are valuable for a variety of reasons. Select a bird species and research and discuss its values in the following categories: cultural, ecological, economic, educational, scientific, historical, recreational, aesthetic, symbolic, intrinsic and ethical.
- Invite speakers from the Peregrine Fund, MK Nature Center or Zoo Boise to discuss birds and birding. Ask for a banding demonstration.
- Read about the artist John James Audubon (1785-1851) and how he chronicled the birds of North America in his paintings and lithographs. Research other famous ornithologists and what contributions they have made: Alexander Wilson (1766-1813), Cordelia Stanwood (1865-1958).
- Create a survey to find out about people's attitudes toward birds. Survey students, parents and neighbors. Share your findings in the school newspaper.