Animals I

Fur, Fins, Feathers, and More

Teacher's Guide

MESS

Marvelous Explorations through Science and Stories

This Teacher's Guide was developed by the
Center for Informal Science Education at the
Florida Museum of Natural History/University of Florida under
Innovation and Improvement Project Grant #90YD0206 from the
U.S. Department of Health and Human Services,
Administration for Children and Families, Office of Head Start.

This document is in the public domain and may be freely reproduced.

Animals I

Table of Contents

		Page
Teacher Background Information		1
Materials List		8
Experiences		
1	Animals, Animals	12
2	Fur and Hair	14
3	Animal Babies	16
4	Animal Communication	18
5	Birds Have Feathers	20
6	Birds Hatch from Eggs	22
7	Birds Have Beaks	24
8	Bird Songs	26
9	What Is a Reptile?	28
10	Snakes	30
11	Life Cycle of the Frog	32
12	Frog Songs	34
13	What Is a Fish?	36
14	How Do Animals Move?	38
15	Animal Defenses	40
16	Animal Homes and Habitats	42
Take-Home Kit Information/Experience Card		44
Recommended Books		46
Head Start Domains and Indicators		69

Animals I

Teacher Background Information

What is the focus of this guide?

The focus of this guide is on the animals that are most familiar to us: mammals, birds, reptiles, amphibians, and fish.

What science concepts are covered in this guide?

- Animals are living things that need food, water, air, and shelter to survive.
- There are many different kinds of animals.
- Animals have distinctive features that help us identify them.
- Animals have adaptations that help them survive.
- During their life cycles, animals grow and change in predictable ways.

How did you pick the particular animals in this guide?

Scientists classify animals as either **vertebrates** or **invertebrates**. Vertebrates have an internal backbone, while invertebrates do not. All the animals in this Kit are vertebrates. Scientists categorize vertebrates into different classes or groups based on physical and genetic characteristics. These groups include mammals, birds, reptiles, amphibians, and fish.

Mammals

Dogs, cats, and the other animals that young children tend to be most familiar with are **mammals**. Most mammals give birth to live young and nurse their young with milk produced by the mother. At birth, mammal young resemble their parents. Young mammals usually need care for a long time after they are born. One or both parents provide this care. Some mammals such as lions and elephants live in groups and are cared for by other adults in the group in addition to the parents.

Mammals also generate heat internally and maintain a near constant body temperature regardless of environmental conditions. All mammals have hair or fur which protects them from the elements. It also helps regulate body temperature. Mammals that live in cold climates tend to have thicker fur than those that live in warm climates. The fur of mammals also functions as **camouflage** and allows mammals to hide from **predators**.

Animals I

Mammals communicate by **vocalizing** or making other sounds. Mammals also communicate through movement and behavior (e.g., wagging tails).

The information that mammals communicate varies from species to species. They may communicate to establish territories, attract mates, startle predators, or keep track of others in their group.

Mammals have **adaptations** that help in movement. A flexible spine allows them to leap. Climbing mammals have long, flexible fingers and toes that can grasp vines and branches. Running mammals have long limbs that absorb shock. Swimming mammals have flippers, and digging mammals have strong claws.

Birds

Birds are the only animals that have feathers. All birds also lay eggs, have beaks or bills instead of teeth, and generate their own body heat.

Bird feathers come in many different shapes and colors. Feathers serve a variety of purposes. Down feathers, the tiny fluffy feathers closest to the body, provide warmth and insulation. A feather's color and markings help a bird blend in with its surroundings for protection from predators. Feathers also play a role in mating. Male birds tend to have more vibrantly colored feathers to attract females. Feathers are essential for flight.

Beaks also come in many sizes and shapes. The beaks of birds are adapted for their specific diets. For example, the scoop-shaped beak of the pelican allows it to scoop up fish from the water. The hummingbird has a small needle-like beak to suck the nectar out of flowers. Other birds, such as robins, use their sensitive lever-shaped beaks to feel in the ground for worms and insects.

Birds communicate through vocalizations and body language. Bird vocalizations range from short, simple calls to long, complex songs. Each bird species has a characteristic song, but the song varies by age, sex, geographic location, and time of year. Bird songs are used to attract mates, scare off predators, and establish territories. Birds also communicate through body posture, feather fluffing, and movements.

Reptiles

Snakes, turtles, tortoises, lizards, alligators, and crocodiles are all **reptiles.** Most reptiles lay eggs. Some, such as the box turtle, lay their eggs in carefully prepared nests and then abandon them. Others, such as alligators, guard their eggs and care for the young hatchlings.

Some snakes and lizards give birth to live young. Whether they hatch from an egg or are born live, young reptiles look like smaller versions of their parents.

Reptiles cannot regulate their body temperature from within. Their temperatures are controlled primarily by the environment.

All reptiles have scales. The scales may be rough or smooth.

Amphibians

Amphibians include frogs, toads, and salamanders. Amphibians live part of their life in the water and part on land. A young frog, for example, lives in the water as a **tadpole** and breathes through **gills**. As it grows, it develops legs and lungs and lives on land at least part of the time. The physical transformation that occurs as a tadpole turns into a frog is called **metamorphosis**. As adults, most amphibians live both on land and in water.

Like reptiles, amphibians cannot regulate their own body temperature. They depend on sunlight to be warm. To cool down, amphibians seek shade or shelter in underground burrows.

Most amphibians have soft, moist skin and live in moist places or near water to keep their bodies from drying out. Because they have no fur, feathers, or scales, amphibians are especially vulnerable to predators. Many amphibians have skin colors and markings that help camouflage them in their surroundings. Others have bright colors that suggest to predators that they may be poisonous, even if they are not.

Animals I

Fish

Fish come in an amazing variety of sizes, shapes, and colors. All fish have gills for breathing underwater, use **fins** to help them swim, and depend on the environment to regulate body temperature (their temperature is usually the same temperature of the water they live in).

Most fish can only live in a particular type of water. For example, a fish that lives in the salt water of the ocean would not be able to live in the fresh water of a lake. Like other living things, fish breathe oxygen. Rather than getting oxygen from the air around them, they absorb oxygen from the water around them through the gills.

There are more species of fish than all the other groups of vertebrates combined. Eels, sharks, and seahorses are all members of the fish family.

What steps should I take to ensure that our exploration of animals is safe and productive?

- Before you begin, talk with families to learn about their children's experience with animals, potential allergies and fears, as well as attitudes of other family members toward different animals. (Please note that some cultural communities revere or strenuously avoid specific animals.) Depending on local regulations, families may be able to provide small pets or other animals for classroom visits.

- Survey your outdoor area for places where you can view animals such squirrels, lizards, and birds. Identify hazards that should be avoided.

- Establish a set of rules for children to follow when they observe and interact with animals. Insist that children ask an adult before touching any animal. Teach the children how to use tools such as specimen viewers and magnifying lenses so that they can collect and examine small animals without harming the animals or themselves.

- Reflect on your own attitudes toward specific animals. Children readily pick up the attitudes of the adults around them. Try not to let your own likes and dislikes influence theirs. If you are very uncomfortable around specific animals, help

children learn to appreciate them from a safe distance. Just remember that the most important thing you can do is instill curiosity and appreciation of the nature that surrounds us.

You may wish to bring live animals into your classroom for either brief visits or as permanent “class pets.” There are several issues to consider before doing so. First, be sure you are in compliance with local ordinances and policies regulating your childcare setting. Then, take time to reflect on other important considerations such as whether you will be able to protect the animals from exposure to chemical cleaners and insecticides, and if it will be possible to find a suitable home for the animals when the time comes. We have inserted a ⚠ near experiences that potentially involve live animals to remind you to take the necessary steps. The url below links to the Position Statement of the National Science Teachers Association on animals in the classroom.

http://www.nsta.org/about/positions/animals.aspx

This guide provides only a brief introduction to animals. A vast amount of information is available about animals in books and on the internet. Two valuable and user-friendly educational websites are:

National Geographic
http://animals.nationalgeographic.com/animals

eNature.com
http://www.enature.com/

Websites associated with zoos, aquariums, museums, federal and state Fish and Game Commissions, as well as organizations devoted to specific animals (e.g., Herpetology Society) also are sources of accurate information.

Animals I

Teacher Vocabulary

adaptation – a characteristic of a plant or animal that helps it survive in its environment

amphibian – a vertebrate that undergoes metamorphosis; body temperature is determined by the environment

bird – an egg-laying vertebrate with feathers and wings; can regulate its own body temperature

camouflage – the way animals blend in with their surroundings

fin – an appendage extending from the body of a fish or other aquatic animal; used for propelling, steering, or balancing the body in the water

fish – a vertebrate that lives in water and breathes oxygen through gills; body temperature is determined by the environment

gill – an organ used to breathe underwater

habitat – the location where a living thing is normally found that provides for all of the living thing's needs (e.g., food, shelter, air, water)

invertebrate – an animal that does not have a backbone

mammal – a vertebrate that has hair or fur and lives on its mother's milk when young; can regulate its own body temperature

metamorphosis – a process in which an animal develops marked by major physical changes in shape and structure

predator – an animal that eats another animal

reptile – a vertebrate with dry, scaly skin; body temperature is determined by the environment; most hatch from eggs

scales – the overlapping, flat plates that form a protective outer covering on fish, reptiles, and bird legs

vertebrate – an animal that has a backbone

vocalize – to produce sound using the vocal chords

MESS® Materials for Core and Center Experiences

Materials	Books
Experience 1: Animals, Animals	
animal photos and illustrations clipboard paper and pencil camera photos of animals	*Is It Alive? by Marcia S. Freeman* *Each Living Thing* by Joanne Ryder *Animals Animals* by Eric Carle *Zoopa: An Animal Alphabet* by Gianna Marino *Let's Find It!* by Katya Arnold *The Water Hole* by Graeme Base *Amazing Animals* by Ingrid and Dieter Schubert
Experience 2: Fur and Hair	
samples of animal fur animal photos magnifying tools	*Crinkleroot's 25 Mammals Every Child Should Know by Jim Arnosky* *Nuts to You!* by Lois Ehlert *Bat Loves the Night* by Nicola Davies *Very Hairy Bear* by Alice Schertle *Hello, Bumblebee Bat* by Darrin Lunde
Experience 3: Animal Babies	
animal baby photos or illustrations adult and baby animal models or photos animal babies puzzles or games	*Animals and Their Babies* by Melvin Berger *Carry Me! Animal Babies on the Move* by Susan Srockdale *Safe, Warm, and Snug* by Stephen R. Swinburne *Crocodile Listens* by April Pulley Sayre *Mothers and Babies* by World Wildlife Fund *Animal Dads* by Sneed B. Collard *Ocean Babies* by Deborah Lee Rose
Experience 4: Animal Communication	
animal models (optional) recordings of animal sounds photos or illustrations of animals that correspond to animal sounds tape or CD player or computer	*Hello, Hello* by Miriam Schlein *Mice Squeak, We Speak* by Tomie dePaola *Polar Bear, Polar Bear, What Do You Hear?* by Bill Martin *Bat Loves the Night* by Nicola Davies *Hello, Bumblebee Bat* by Darrin Lunde *Barnyard Banter* by Denise Fleming

Materials	Books
Experience 5: Birds Have Feathers	
samples of animal fur assortment of large and small feathers (e.g., ostrich, peacock, parrot) magnifying tools photos of a birds that correspond to the feathers	*Quick, Quiet, and Feathered: What Am I?* by Moira Butterfield *Feathers for Lunch* by Lois Ehlert *Birds* by Kevin Henkes *About Birds* by Cathryn Sill
Experience 6: Birds Hatch from Eggs	
assortment of bird eggs or egg replicas feathers photos of birds that correspond to the eggs or egg replicas magnifying tools	*About Birds* by Cathryn Sill *Whoo-oo Is it?* by Megan McDonald *Peep!* by Kevin Luthardt *Condor's Egg* by Jonathan London *Guess What is Growing Inside This Egg?* by Mia Posada *Chickens Aren't the Only Ones* by Ruth Heller
Experience 7: Bird Have Beaks	
objects to represent food eyedroppers ladles tongs photos of birds with different kinds of beaks such as a pelican, hummingbird, and sandpiper	*Unbeatable Beaks* by Stephen R. Swinburne *Beaks!* by Sneed B. Collard *Vulture View* by April Pulley Sayre *Birds to A to Z* by Terri DeGelle
Experience 8: Bird Songs	
Identiflyer™ and Identiflyer™ bird song card or recordings of bird songs and CD or tape player bird photos that correspond to the bird songs	*About Birds* by Cathryn Sill *Mice Squeak, We Speak* by Tomie dePaola

Materials	Books
Experience 9: What Is a Reptile? live reptiles or models and photos of a variety of reptiles (e.g., snake, lizard, turtle)	*About Reptiles* by Cathryn Sill *Turtle, Turtle, Watch Out!* by April Pulley Sayre *Verdi* by Janell Cannon *Extraordinary Egg* by Leo Lionni *Guji Guji* by Chih-Yuan Chen *Crocodile Listens* by April Pulley Sayre *Turtle Splash! Countdown at the Pond* by Cathryn Falwell *Chickens Aren't the Only Ones* by Ruth Heller
Experience 10: Snakes snake model magnifying tools snake skin shed snake puppets made from socks	*About Reptiles* by Cathryn Sill *Hide and Snake* by Keith Baker *Snakes and Lizards* by Ellen Catala
Experience 11: Life Cycle of the Frog frog life cycle poster, puzzle, model or card set frog photos	*Tale of a Tadpole* by Karen Wallace *Growing Frogs* by Vivian French *Tadpoles* by Betsy James *Frogs* by Gail Gibbons *Frogs* by Nic Bishop
Experience 12: Frog Songs Identiflyer™ and Identiflyer™ frog sound card or recordings of frog sounds and CD or tape player frog photos that correspond to the frog recordings	*Frogs Sing Songs* by Yvonne Winer *March Music* by Marianne Berkes *Mice Squeak, We Speak* by Tomie dePaola
Experience 13: What Is a Fish? fish photos fish models simple poster or illustration showing the parts of a fish	*About Fish* by Cathryn Sill *Fish Faces* by Norbert Wu *Fabulous Fishes* by Susan Stockdale *Swimmy* by Leo Lionni *Not Norman* by Kelly Bennett *Ocean Babies* by Deborah Lee Rose *Mr. Seahorse* by Eric Carle *Fish Is Fish* by Leo Lionni

Materials	Books
Experience 14: How Do Animals Move?	
models and/or photos of a variety of animals	*Move!* by Steve Jenkins and Robin Page *Elephants Swim* by Linda Capus Riley *Slither, Swoop, Swing* by Alex Ayliffe *Scoot* by Cathryn Falwall *From Head to Toe* by Eric Carle *Whose Feet* by Nina Hess
Experience 15: Animal Defenses	
turtle shell tortoise puppet models or photos of a variety of animals (e.g., snake, lizard, owl) samples of animal fur feathers	*Red Eyes or Blue Feathers* by Patricia M. Stockland *Animals in Hiding* by Melvin Berger *Swim for Cover!* by Sue Vyner *Nature's Paintbrush* by Susan Stockdale *How to Hide a Meadow Frog/Octopus* by Ruth Heller *Red-Eyed Tree Frog* by Joy Cowley *Lost in the Woods* by Carol R. Sams II and Jean Stoick
Experience 16: Animal Homes	
class animal log animal models or photos photos of birds animal homes matching cards	*About Habitats* by Cathryn Sill *I Took a Walk* by Henry Cole *Around the Pond/In the Garden/In the Snow/In the Woods* by Lindsay Barrett George *Bird, Butterfly, Eel* by James Prosek *Birds Build Nests* by Yvonne Winer *The Salamander Room* by Anne Mazer *Baby Alligator* by Ginjer Clarke *Around One Cactus/In One Tidepool/ Near One Cattail/Under One Rock* by Anthony D. Fredericks *Frog in a Bog* by John Himmelman

Experience 1

Animals, Animals

Science Concept

Animals are living things that need food, water, air, and shelter to survive.

There are many different kinds of animals in the world.

Aim

Children will learn that many different animals live on Earth.

Materials

animal photos or illustrations
clipboard
paper and pencil
camera
animals

Books

Is It Alive? by Marcia S. Freeman
Each Living Thing by Joanne Ryder
Animals Animals by Eric Carle
Zoopa: An Animal Alphabet by Gianna Marino
Let's Find It! by Katya Arnold
The Water Hole by Graeme Base
Amazing Animals by Ingrid and Dieter Schubert

Vocabulary

alive
animal

Approach

- Begin by showing the children pictures of animals in a book or magazine. Help the children identify the animals. Review the characteristics of living things (they can move, grow, and reproduce), and what animals need to survive.
- Ask the children if they have seen any animals that day. Remind the children about the pets they may have at home or any animals that you may have in the classroom.
- Explain that you are going to go outdoors to look for animals. Encourage the children to predict what animals they might see: *Do you think we will see any animals outside? What kinds of animals will we see? Where will we find them?*
- Once outdoors, help the children search for animals by focusing their attention on trees and other habitats. Encourage the children to describe

Hint!
You may need to suggest birds, insects, or fish because children often think that only furry things are animals.

Extension
Repeat the experience in a natural area where you may find a wider variety of animals.

Science Center
Place the animal photos in the Center for further exploration.

Integrated Experiences

Literacy 1: During the discussion, write down the names of the animals the children predict that they will see outdoors. Compare their predictions to those that you actually did find.

Literacy 2: Create a class display of different animals using pictures and objects. Label the animals.

Literacy 3: Begin a list of all the animals that you see over the course of the unit. Supplement with photographs and details such as where you saw the animal or what it was doing.

Math: Make a chart of the different kinds of pets the children have at home.

the animals and what they are doing: *What kind of animal is that? What does it have in its mouth? Where is it running to?*

Write down the animals that you find and, if possible, take a photograph to help the children remember what they saw. Keep track of the different animals you see over the next few weeks and use this record in Experience 16.

Where have you seen animals?

animal	when	where	what was it doing?
bird	yesterday	sky	flying
squirrel	Sunday	tree	climbing

Experience 2

Fur and Hair

Science Concepts

Animals have distinctive features that help us identify them.

Animals have different adaptations to help them survive.

Aim

Children will explore the body coverings of mammals.

Materials

samples of animal fur
animal photos
magnifying tools

Books

Crinkleroot's 25 Mammals Every Child Should Know by Jim Arnosky
Nuts to You! by Lois Ehlert
Bat Loves the Night by Nicola Davies
Very Hairy Bear by Alice Schertle
Hello, Bumblebee Bat by Darrin Lunde

Vocabulary

camouflage
fur
hair
mammal
skin
soft

Approach

Begin by showing the children photos of furry animals in books or magazines. Ask the children to identify the animals and describe what is covering the outside of their bodies. Introduce the term "fur" for the thick coat of soft hair covering the body. Ask the children to name other animals that have fur.

Show the children the mammal body coverings board and the matching photos. Encourage the children to touch the body coverings and to describe how the coverings look and feel: *Is the fur hard or soft? What about the armadillo shell?* Have the children use the magnifying tools to get a closer look.

Talk about how an animal's fur or hair protects the skin, provides camouflage, and keeps the animal warm. Explain that animals that have fur or hair are called "mammals," and that people are mammals!

Extension

Bring gentle pets such as rabbits, cats, or dogs into the classroom for the children to touch.

Science Center

Place the photos, animal fur, and magnifying tools in the Center for further exploration.

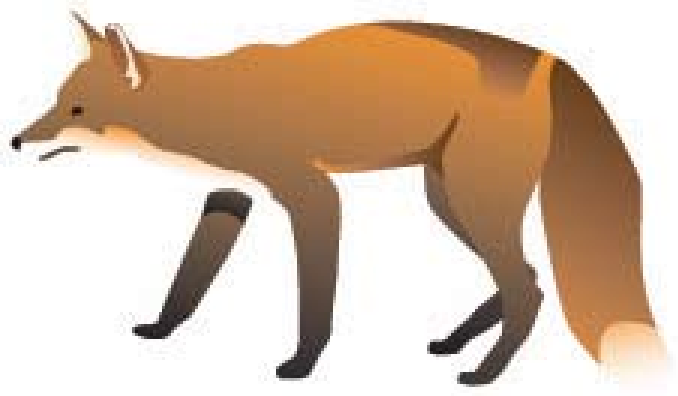
Integrated Experiences

Literacy 1: Help the children describe their own hair in their journals using words and drawings.

Literacy 2: Make a class display of animals that have fur or hair. Label and add photos.

Literacy 3: As a group, generate a list of words that describe how the different samples of fur and hair feel. Add the list to the word wall.

Creative Arts (Art): Provide small pieces of fur fabric samples for the children to make their own animals by gluing the fur to paper.



Experience 3

Animal Babies

Science Concepts

Animals have distinctive features that help us identify them.

During their life cycle, animals grow and change in predictable ways.

Aim

Children will compare the features of animal babies and their parents.

Materials

animal babies photos or illustrations
adult and baby animal models or photos
animal babies puzzles or games

Books

Animals and Their Babies by Melvin Berger
Carry Me! Animal Babies on the Move by Susan Srockdale
Safe, Warm, and Snug by Stephen R. Swinburne
Crocodile Listens by April Pulley Sayre
Mothers and Babies by World Wildlife Fund
Animal Dads by Sneed B. Collard
Ocean Babies by Deborah Lee Rose

Vocabulary

names of animals and their babies (e.g., bear, cub, foal, horse)

Approach

- Show the children pictures of animal babies. Ask the children to share any experiences they have had with baby animals. Talk about the special needs of animal babies, highlighting what parents do to help babies live and grow.
- Show the children one set of animal baby and adult models or photos at a time. Help the children identify the different animals. Encourage the children to compare the animal babies and their parents: *How are they alike? How are they different? Which one is bigger?*
- Review by having the children match the animal babies with their parents.

Extension

Visit a pet store or farm to observe animal babies.

Science Center

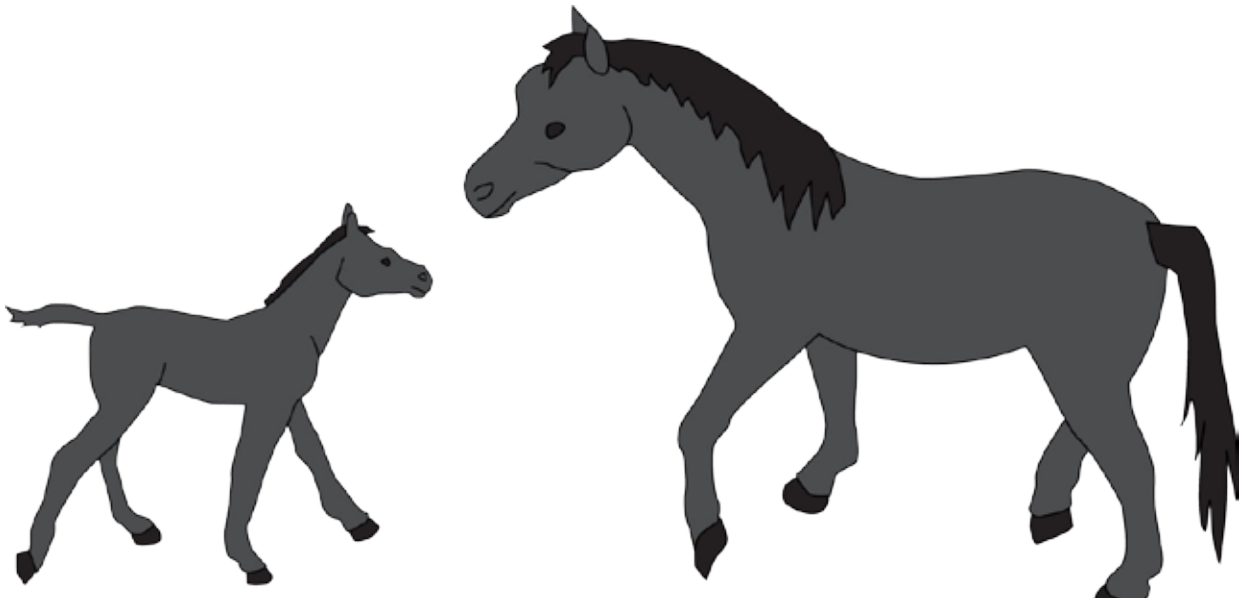
Place animal baby puzzles or games in the Center. Encourage the children to pair the babies with their parents and compare the ways the adult and baby of each animal are alike and different.

Integrated Experiences

Literacy: Have the children bring in photos of themselves as babies and photos of a parent. Talk about how the children both resemble and look different from their parents.

Math: Use formal and informal measuring tools to compare the size of different animal babies at birth.

Creative Arts (Dramatic Play): Place stuffed animals and related props in the dramatic play area and encourage the children to pretend to be animal parents.



Experience 4

Animal Communication

Science Concepts

Animals have distinctive features that help us identify them.

Animals have adaptations that help them survive.

Aim

Children will learn how different animals communicate.

Materials

animal models (optional)
recordings of animal sounds
photos or illustrations of animals that correspond to animal sounds
tape or CD player or computer

Books

Hello, Hello by Miriam Schlein
Mice Squeak, We Speak by Tomie dePaola
Polar Bear, Polar Bear, What Do You Hear? by Bill Martin
Bat Loves the Night by Nicola Davies
Hello, Bumblebee Bat by Darrin Lunde
Barnyard Banter by Denise Fleming

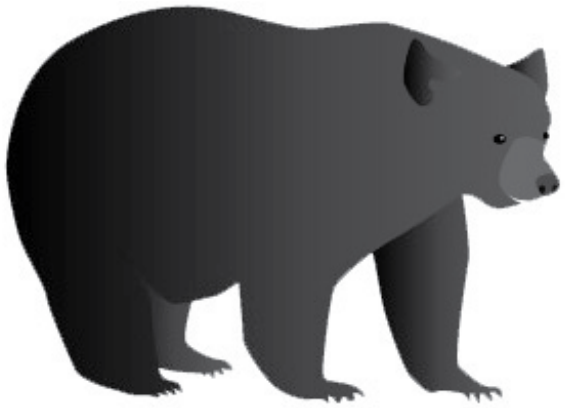
Vocabulary

bark
growl
meow
moo
neigh
oink
roar

Approach

Begin by showing the children models or pictures of some familiar animals. Ask the children to imitate the sounds that the animals make. Explain that because animals cannot use words, they communicate with each other by making different kinds of sounds. Play the recordings of animals sounds. Encourage the children to identify and imitate the different sounds. Show the children a picture of the appropriate animal.

Explain that animals can communicate with each other without sound. To demonstrate, ask the children how they can say “hello” without talking. Talk about how other animals also communicate by moving their bodies in different ways. Give examples of some of the ways that different animals communicate using movement.



Science Center

Place the animal photos or models and recordings of animal sounds with tape or CD player in the Center for further exploration.

Integrated Experiences

Literacy 1: Help the children use words and pictures in their journals to describe how a favorite animal communicates.

Literacy 2: Have the children take turns making animal sounds while others identify the animals.

Creative Arts 1 (Music and Movement): Sing “Old MacDonald Had a Farm.”

Creative Arts 2 (Music and Movement): Have the children imitate how animals communicate using movement.

Experience 5

Birds Have Feathers

Science Concepts

Animals have distinctive features that help us identify them.

Animals have adaptations that help them survive.

Aim

Children will explore feathers.

Materials

samples of animal fur
assortment of large and small feathers (e.g., ostrich, peacock, parrot)
magnifying tools
photos of birds that correspond to the feathers

Books

Quick, Quiet, and Feathered: What Am I? by Moira Butterfield
Feathers for Lunch by Lois Ehlert
Birds by Kevin Henkes
About Birds by Cathryn Sill

Vocabulary

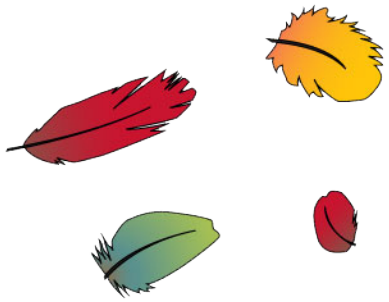
feather
ostrich
parrot
peacock

Approach

- Show the children the body coverings board and review what they have already learned about body coverings. Show the children a feather and encourage them to share what they know about feathers: *What is it? What kind of animal has feathers?*
- Have the children explore the different feathers. Encourage the children to make comparisons by asking: *What colors do you see? Which one is bigger, smaller?* Have them use the magnifying tools to take a closer look.
- Show the children the photos and ask them to match the feathers to the appropriate birds. Explain that all birds have feathers. Talk about how feathers come in different sizes, colors, and shapes because they come from different birds and have different jobs to do.

Extension

Feathers also help keep birds dry. Carefully drop a few drops of water on a long flight feather and observe how the water rolls right off. This works better with long flight feathers rather then small fluffy down feathers. Let the feathers dry before putting them away.



Science Center

Place the feathers in the Center along with magnifying tools to encourage further examination.

Integrated Experiences

Literacy: Create a class log describing the feathers and the birds that they came from. Supplement with photographs and children's drawings.

Math: Encourage the children to sequence the feathers from shortest to longest.

Creative Arts 1 (Art): Have children create a collage of birds using photos and drawings from magazines.

Creative Arts 2 (Art): Have children make birds by gluing fake feathers to their drawings of birds.

Experience 6

Birds Hatch from Eggs

Science Concepts

Animals have distinctive features that help us identify them.

During their life cycle, animals grow and change in predictable ways.

Aim

Children will learn that birds hatch from eggs.

Materials

assortment of bird eggs or egg replicas
feathers
photos of birds that correspond to the eggs or egg replicas
magnifying tools

Books

About Birds by Cathryn Sill
Whoo-oo Is it? by Megan McDonald
Peep! by Kevin Luthardt
Condor's Egg by Jonathan London
Guess What is Growing Inside This Egg? by Mia Posada
Chickens Aren't the Only Ones by Ruth Heller

Vocabulary

names of birds (e.g., chicken, emu, ostrich) associated with the eggs or replicas
egg
hatch
nest

Approach

- Begin by reviewing what the children have already learned about animals and their babies. Show the children a photo of an adult and baby bird such as a chicken. Encourage the children to share their ideas about the photos: *What kind of animal are these? Which one is the mother? Which one is the baby? How do you know?*
- Draw the children's attention to the features both animals have in common, such as wings and legs, and the features that differ, such as size and type of feathers.
- Show the children an egg and explain that baby birds hatch from eggs.
- Show the children the other eggs one at a time. Talk about how all birds come from eggs and that eggs, like birds, come in many sizes and colors. Use the photos to show that large birds have large eggs and small birds have small eggs.

Hint!
The color of bird eggs is due to genetics, not diet as one might think.

Science Center

Place the eggs and egg replicas in the Center for further exploration under adult supervision.

Integrated Experiences

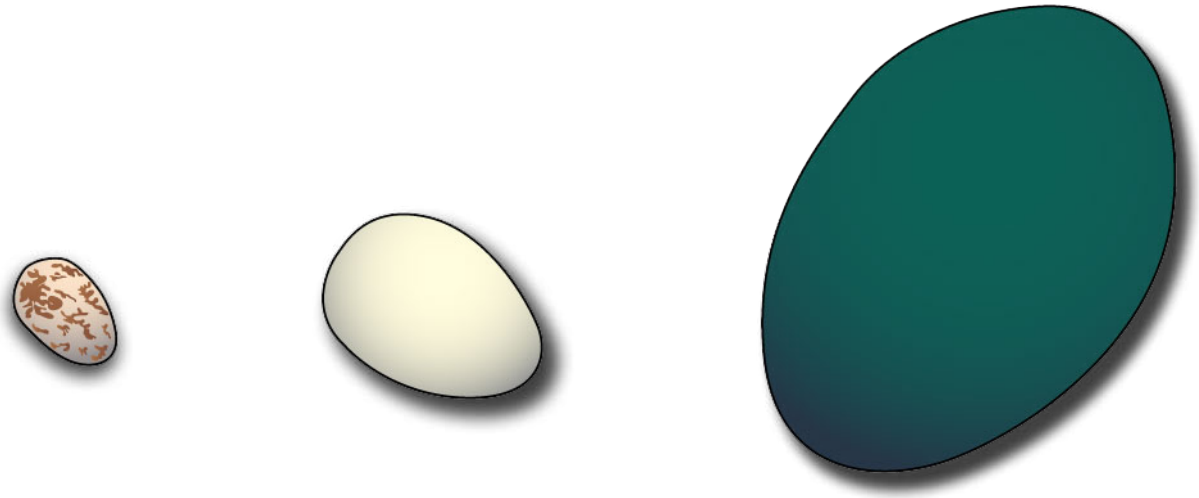
Literacy: Help the children describe their observations about eggs in their journals using words and pictures.

Math: Encourage the children to place the eggs in order from smallest to largest.

Creative Arts 1 (Art): Make paper mache eggs by gluing tissue paper or newsprint over balloons.

Creative Arts 2 (Music and Movement): Have the children pretend to hatch from an egg.

Social and Emotional: Invite a bird breeder to visit the classroom to show the children newly hatched birds.



Experience 7

Birds Have Beaks

Science Concepts

Animals are living things that need food, water, air, and shelter to survive.

Animals have adaptations that help them survive.

Aim

Children will compare different bird beaks.

Materials

objects to represent food
eyedroppers
ladles
tongs
photos of birds with different kinds of beaks such as a pelican, hummingbird, and sandpiper

Books

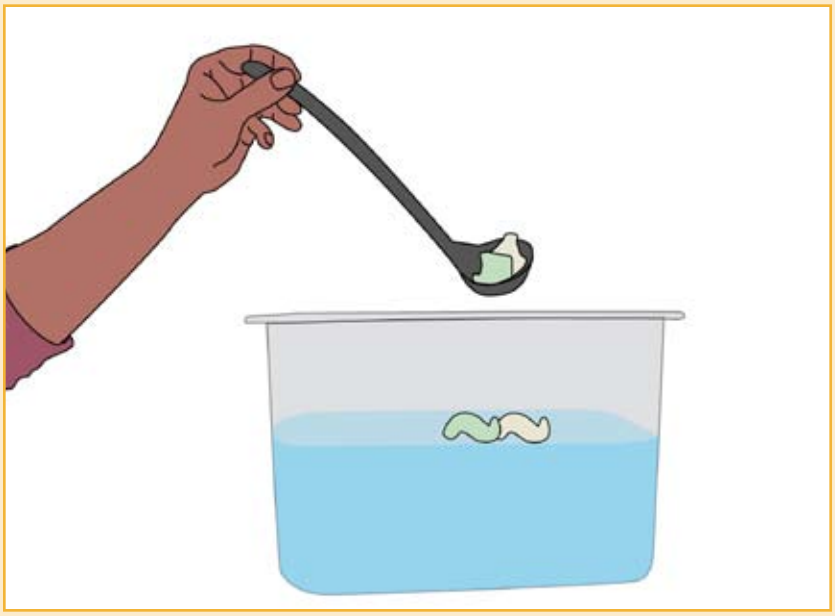
Unbeatable Beaks by Stephen R. Swinburne
Beaks! by Sneed B. Collard
Vulture View by April Pulley Sayre
Birds to A to Z by Terri DeGelle

Vocabulary

beak
hummingbird
nectar
pelican
sandpiper

Approach

In advance, gather different materials that can represent different kinds of bird food. Find food that can represent fish in a pond (plastic fish, styrofoam peanuts floating in water), worms (pieces of string), insects (small stones), and nectar in flowers (cups of colored water).



Begin by reviewing what the children have already learned about birds. Ask: *What do birds eat? What parts of their bodies do birds use to eat?*

Show the children photos and illustrations of different kinds of beaks. Introduce the term *beak* and draw the children's attention to the differences among bird beaks.

Show the children the photo of the pelicans along side the

Extension

Designate a “bird watching area” in the school yard. Add a bird feeder or spread bird seed or other foods to attract birds to observe.

Science Center

Place the “beaks” and some “food” items in the Center for further exploration.

ladle. Point out how the pelican’s beak is similar to the ladle, then use the ladle to scoop “fish” from some water. Explain that the shape of the pelican’s beak is good for scooping fish from water.

Then introduce the tongs and photo of the sandpiper. Draw the children’s attention to the ways in which the sandpiper’s beak and the tongs are similar. Demonstrate how to use the tongs to pick up “worms” or “insects.”

Finally, show the children the photo of the hummingbird and the eyedropper. Explain that hummingbirds drink nectar from flowers. Show the children how the hummingbird’s beak resembles an eyedropper, then demonstrate how to use the eyedropper to sip water.

Encourage the children to try using each of the different “beaks” with each of the foods. Conclude by reviewing which beaks work best with which foods.

Experience 8

Bird Songs

Science Concepts

Animals have distinctive features that help us identify them.

Animals have adaptations that help them survive.

Aim

Children will learn that each type of bird makes a unique sound.

Materials

Identiflyer™ and Identiflyer™ bird song card or recordings of bird songs and CD or tape player

bird photos that correspond to the bird songs

Books

About Birds by Cathryn Sill

Mice Squeak, We Speak by Tomie dePaola

Vocabulary

names of birds (e.g., chickadee, crow) associated with recordings

Approach

Begin by reviewing what the children already know about birds. Encourage the children to make bird sounds. Ask the children to think about whether all birds sound exactly the same.

Play the calls of two different birds that can be easily distinguished. Talk about how the two songs sound different. Show the photos of the birds that go with each song. Explain that each bird has its own calls and sound.

Explore some of the other calls, showing photos of the appropriate birds. Explain that different bird calls are like different languages. Birds understand their own group, but may not understand others.

Extension

Go outdoors and listen for birds. Compare the sounds you hear to your recordings.

Science Center

Place the Identiflyer™ or bird recordings and CD or tape player in the Center for further exploration.

Integrated Experiences

Literacy 1: Generate a list of different words we use to describe bird songs such as “chirp,” “hoot,” “peep,” and “cluck.” Add to the word wall.

Literacy 2: Have children draw a picture of a favorite bird. Help them describe the bird’s song using letters.

Creative Arts (Dramatic Play): Encourage the children to make up their own bird songs and pretend to be birds.

Experience 9

What Is a Reptile?

Science Concepts

There are many different kinds of animals.

Animals have adaptations that help them survive.

Aim

Children will learn some of the characteristics of reptiles.

Materials

live reptiles or models
photos of a variety of reptiles (e.g., snake, lizard, turtle)

Books

About Reptiles by Cathryn Sill
Turtle, Turtle, Watch Out! by April Pulley Sayre
Verdi by Janell Cannon
Extraordinary Egg by Leo Lionni
Guji Guji by Chih-Yuan Chen
Crocodile Listens by April Pulley Sayre
Turtle Splash! Countdown at the Pond by Cathryn Falwell
Chickens Aren't the Only Ones by Ruth Heller

Vocabulary

names of different reptiles (e.g, lizard, snake, turtle)
reptile
scale

Approach

⚠ If you wish to introduce the children to live animals, be sure to review local regulations and ordinances in advance to ensure you are in compliance.

Begin by showing the children the live specimens, models, and/or photos of a number of different reptiles. Explain that snakes, lizards, alligators, and turtles are all a kind of animal called "reptile." Draw the children's attention to the animals' scales. Explain that reptiles all have scaly skin, and most hatch from eggs.

Encourage the children to think about other ways the reptiles are alike: *How many eyes do they have? Do they have a mouth? Do they need food and water to live? Do they live on the ground or do they fly in the sky?*

Extension

Go outdoors and look for lizards. Observe the lizards in their natural habitat or keep a lizard in the classroom in an appropriate habitat.

Science Center

Place the models and/or photos of reptiles in the Center for further exploration.

Integrated Experiences

Literacy: Have the children draw a picture of their favorite reptile in their journals. Help them label their drawings.

Then encourage the children to describe the ways the reptiles differ: *Which one has a shell? Which one does not have any legs? Which one has a long tail?*

Experience 10

Snakes

Science Concepts

Animals have distinctive features that help us identify them.

During their life cycle, animals grow and change in predictable ways.

Aim

Children will learn about some of the special characteristics of snakes.

Materials

snake model
magnifying tools
snake skin shed
snake puppets made from socks

Books

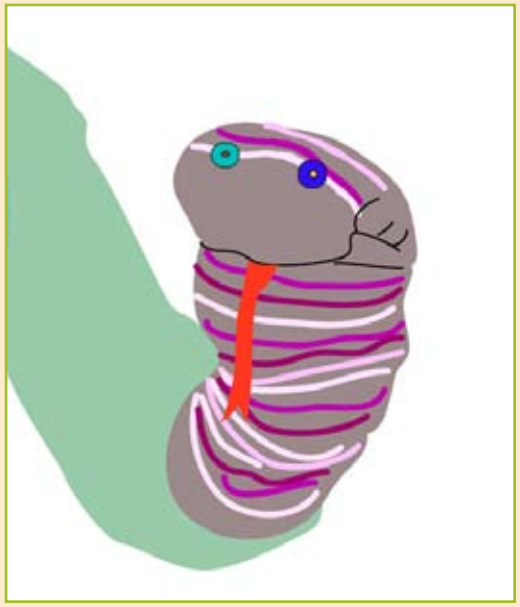
About Reptiles by Cathryn Sill
Hide and Snake by Keith Baker
Snakes and Lizards by Ellen Catala

Vocabulary

scales
shed
skin
venom

Approach

- Show the children the snake model and review what the children have already learned about reptiles.
- Encourage the children to handle the model. Focus their attention on the snake's size and shape.
- Show the children the snake skin shed. Explain that covering the snake's scales is a thin, transparent skin. As the snake grows, this skin becomes too tight and must be shed. The skin loosens along the snake's jaws. Often rubbing against a rough surface, the snake literally crawls out, turning the skin inside out in the process. Snakes normally shed their skins in one piece. They usually shed their skins several times a year.
- Encourage the children to examine the snake skin shed carefully with magnifying tools.
- Distribute the snake sock puppets among the children. Using one of the puppets, demonstrate how a snake slowly sheds its skin. Distribute the puppets and have the children pretend to move their arms like snakes and shed their skin.



Science Center

Place the snake model or photo, snake skin shed, and magnifying tools in the Center for further exploration under supervision.

Integrated Experiences

Literacy: Have the children draw a snake in their journals. Help them label the parts.

Math: Using formal or informal measuring tools, measure the snake model and the snake skin shed.

Creative Arts 1 (Art): Provide children with outlines of snakes and have them color in a pattern.

Creative Arts 2 (Music and Movement): Have the children make rattles by placing small stones or other items in containers. Have the children shake their rattles as they march.

Physical Health and Development (Health and Safety): Talk about how the children should be careful if they come across a snake outdoors. Only some snakes are poisonous, but most snakes will bite.

Experience 11

Life Cycle of the Frog

Science Concepts

Animals have distinctive features that help us identify them.

During their life cycle, animals grow and change in predictable ways.

Aim

Children will learn about the life cycle of frogs.

Materials

frog life cycle poster, puzzle, model or card set
frog photos

Books

Tale of a Tadpole by Karen Wallace
Growing Frogs by Vivian French
Tadpoles by Betsy James
Frogs by Gail Gibbons
Frogs by Nic Bishop

Vocabulary

amphibian
eggs
frog
gills
lungs
metamorphosis
tadpole

Approach

- Show the children a photo of a frog. Ask the children to share any experiences they have had with frogs: *What kind of animal is this? Have you ever seen a frog outside? Where have you seen them?*
- Using a poster, puzzle, model, or card set, show the stages of the frog's life. Explain that when the frog is a tadpole it lives in water and has gills for breathing like fish do, but when it is older it can live out of water and breathes using its lungs. This change is called metamorphosis. Explain that these kinds of animals that live in water and on land during their life are called "amphibians."
- Review the stages in the life cycle of a frog again using your poster or other teaching tool.

Extension

Set up a habitat with live tadpoles so that the children can observe the transformation from tadpole to frog firsthand.

Science Center

Place a puzzle or model showing the stages in the life cycle of a frog in the Center for further exploration.

Integrated Experiences

Literacy: Have the children draw a picture of a frog as a tadpole and as an adult. Help them label their drawings.

Math: Count the number of legs a frog has at each stage of its development.

Creative Arts (Music and Movement): Sing “Five Little Speckled Frogs.”

Physical Health and Development (Gross Motor): Have the children play a game of “leap frog.”

Experience 12

Frog Songs

Science Concepts

There are many different kinds of animals.

Animals have distinctive features that help us identify them.

Aim

Children will learn that each type of frog has a unique song.

Materials

Identiflyer™ and Identiflyer™ frog song card or recordings of frog songs and CD or tape player

frog photos that correspond to the frog recordings

Books

Frogs Sing Songs by Yvonne Winer

March Music by Marianne Berkes

Mice Squeak, We Speak by Tomie dePaola

Vocabulary

song

Approach

Begin by reviewing what the children have already learned about frogs. Ask the children if they know what frogs sound like and have them imitate the calls that frogs make.

Explore frog songs using the Identiflyer™ or other recordings of frogs. Show the photos that go with the different sounds. Explain that different frogs make different sounds.

Science Center

Place the Identiflyer™ or frog recordings and CD or tape player in the Center for further exploration.

Integrated Experiences

Creative Arts 1 (Music and Movement): Divide the children into groups and assign them different frog or toad songs to sing as a choir.

Creative Arts 2 (Dramatic Play): Encourage the children to make up their own frog songs and pretend to be frogs.

Experience 13

What Is a Fish?

Science Concepts

Animals have distinctive features that help us identify them.

Animals have adaptations that help them survive.

Aim

Children will learn some of the characteristics of fish.

Materials

fish photos
fish models
simple poster or illustration showing the parts of a fish

Books

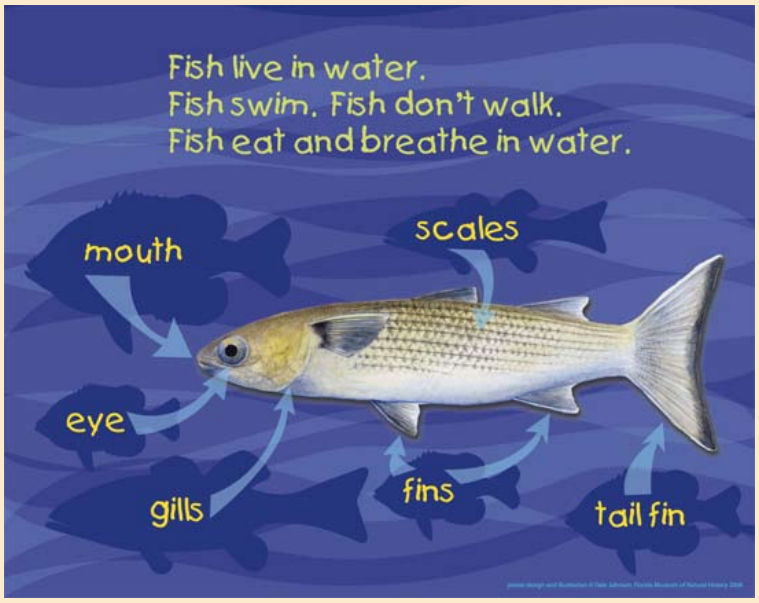
About Fish by Cathryn Sill
Fish Faces by Norbert Wu
Fabulous Fishes by Susan Stockdale
Swimmy by Leo Lionni
Not Norman by Kelly Bennett
Ocean Babies by Deborah Lee Rose
Mr. Seahorse by Eric Carle
Fish Is Fish by Leo Lionni

Vocabulary

fins
fish
gills
scales
swim

Approach

- Begin by showing the children photographs of fish in books or magazines. Encourage the children to share what they already know about fish: *What kind of animal is this? Where have you seen fish before? Where do fish live?*
- Using the poster or illustration, help the children locate different body parts such as eyes and mouth. Introduce the terms “fins,” “gills,” and “scales.” Explain that fins help fish swim.
- Draw the children’s attention to the gills. Explain that a fish breathes by moving water in through its mouth and out through its gills.
- Distribute the fish models among the children. Encourage the children to locate the different body parts on the models and to compare how the fish are alike and different.



Extension

Set up a fish bowl or aquarium in the classroom. Or, visit a pet store, aquarium, or other setting where children can observe live fish.

Science Center

Place the fish models in the Center for exploration. Encourage the children to sort the fish into different groups.

Integrated Experiences

Literacy: Ask the children to draw a fish in their journals. Help them label the parts of the fish.

Math: Have the children count the number of eyes, fins, and tails they see on the fish.

Creative Arts (Art): Cut fish scales out of a variety of colored paper. Have the children glue them on an outline of a fish and add details.

Physical Health and Development (Fine Motor): Make fishing poles using wooden dowels and string with magnets as “hooks.” Attach paper clips to paper fish and have the children “go fishing.”

Social and Emotional: Invite someone who fishes to visit the classroom to share their knowledge of fish and fishing.

Experience 14

How Do Animals Move?

Science Concepts

There are many different kinds of animals.

Animals have adaptations that help them survive.

Aim

Children will compare how different animals move.

Materials

models and/or photos of a variety of animals

Book

Move! by Steve Jenkins and Robin Page
Elephants Swim by Linda Capus Riley
Slither, Swoop, Swing by Alex Ayliffe
Scoot by Cathryn Falwall
From Head to Toe by Eric Carle
Whose Feet by Nina Hess

Vocabulary

climb
crawl
dig
fly
run
slither
swim

Approach

Begin by asking the children to name animals that move in different ways: *Can you think of an animal that can run? Fly? Swim? Climb? Slither?* Explain that different animals move in different ways and that how they move depends on how their bodies are built.

Using the models and photos, focus the children's attention on the body parts that allow different animals to move in different ways. For example,

- Flexible toes and fingers help chimpanzees climb.
- Webbed feet help frogs and ducks swim.
- Fins help fish, manatees, and dolphins swim.
- Wings allow birds to fly.
- Paws and hooves help animals run.
- Claws allow turtles and chickens to dig.
- Without limbs, snakes must slither!

Talk with the children about the body parts that many kinds of animals have and those that are only found on certain animals: *What body parts do birds have that mammals do not have? Can you show me the legs on these animals?*

Extension
Go outdoors and observe animals in action!

Science Center
Have the children sort the animal models or photos into groups based on how they move or the number or type of feet they have.

Integrated Experiences

Literacy 1: During the discussion, write down the animals the children name.

Literacy 2: Add words that describe animal movement to the word wall.

Physical Health and Development (Gross Motor): Have the children move like different animals.

Experience 15

Animal Defenses

Science Concepts

There are many different kinds of animals.

Animals have adaptations that help them survive.

Aim

Children will learn some ways that animals defend themselves.

Materials

turtle shell
tortoise puppet
models or photos of a variety of animals (e.g., snake, lizard, owl)
samples of animal fur
feathers

Books

Red Eyes or Blue Feathers by Patricia M. Stockland
Animals in Hiding by Melvin Berger
Swim for Cover! by Sue Vyner
Nature's Paintbrush by Susan Stockdale
How to Hide a Meadow Frog/Octopus by Ruth Heller
Red-Eyed Tree Frog by Joy Cowley
Lost in the Woods by Carol R. Sams II and Jean Stoick

Vocabulary

camouflage
danger
fangs
hard
poison
predator
prey
protect
rattle
scutes
shell
teeth
venom

Approach

Show the children the turtle shell and tortoise puppet. Explain that turtles are preyed upon by other animals such as alligators and large birds. Encourage the children to share their ideas about what turtles do to protect themselves when they are afraid or in danger. Use the puppet to demonstrate how turtles use their shells for protection.

Show the children the models or photos of animals such as a snake, lizard, or owl. Draw the children's attention to the physical or behavioral features that help each animal defend itself such as fangs, claws, speed, and camouflage.

Show the children the samples of other animal body coverings. Encourage the children to think about how animals use their fur and other coverings to help protect themselves as well.

Science Center
Place the animal models or photos in the Center for further exploration.

Integrated Experiences

Literacy 1: During the discussion, write down the children's ideas about different ways that animals can avoid being eaten or attacked by other animals.

Physical Health and Development (Health and Safety): Discuss the steps children should take to protect themselves if they are in a dangerous situation.

Experience 16

Animal Homes and Habitats

Science Concept

There are many different kinds of animals.

Animals are living things that need food, water, air, and shelter to survive.

Aim

Children will learn about the homes and habitats of familiar animals.

Materials

class animal log
animal models or photos
photos of birds
animal homes matching cards

Books

About Habitats by Cathryn Sill
I Took a Walk by Henry Cole
Around the Pond/*In the Garden*/*In the Snow*/*In the Woods* by Lindsay Barrett George
Bird, Butterfly, Eel by James Prosek
Birds Build Nests by Yvonne Winer
The Salamander Room by Anne Mazer
Baby Alligator by Ginjer Clarke
Around One Cactus/*In One Tidepool*/ *Near One Cattail*/*Under One Rock* by Anthony D. Fredericks
Frog in a Bog by John Himmelman

Vocabulary

aquarium
barn
dam
den
dog house
forest
habitat
jungle
nest
ocean
pen
pond
swamp
tree
water

Approach

- In advance, keep a class log of the animals you see each day. Be sure to document where you saw the animal and what it was doing.
- Begin by reviewing the list of animals you have seen over the course of the unit. Talk about the kinds of homes or habitats in which each animal lives.
- Show the children various animal models. For each, encourage the children to share their ideas about the kind of home each animal needs to survive.
- Discuss how some animals such as birds build their own homes and that sometimes people build structures such as barns and pens to house animals.

Extension

Go outdoors and look for areas where you think animals could live. Look up in trees for nests or on the ground for burrows.

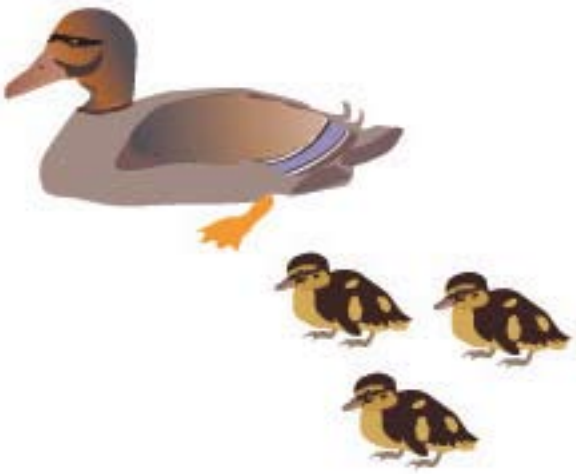
Science Center

Place the animal homes matching cards in the Center. Have the children match the animals to their home.

Integrated Experiences

Literacy 1: Have the children draw a picture of their favorite animal in its home. Help them label their drawing.

Literacy 2: Create a class display showing different animals in their appropriate habitats.



MESS® Take-Home Kit Information/Experience Card

Animals I

Welcome to the Animals I *MESS*® Take-Home Kit. This page suggests ways to further explore what your child has been learning at school.

In this Kit you will find:

- *What Do You Do with a Tail Like This?* by Steve Jenkins and Robin Page
This book describes the fascinating things that animals do with their noses, ears, tails, eyes, and mouths.
- an elephant trunk mask
- elephant photo

This month, your child is learning:

- about body parts and behaviors that help animals survive in their environments. These are called adaptations.

How to use the book:

- Point to the different animal body parts in the pictures as you read.
- Read the book again and ask your child to name the animals when shown just one of their body parts.

How to use the object:

- Compare the elephant mask to the trunks in the book and the photo on the back of this page.
- Hold the mask up to your face and imagine what it would be like to have a trunk instead of a nose.

To further support your child's learning:

- Visit a zoo, aquarium, or wildlife sanctuary to observe live animals.
- Watch TV shows about animals with your child. *Animal Planet* has many good ones: http://animal.discovery.com/
- Go online to watch a video of baby elephants:
http://kids.nationalgeographic.com/Animals/CreatureFeature/African-elephant

Animals I

Recommended Books

Arnold, Katya. *Let's Find It!* NY: Holiday House, 2002. An author who loved nature as a child has written a book to inspire other children to look around indoors and out. Each double-page spread includes one page of animals and plants to find in the scene painted on the opposite page. Identification and classification information is on the final page.

Arnosky, Jim. *Crinkleroot's 25 Mammals Every Child Should Know.* New York: Bradbury Press, 1994. After a brief introduction to mammals, simple, gently-colored illustrations and single words identify 25 mammals, including humans. Domestic and wild mammals are included, and fur or hair is evident on all but the whale.

Ayliffe, Alex. *Slither, Swoop, Swing.* New York: Viking, 1992. Single action words (one per double-page spread) describe the movement of several animals, including some that readers might not think about (e.g., "slither" suggests snakes, but what about slugs and worms?). Colorful, active illustrations invite children to imitate the actions.

Baker, Keith. *Hide and Snake*. New York: Harcourt, 1991. Actually the snake does the hiding and readers do the seeking. Text is sparse and simple, but readers are challenged to find the snake camouflaged among illustrations of familiar objects.

Base, Graeme. *The Water Hole.* New York: Harry N. Abrams, 2001. With richly detailed illustrations, this counting book demonstrates animal diversity and the dependence of living things on water. Shrinking cutouts of a water hole, animals from around the world, detailed borders of animals within a geographical area, and distinct colors invite both close observation and enthusiastic discussion.

Bennett, Kelly. *Not Norman: A Goldfish Story*. Cambridge, MA: Candlewick Press, 2005. A boy wants a pet that can run and catch, not a goldfish like Norman. In the end he comes to love and appreciate Norman. The story can be a springboard for conversation about the special attributes of different animals, even those we might not initially like.

Berger, Melvin. *Animals and Their Babies*. New York: Newbridge, 1993. Large photographs and minimal text describe a variety of animal parenting roles: feeding, protecting, transporting, cleaning, and teaching. An index concludes the big book.

Berger, Melvin. *Animals in Hiding*. New York: Newbridge, 1993. This big book introduces the concept of camouflage via photographs and questions that encourage readers to find animals hidden in the pictures.

Animals I

Berkes, Marianne. *March Music*. Brookfield, CT: Millbrook, 2000. The coming of a summer evening brings on the sounds that resident frogs make at the pond. This "orchestra" is led by the bullfrog but numerous other species are included. Watercolor illustrations in earth-tones create a natural night scene, but the poetic story is fictional and the music is made in some unusual ways. An afterword explains the musical terms and more information on the specific frogs.

Bishop, Nic. *Frogs*. New York: Scholastic Nonfiction, 2008. Intriguing large, close-up photographs of frogs from around the world fascinate readers of all ages. Text in several type sizes/styles makes editing the quantity/detail for preschoolers easy. Life cycle, sounds, movement, colors and textures, defenses, toad/frog distinctions are mentioned in the book.

Butterfield, Moira. *Quick, Quiet, and Feathered: What Am I?* Austin, TX: Steck-Vaughn, 1997. A riddle asking the reader to guess what animal is being described leads to information about different parts of its body, how it behaves, and where it lives. Pictures in context are provided to fit each clue. Each book provides practice for observation, listening, drawing conclusions, and conversation. Also available: *Brown, Fierce, and Furry: What Am I?; Fierce, Strong, and Snappy: What Am I?*

Cannon, Janell. *Verdi.* Orlando, FL: Harcourt Brace, 1997. This young green snake moves through life with enthusiasm and wants to stay young—not like the lazy, boring adults around him. Colorful yellow and green illustrations are equally active. While the story is silly fun, some good snake science is there, too. Text is sometimes substantial, but words flow and illustrations fit so tightly that the story moves quickly or could be edited.

Carle, Eric. *Animals Animals/Animals=Animales.* New York: Scholastic, 1999. Exuberant, colorful illustrations of a wide variety of wild and domestic animals are accompanied by poems from well-known poets.

Carle, Eric. *From Head To Toe/De la cabeza a los pies*. New York: Scholastic, 1997. Using a question and answer format, a variety of colorfully illustrated animals ask if you can move like them (gorilla thumps its chest; giraffe stretches its neck, etc.). A child always responds "I can do it!" and copies each body movement. Imitation will be the response from readers as well. While animals are familiar ones and text is simple, the vocabulary will promote review of body parts, animal identification, and descriptive movements (wriggle, clap, thump, etc.).

Carle, Eric. *Mister Seahorse*. New York: Philomel Books, 2004. Young readers are introduced to Mr. Seahorse, a fish father who carries the mother's eggs around in his pouch until they hatch. As he drifts through the sea, Mr. Seahorse meets other fish fathers who hatch eggs—stickleback, tilapia, Kurtus nurseryfish, pipefish, and bullhead catfish. The fascinating tissue paper and acetate overlay illustrations also provide opportunities to explore camouflage.

Animals I

Catala, Ellen. *Snakes and Lizards*. Mankato, MN: Yellow Umbrella Books, 2004. Two of the most familiar groups of reptiles are compared in terms of body heat, smelling, shedding, legs, eyelids, and hearing. The book provides a good example of how to observe closely. Text is appropriate for preschoolers and close-up photographs invite careful study.

Chen, Chih-Yuan. *Guji Guji/Guji Guji.* La Jolla, CA: Kane/Miller Book Publishers, 2004. Raised from an egg by a mother duck, a young crocodile is living a happy life as a duckling...until he runs into a group of nasty crocodiles who convince him that he is, in fact, a crocodile and should bring his family in for "dinner." While the primary focus of the story is on family, the tale includes accurate information about crocodiles and ducks. 2005 ALA Notable Children's Book

Clarke, Ginjer L. *Baby Alligator*. New York: Grosset & Dunlap, 2000. The story begins just as a baby alligator is hatching from its egg. Intended as a beginning reader, the book combines a gentle caution, not a fear message, with plentiful information about an alligator's habitat. Strong earth tone illustrations show the early life and growth of the hatchlings.

Collard, Sneed B., III. *Animal Dads*. Boston: Houghton Mifflin, 1997. Cut-paper collages and text on two levels (one a simple sentence and the other a detailed paragraph) describe how the males of different species help take care of their young.

Collard, Sneed B., III. *Beaks!* Watertown, MA: Charlesbridge, 2002. "Birds have no hands... beaks are enough." Thus begins a description, with text on two levels, about a variety of bird beaks and how they are used to gather, hunt, and eat. Painted and sculpted paper illustrations stimulate close observation and conversation. The book concludes with a "beakability" quiz—if you had this beak, what would you eat?

Cole, Henry. *I Took a Walk*. New York: Greenwillow Books, 1998. This walk in the woods reminds readers how much there is to see if only we "look" closely. The book encourages observation by asking readers to find specific things in the woods, meadow, stream, and pond. Most of the specifics are animals but it is the lush habitat scenes that first catch your eye. A key in the back identifies exact locations in each scene.

Cowley, Joy. *Red-Eyed Tree Frog*. New York: Scholastic, 1999. Sparse text and brilliantly colored photographs heighten the natural drama in the tree frog's world: will it both find enough food to eat and avoid being eaten? The amount of tension in the story is just right for young children. 2000 Notable Children's Book, 2000 NSTA Outstanding Science Trade Book for Children

Animals I

Davies, Nicola. *Bat Loves the Night*. Cambridge MA: Candlewick Press, 2001. Gentle illustrations and quiet drama tell the story of one bat's nightly adventure. Early pages establish that this intriguing animal has wings and fur, flies at night, hears by echolocation, and eventually returns to her roost to care for her babies. Text is written on two levels—one is the story and the second, in smaller print, provides additional facts.

DeGezelle, Terri. *Birds A to Z*. Mankato, MN: A+ Books, 2000. Beautiful close-up bird photographs are accompanied by upper- and lower-case letters plus two-three sentences about each bird. The text and pictures support conversation about bird homes and habitats. Pages at the end contain follow-up activities, a glossary of additional information about the birds pictured, bibliography, and index.

DePaola, Tomi. *Mice Squeak, We Speak*. New York: Putnam Juvenile, 2000. Three young children consider the ways various animals, including themselves, communicate: owls hoot, pigs squeal, and bees buzz. Illustrations are colorful, simple,and detailed enough to encourage observation. Text is sparse but written in "proper" sentences (upper/lower case, punctuation, etc.) and clever rhymes.

Ehlert, Lois. *Feathers for Lunch/Plumas para almorzar*. New York: Harcourt Brace, 1990. The cat got outside and is looking for lunch! Fortunately for the birds in the backyard, the cat wears a little bell around its neck so they get ample warning. Life-size, cut-paper illustrations show the cat's travels. At the end, miniature pictures highlight details about the 12 birds the cat encounters. 1991 NSTA Outstanding Science Trade Books for Children

Ehlert, Lois. *Nuts to You!* Orlando, FL: Harcourt Brace, 1993. This is the story of one busy squirrel intent on getting into flower boxes, and it even finds a way inside an apartment. A section at the end called "Squirrel Talk" provides numerous squirrel details—identification as a mammal, body parts, home, and food—that provide ideas for conversation as you look at the colorful illustrations and read the rhyming text.

Falwell, Cathryn. *Scoot!* New York: Greenwillow Books, 2008. Movement abounds at the pond "on a sunny summer day"—except for the six silent turtles that "sit still as stones." Colorful, action-packed paper collage illustrations keep readers busy looking for details. Descriptive movement words—like dash, scurry, hover—support vocabulary development.

Falwell, Cathryn. *Turtle Splash! Countdown at the Pond*. New York: Greenwillow Books, 2001. The quiet enjoyed by ten turtles at a pond is disturbed by first one animal and then another, until there are no turtles left on the log. The detailed, colorful collage illustrations and descriptive counting text show where the turtles finally settle for the night. Each of the other animals is described at the end, as is leaf printmaking. 2002 ALA Notable Children's Book

Animals I

Fleming, Denise. *Barnyard Banter*. New York: Henry Holt, 1994. Goose seems to have something to do with all the sounds occurring in this farmyard, but why? Because she is minimally seen among the other colorful (and noisy) animal characters, observation skills get lots of practice. Imitation of all the sounds occurs with minimal encouragement.

Fredericks, Anthony D. *Around One Cactus: Owls, Bats, and Leaping Rats.* Nevada City, CA: Dawn Publications, 2003.

—*In One Tidepool: Crabs, Snails and Salty Tails. 2002.*
—*Near One Cattail: Turtles, Logs and Leaping Frogs. 2005.*
—*Under One Rock: Bugs, Slugs and Other Ughs. 2001.*

Each of these books details the plants and animals that live in a given habitat. Illustrations are large and richly colored, field notes provide additional information about the featured plants and animals, and references are added for those who want to know more about each ecosystem. For young children, the cumulative, rhyming text can be abbreviated to only the new verse each time.

Freeman, Marcia S. *Is It Alive?* New York: Newbridge, 2002. “How can you tell what is alive?” From this initial inquiry, living things are described as things that grow, reproduce, need food and water, excrete waste, and move. Good examples compare living and nonliving things, and introduce the idea that some things once lived but now are nonliving. Microscopic cells are suggested as the ultimate standard of “living.” Several potential projects complete the big book.

French, Vivian. *Growing Frogs*. Cambridge, MA: Candlewick Press, 2000. Inspired by a book about a frog that grows bigger and bigger, a mother and daughter are determined to see the real thing. They collect frog eggs for a home tank where they can watch them turn into tadpoles that eventually grow into frogs. Steps in the process, including water changes/rocks/food, and metamorphic changes are detailed in two levels of text and brightly colored illustrations.

George, Lindsay Barrett. *Around the Pond: Who’s Been Here?* New York: Greenwillow Books, 1996.

—*In the Garden: Who’s Been Here? 2006.*
—*In the Snow: Who’s Been Here? 1999.*
—*In the Woods: Who’s Been Here?* 1995.

During their explorations, two children and their dog find clues that other animals are, or have been, there also. Nature concepts such as life cycle, predator/prey, and habitat are illustrated. Large, richly colored illustrations invite close observation and conversation. Additional information about each book’s featured animals is provided.

Animals I

Gibbons, Gail. *Frogs.* New York: Holiday House, 1993. Plentiful text and carefully labeled illustrations introduce frogs: their tadpole stage, sounds they make, hibernation, body parts, and how toads differ. Text is sometimes too detailed for young children, but provides good support for discussion about the fascinating pictures.

Heller, Ruth. *Chickens Aren't the Only Ones*. New York: Penguin Putnam Books for Young Readers, 1981. Colorful illustrations accompany the rhyming text that tells readers about many animals that lay eggs including birds, reptiles, insects, spiders, amphibians, fish and even two mammals. Text is sparse, but the illustrations easily generate conversation.

Heller, Ruth. *How to Hide a Meadow Frog and Other Amphibians*. New York: Grosset & Dunlap, 1995.

—*How to Hide an Octopus and Other Sea Creatures.* New York: Grosset & Dunlap, 1992. These are just two of the author's books about camouflage. Each book works on the same premise: not being seen by others has advantages for both predators and prey. Text is brief and rhyming, and accompanied by colorful illustrations showing animals alone and then camouflaged.

Henkes, Kevin. *Birds*. New York: Greenwillow Books, 2009. Looking out her window, a young girl notices that birds come in many colors and sizes. The story grows more sophisticated as she combines her imagination with past observations of birds. Brightly colored, bold illustrations add much to this wonderful reflection on birds.

Hess, Nina. *Whose Feet?* New York: Random House Children's Books, 2004. All feet are not the same and thus they can do different things. Feet dig (mole), dash (cheetah), hop (bunny), hang (bat), splash (duck), swing (orangutan), and more (human). Text is limited (the book is intended as an early reader), but repeatedly asks the question "whose feet can . . . ?" Illustrations are sufficiently detailed for good observation practice.

Himmelman, John. *Frog in a Bog.* Watertown, MA: Charlesbridge, 2004. This story is more about the bog than the frog, although the frog on a fern begins and ends the book. Meticulous watercolor illustrations and brief descriptive text detail the various plants and animals that live there. Predator/prey relationships and food chain concepts are implicit. The final pages identify and group the animals (insects, birds, etc.) illustrated. The naturalist/author provides a note at the end explaining what a bog is and how it is unique.

James, Betsy. *Tadpoles.* New York: Dutton Children's Books, 1999. Molly spends her summer watching frog eggs in her fishbowl grow into tadpoles and then frogs while her little brother learns to walk. She ultimately accepts the importance of returning her young frogs to their natural world. The book's last page details the stages of frog growth and provides some rules for growing frogs away from their habitat.

Animals I

Jenkins, Steve, and Robin Page. *Move!* Boston: Houghton Mifflin, 2006. Follow animals as they swing, float, leap, dance, and slide from page to page. A playful introduction to motion encourages young children to guess some of the ways that animals get around. Simple collage illustrations demonstrate the action, and a key at the end provides additional information about the animals represented.

Jenkins, Steve, and Robin Page. *What Do You Do with a Tail Like This*? Boston: Houghton Mifflin, 2003. Cut-paper illustrations highlight different animal body parts, while the simple text explains what those parts do. Word arrangement highlights whatever body part is under discussion (the use of the monkey's tail is described vertically along the illustration of the monkey hanging by its tail). Additional information on each animal is included in the back of the book.

Lionni, Leo. *Extraordinary Egg*. New York: Knopf, 1994. Jessica the frog lugs home a stone which a frog friend identifies as a chicken egg. The "chicken" that hatches is friendly, enjoys the water, and even rescues Jessica when she gets caught in water weeds. When Jessica helps the chicken find his mother, the frogs chuckle when the mother calls him "my sweet little alligator." Children who know about chickens and alligators will appreciate the humor.

Lionni, Leo. *Fish Is Fish*. New York: Knopf, 1998. Tadpole and minnow friends become separated when the tadpole eventually becomes a frog and moves onto land. Determined to see the "people" that his frog friend tells him about, fish almost dies in the process. Frog pushes fish back into the water and fish reluctantly admits "fish is fish." Fish's imagined "people" are great observation/imagination stimulants. Colored pencil illustrations in watery colors and a limited amount of text make the book fun reading/conversation.

Lionni, Leo. *Swimmy*. New York: Knopf, 1991. The lone survivor of a hungry tuna who swallowed his friends, a little fish devises a plan to camouflage itself and some new, equally little, companions as they swim in their watery world. The fascinating illustrations (children may think fingerpaint but it is more than that) and lyrical text ("lobster, who walked about like a water-moving machine") also tell of the wondrous sights Swimmy sees before he finds new friends. 1964 Caldecott Honor Book, ALA Notable Children's Book

London, Jonathan. *Condor's Egg*. San Francisco, CA: Chronicle Books, 1994. Beautiful pen-and-ink and watercolor illustrations show the panoramic habitat of the California condor, the largest bird in North America. This story tells about a pair awaiting the birth of their chick. Appropriately limited text is lyrical but fairly detailed. Young children are unlikely to understand all the information that is in the text or supplemental pages, but the observation and conversation opportunities in the soaring flight and birth of this threatened scavenger make this title worthwhile regardless.

Animals I

Lunde, Darrin. *Hello, Bumblebee Bat*. Watertown, MA: Charlesbridge, 2007. In larger print, someone interviews an endangered bumblebee bat about its size, diet, etc. In smaller print, it responds in a couple of sentences. On the opposite page, detailed mixed media drawings provide similar information graphically. The text is simple but the illustrations stimulate keen observation and conversation. 2008 ALA Notable Children's Book, 2008 Geisel Honor Book

Luthardt, Kevin. *Peep!* Atlanta: Peachtree, 2003. A young boy observes a baby duck emerging from its egg at the park one day. Thereafter the two are inseparable—until the growing duckling hears the call of his flock. The book is nearly wordless (except for a lot of peeps) while the colorful illustrations tell the tender but humorous story of wild animal/human relationships.

Marino, Gianna. *Zoopa: An Animal Alphabet.* San Francisco: Chronicle Books, 2005. Lively, colorful, creative illustrations with no words provide fun opportunities for learning. New letters appear a few at a time; the animals that they represent are somewhere on the page. The book concludes with a key so readers can learn the names of any animals they fail to recognize.

Martin, Bill, Jr. *Polar Bear, Polar Bear, What Do You Hear?/Oso polar, oso polar, que es ese ruido?* New York: Henry Holt, 1991. Zoo animals make their distinctive sounds for each other, while children imitate the sounds for the zookeeper. Even better than the colorful pictures are the descriptive words associated with each sound—snorting, growling, braying, etc. Sparse text and collage pictures invite reader imitation of the sounds, actions, and repetitive phrases.

Mazer, Anne. *The Salamander Room*. New York: Alfred A. Knopf, 1991. A little boy finds a salamander in the woods and tries to convince his mom to let him keep the little orange animal as a pet. She raises concerns about its care, and he supplies imaginative answers that would transform his bedroom into a dark, damp, green forest. Their conversation and the rich paintings provide impetus for further discussion.

McDonald, Megan. *Whoo-oo Is It?* New York: Orchard Books, 1992. An owl's ears are generally sensitive, but this mother owl with eggs listens especially carefully. The pastel drawings on muted color paper give a gentle feeling of night as the mother owl flies around investigating the sounds of other animals in the yard. Eventually, she figures out that the sound she is attuned to is her own baby cracking its egg.

Posada, Mia. *Guess What Is Growing Inside This Egg*. Minneapolis, MN: Millbrook Press, 2007. Young children frequently only know that chickens, or perhaps birds generically, come from eggs. This book broadens their understanding as it illustrates alligators, spiders, octopuses, sea turtles, ducks, and penguins caring for their eggs. Each animal egg/nest is briefly described. The two follow-up pages display what the baby animal looks like and provide more information about the hatchling's environment. 2008 NSTA Outstanding Science Trade Book for Students K-12

Animals I

Prosek, James. *Bird, Butterfly, Eel.* New York: Simon & Schuster Books for Young Readers, 2009. For younger children, the most valuable element of this book on migration are the detailed, double-page watercolor paintings depicting the habitats and life cycles of a swallow, monarch butterfly, and eel. In the summer, Bird cares for her young in a barn, Butterfly lays eggs on milkweed plants in a nearby meadow, and Eel swims in a cool, dark pond. Autumn comes, and each begins a journey to far-off places. When spring arrives, Bird, Butterfly, and Eel (or their descendants) return to the farm. The book concludes with additional information about the three species and how the study of migration has changed over time. Readers should edit text that attributes human characteristics to the animals.

Riley, Linda Capus. *Elephants Swim*. New York: Houghton Mifflin, 1995. Not only elephants, but a number of animals besides the expected swimmers spend time in the water. One informative sentence per double page and a paper collage illustration of an animal—17 including people—tell readers about animal movements. Several pages of notes at the end provide additional details. 1996 NSTA Outstanding Science Trade Books for Children

Rose, Deborah Lee. *Ocean Babies*. Washington, DC: National Geographic, 2005. “Billions of babies are born to the ocean.” Their similarities and differences are the subjects of the brief text and pastel watercolor illustrations. Specific information about both the marine animals illustrated (occasionally too murky for preschoolers to identify) and how they are representative of the comparison in the text is given on several back pages.

Ryder, Joanne. *Each Living Thing.* New York: Gulliver Books, 2000. Vibrant illustrations show large and small creatures and the natural environments they live in. Abundant details make this a good book for practicing observation skills. Sometimes the brief but highly descriptive text almost implies danger, but is really a gentle message of respectful awareness and conservation that is important before going out to look for animals.

Sams, Carl R. II and Jean Stoick. *Lost in the Woods*. Milford, MI: Carl R. Sams II Photography, 2004. In this beautiful photographic essay, a variety of young woodland animals are concerned that a fawn is lost. Close-up photos show the silky fur of the fawn, the whiskers on the mouse, the hairs on the squirrel’s tail, and the fur standing up on the raccoon’s head. The defensive concept of camouflage is quietly highlighted, and details encourage careful observation.

Sayre, April Pulley. *Crocodile Listens*. New York: Greenwillow Books, 2001. A large, powerful crocodile lays in the sand, not attending to her usual pursuits. The suspense of her seeming inattention to the animals around her, all the changing sounds, and the puzzlement of why she is listening keep listeners on the edge of their seats. The birth of and care for her babies is a comforting resolution.

Animals I

Sayre, April Pulley. *Turtle, Turtle, Watch Out!* New York: Orchard Books, 2000. Many things can threaten the life of a sea turtle whether in its egg or fully grown, all prompting the refrain "Turtle, turtle, watch out!" Watchfulness, efficient flippers, a little luck, and even human hands may be needed if the turtle is to return to reproduce herself. As the title suggests, drama is on each page. Dark pastel illustrations of the beach and watery world of the sea turtle hold numerous opportunities for observation and conversation.

Sayre, April Pulley. *Vulture View*. New York: Henry Holt, 2007. "Poetic" and "beautiful illustrations" are not the usual words one thinks of to describe turkey vultures, but they apply here. Simple, poetic text, enhanced by boldly colored cut-paper collages, describes the eating patterns of one of nature's cleanup crew. The book ends with two pages of information about vultures and encouragement for young scientists to learn more. 2008 ALA Notable Children's Book, 2008 Geisel Honor Book

Schertle, Alice. *Very Hairy Bear*. Orlando, FL: Harcourt, 2007. Appealing earth-tone illustrations and a succinct rhyming text tell about one adventure per season for this hairy (not furry) brown bear—salmon fishing in the spring, blueberry picking in the summer, etc. Vivid descriptors like "honey hunter" and "no-hair nose" add detail to the soft pastel and pencil illustrations.

Schlein, Miriam. *Hello, Hello*. New York: Simon & Schuster Children's Publishing, 2002. When two lions meet, do they say "hello" or do they have another way of greeting each other? How about two chimpanzees or zebras? This is a fun look at how nine different animals communicate. The illustrations allow observation and conversation practice.

Schubert, Ingrid and Dieter. *Amazing Animals*/*Sobre moscas y elefantes*. Arden, NC: Front Street, 1995. Detailed, gently colored pencil and watercolor illustrations and rhyming text introduce animals from a wide range of habitats. Topics covered include life cycle, movement, body coverings, diurnal/nocturnal, camouflage, predator/prey, sounds, defense mechanisms, diet, and more.

Sill, Cathryn. *About Birds (*also *Fish, Mammals, Reptiles): A Guide for Children*. Atlanta: Peachtree, 1991-2002. Physical characteristics, habitat, movement, food, hunting behavior, and life cycle vary in different kinds of animals; each group gets special treatment in this series. Alternating pages include first a sentence of simple text and then its accompanying illustration. More detailed information about the 15 or so specific animals is included in the back of each book.

Animals I

Sill, Cathryn. *About Habitats: Deserts*. Atlanta: Peachtree, 2007. Following the pattern in her *About . . .* animal series, the author provides single sentences about some habitat feature or how life can survive in that habitat, and follows this simple text with a detailed, full-page, watercolor illustration of that feature. Plates are labeled with a specific location and identification of the living things, with an afterword providing additional details.

Stockdale, Susan. *Carry Me! Animal Babies on the Move*. Atlanta: Peachtree, 2005. The variety of ways animal parents carry their young are detailed in sparse text and colorful illustrations. Text is rhythmic with good descriptive words ("gripped," "nestled"). Acrylic pictures are relatively simple yet provide sufficient detail for observation practice. A note at the end identifies the specific animals and where they live.

Stockdale, Susan. *Fabulous Fishes*. Atlanta: Peachtree, 2008. Bright, textured, acrylic illustrations draw attention to the fascinating world of fishes, salt- and freshwater. Alliterative and rhyming text highlights the special characteristics of different species—large and small, frilly and smooth, hidden and easily seen. Both text and pictures should generate vocabulary and conversation about the similarities and differences in the fish. An identification note and bibliography provide information for those who want more. 2008 NSTA Outstanding Science Trade Books for Children

Stockdale, Susan. *Nature's Paintbrush: Patterns and Colors Around You*. New York: Simon & Schuster Books for Young Readers, 1999. Animal colors and patterns are beautiful to see, but they also have particular use to animals. Each short entry begins with a question that calls attention to some textural or pattern feature of a particular animal. Illustrations then demonstrate its effectiveness. 2000 NSTA Outstanding Science Trade Books for Children

Stockland, Patricia M. *Red Eyes or Blue Feathers: A Book about Animal Colors*. Minneapolis, MN: Picture Window Books, 2005. Text on two levels and bright digital illustrations describe how color adaptations make surviving in the wild much easier, whether you are predator or prey. A review page, fun facts, glossary, index, and bibliography at the end add to the value of the book. 2006 NSTA Outstanding Science Trade Books for Students K-12

Swinburne, Stephen R. *Safe, Warm, and Snug*. San Diego, CA: Gulliver Books, 1999. The title description applies to the way eleven animal parents keep their young from getting eaten by predators. Some of the animals will be familiar to children, some new. Text is presented in rhyming couplets, while double-page paintings demonstrate the safety systems within the relevant habitat. Additional information is provided in the back of the book.

Animals I

Swinburne, Stephen R. *Unbeatable Beaks*. New York: Henry Holt, 1999. Lyrical text and eye-catching paper-collage illustrations introduce young children to birds and beaks of a variety of sizes, shapes, and colors. A glossary at the end provides additional information about the pictured birds. NCTE Notable Children's Books in the Language Arts

Vyner, Sue. *Swim for Cover! Adventure on the Coral Reef*. New York: Crown Publishers, 1995. An octopus tries to warn other reef animals of the danger of a moray eel that is following her. Each touts its particular defense mechanism. Colorful, watery illustrations add to the suspense. Both illustrations and animal responses provide good conversation material. End notes include more information about each of the featured animals and the coral reef where they live.

Wallace, Karen.*Tale of a Tadpole*. New York: DK Publishing, 1998. Through simple text and eye-catching full-color photographs, the author describes the growth and development of a tadpole from egg to adult frog. Small inset boxes add more detail. Intended as a beginning reader, good descriptive words like "webbed" and "dotted" increase young vocabularies. A short picture word glossary at the back adds learner support.

Winer, Yvonne. *Birds Build Nests*. Watertown, MA: Charlesbridge, 2001. Beautifully detailed illustrations and poetic text explain how, when, where, and why birds build nests. Each five-line poem is accompanied by a full-page watercolor of an appropriate bird. A nest and bird identification guide is included in the back of the book. Poems and pictures encourage both observation and conversation. 2002 NSTA Outstanding Science Trade Book for Students K-12

Winer, Yvonne. *Frogs Sing Songs*. Watertown, MA: Charlesbridge Publishing, 2003. Short verses, each ending with "that's . . . frogs sing songs," describe how, when, where, and why frogs make sounds. Realistic full-page watercolors provide observation practice. The book concludes with a gentle environmental message. Details about the specific frogs are included in an identification guide in the back of the book.

World Wildlife Fund. *Mothers and Babies*. San Rafael, CA: Cedco Publishing, 1997. More than 20 beautiful full-page photographs of an animal mother and baby are accompanied only by words identifying the animal and the common name of its baby: mountain goat and kid, penguin and chick, etc. Color and size comparisons between mother and young, and among the various animals can be seen, although relative size among animals (because all photographs are close-ups) is not obvious.

Wu, Norbert. *Fish Faces*. New York: Henry Holt, 1993. The marine biologist/author uses photographs to introduce readers to some of the more striking characteristics of the creatures encountered on his dives. Shapes, colors, movement, and even body parts build vocabulary.

Animals I

Other Recommended Books

Arnosky, Jim. *Babies in the Bayou*. New York: G.P. Putnam's Sons, 2007. The author explains that a bayou is a Southern waterway where freshwater mixes with the sea. But what lives there? Simple text tells about alligator, turtle, raccoon, and duck families, and suggests the sometimes adversarial relation between groups. Swampy-looking illustrations in greens, blues, and browns provide detail beyond the animal families.

Arnosky, Jim. *I See Animals Hiding.* New York: Scholastic, 1995. The author's gentle but detailed watercolor paintings effectively demonstrate the concept of camouflage. The text looks substantial, but is well-coordinated with illustrations.1996 NSTA Outstanding Science Trade Books for Children

Aston, Diane. *An Egg Is Quiet*. San Francisco, CA: Chronicle Books, 2006. Beautiful, delicately colored ink and watercolor illustrations and informative text introduce readers to the variety and wonder of eggs. Text is presented on two levels: first in larger, cursive handwriting with fairly generic information, and then in a smaller, print caption with information about a specific example. Birds, reptiles, fish, and insects are represented.

Banks, Kate. *Close Your Eyes*. New York: Farrar, Straus and Giroux, 2002. Looking for every possible excuse not to go to sleep, the little tiger lists all the sights he will miss if he complies with his mother's request to close his eyes. She cites all the dreamy advantages of falling asleep. Oil paintings in earthy colors add to the warm, protective feeling imparted by the conversation between mother and baby tiger.

Benjamin, Cynthia. *Footprints in the Snow*. New York: Scholastic, 1994. This beginning reader illustrates a variety of animal footprints in a snowy habitat. The destination for each animal is its home—a den, hollow, or nest. The illustrations encourage conversation about tracks, animal homes, and camouflage.

Brett, Jan. *The Umbrella*. New York: G.P. Putnam's Sons, 2004. Carlos's world is that of a lush tropical forest with fascinating plants and animals. Curious young observers will enjoy both the detail they can see and that Carlos seems oblivious to the drama going on around him.

Cannon, Janell. *Stellaluna/Stelaluna. San Diego, CA*: Harcourt, 1993. Following an owl attack, a baby bat is separated from its mother and lands in a nest of three baby birds. Their similarities and differences become obvious as mother bird cares for all four babies but insists Stellaluna follow "bird rules." Text is ample on some pages but moves quickly with the drama that eventually reunites Stellaluna and her mother. Detailed bat and bird illustrations against the day and night sky backgrounds promote discussion by themselves.

Animals I

Carle, Eric. *Does a Kangaroo Have a Mother, Too?/El canguro tiene mama*. New York: Scholastic, 2000. Simple, repetitious text leads the reader to different animals and their mothers, including dolphins, sheep, and lions. A reference at the end provides the correct names of animal babies, parents, and groups. Animal mothers and their babies are pictured in bright colors.

Carle, Eric. *The Mixed-Up Chameleon*. New York: HarperCollins Publishers, 1984. Not appreciating its own camouflage adaptation skills, a bored chameleon imagines itself taking on the obvious characteristics of several zoo animals. Its mixed-up state gets in the way of catching dinner, however, until it wishes "to be myself." The colorful illustrations of the special adaptations of each animal make good discussion, especially now that scientists are less sure about the purpose/triggering mechanism of the chameleon's color change.

Chermayeff, Ivan, Catherine Chermayeff, and Nan Richardson. *Scaly Facts*. San Diego, CA: Gulliver Books, 1995. Bold collage illustrations are paired with isolated facts about 15 different reptiles. Preschoolers fascinated by turtles, lizards, snakes, crocodilians, and tuataras may enjoy poring over these pictures and the lone details might encourage conversation and further study.

Cooper, Susan. *Frog*. New York: Margaret K. McElderry Books, 2002. A little boy learns to swim by watching the movements of a small frog in his backyard pool and ultimately rescues the little frog. The absence of an adult in some illustrations provides an opportunity to discuss water safety.

Cotten, Cynthia. *At the Edge of the Woods; A Counting Book*. New York: Henry Holt, 2002. At its most basic, this is a counting book. On closer look, however, life is busy for the animals that live at the edge of the woods. The colorful illustrations deserve close observation. The descriptive vocabulary (sassy, burly, perch, flutter) among the rhythmic text builds vocabulary and listening skills. The surprise ending generates even more conversation.

Davies, Nicola. *One Tiny Turtle*. Cambridge, MA: Candlewick Press, 2001. From baby turtle to mother of the next generation, this story tells about a loggerhead turtle's life. Text is provided on two levels—the larger tells the story and the smaller provides more detail. Blue and green illustrations of water and beach habitats detail the drama from baby to adult.

Donaldson, Julia. *Where's My Mom?* New York: Dial Books for Young Readers, 2000. A butterfly tries to help a lost young monkey find its mother. The story shows the value of good description, since the little monkey's clues (all true but incomplete) keep leading to the wrong conclusions on the well-meaning butterfly's part. Before the happy ending, readers meet several other animals and learn something about mammal vs. butterfly babies.

Animals I

Dorros, Arthur. *Animal Tracks.* New York: Scholastic, 2001. Sometimes tracks tell observers that an animal has been there when it has not been seen. Tracking requires close observation, and the book's clear illustrations and questioning text encourage children to explore and compare. Sample tracks for large and small animals on the end papers invite comparisons, too.

Dotlich, Rebecca Kai. *What Is Science?* New York: Henry Holt, 2006. The author answers her title question by naming many of the subjects science studies. Brightly colored illustrations show a group of enthusiastic children exploring each area, often with appropriate tools like magnifiers and sketch pads in hand.

Ehlert, Lois. *Top Cat*. New York: Harcourt Brace, 1998. In simple rhyming text, an older cat reacts negatively to the arrival of a cute new kitten in the house. Eventually cut-paper illustrations and changing "sound" words in the margins show the two becoming friends. Raised hair on the older cat suggests another form of communication.

Ehrlich, Fred. *Does a Duck Have a Daddy?* Maplewood, NJ: Blue Apple Books, 2004. Every animal has a mother and father, but this book's emphasis is on the parenting roles of a variety of animal fathers, including insects, birds, fish, beavers, and humans. Colorful, cartoon-like illustrations and accompanying text have sufficient detail to encourage conversation. For classes where two-parent families are not the norm, teachers may want to edit the final pages on humans.

Ehrlich, Fred. *Does a Mouse Have a Mommy?* Maplewood, NJ: Blue Apple Books, 2004. Simple illustrations and appropriate text describe the parenting roles of animal mothers from turtles and lizards (who abandon their eggs) to elephants and humans (who care for their young over an extended period with other adult help). Although this book begins with the idea that all animals have mothers and fathers, most children will be comfortable with the mother role emphasized here even if they do live in a two-parent family.

Ehrlich, H.M. *Dr. Duck and the New Babies*. Maplewood, NJ: Blue Apple Books, 2005. The baby-delivering Dr. Duck has a hard time getting a spare day in his garden when the various goats, cows, and chickens in his neighborhood are expecting. The cartoon-like illustrations are thoroughly humanized but fun, and the idea of parents caring for their young is prevalent. The story may elicit questions about babies and birth.

Fleming, Denise. *Time to Sleep*. New York: Henry Holt, 1997. It is winter and that means "sleeping" for a number of animals. Boldly colored, handmade paper illustrations and a gentle story provide signs of winter. Pictures and text convey details of the homes and general habitat of the animals.

Animals I

Fox, Paula. *Traces*. Asheville, NC: Front Street, 2008. “Something, someone was just here.” More than footprints, traces are clues or signs of the presence of several animals, an airplane, and the wind. And since wild animals seldom stand still for young children to see, learning to observe the signs of their presence is useful. Great descriptive words like “wriggly, squirming, slimy, and slippery” also provide clues. Subtle, yet nicely detailed illustrations in earth tones encourage close observation.

Fraser, Mary Ann. *Where Are the Night Animals?* New York: HarperCollins, 1999. “The summer moon rises over the hill.” This sets the scene for a description of several animals appearing on a star-filled night. The story notes that some animals are active in the day and some at night. While the text is ample, the descriptive explanation of the animal activities is generally still appropriate. Illustrations, although set at night, are great scenes for observation—even to the water dripping from the raccoon’s tail.

French, Jackie. *Diary of a Wombat*. New York: Clarion Books, 2002. An Australian wombat that looks like a small bear tells its own story in brief segments. Eating, sleeping, digging holes, scratching, and training humans are the main activities. Printed text is minimal, sometimes single words. The illustrations are equally minimal but wonderful for encouraging observation. Subtle humor appeals to older children and adults.

George, Jean Craighead. *Morning, Noon, and Night*. New York: HarperCollins, 1999. As the position of the sun—the light—changes during the day, the activities of animals change, too. Short poetic verses, each accompanied by paintings of an appropriate animal, tell about the changes. Brief endnotes identify each animal and the general geographical area of the painting.

Gregoire, Elizabeth. *Whose House Is This? A Look at Animal Homes—Webs, Nests, and Shells*. Minneapolis, MN: Picture Window Books, 2005. Rhythmic questioning text and collage picture clues invite the reader to decide which of eight animals belongs in the brightly colored houses. Inset boxes, which can be edited, provide fun facts. Observation and conversation opportunities abound.

Hammersmith, Craig. *Kerplunk!* Minneapolis, MN: Compass Point Books, 2002. The pond habitat is home to various insects, frogs, turtles, birds, beavers, and even a mud puppy. The text provides background information about how and why each animal lives at the pond. Features like “Did you know?” boxes, Fun Facts, index and glossary can be deleted as appropriate for group size/interests. Photographs of the animals encourage observation skills.

Animals I

Hickman, Pamela. *A New Frog: My First Look at the Life Cycle of an Amphibian*. Niagara Falls, NY: Kids Can Press, 1999. A pond habitat hosts the birth of leopard frogs through their complete metamorphic cycle. Using half-page flaps to open and a cumulative (ala "House that Jack Built") but short text, the small-book format is appropriate for individuals or very small groups. Illustrations are finely detailed, but the relative size of people in backgrounds and animals in foregrounds can sometimes be misleading.

Himmelman, John. *A Salamander's Life*. New York: Children's Press, 1998. Detailed earth-tone illustrations and simple text follow a salamander through its life cycle, from eggs in a pond and winter hibernation in a leafy burrow through spring mating. Information about the spotted salamander at the beginning and a short glossary at the end add detail.

Hoberman, Mary Ann. *A House Is a House for Me*. New York: Viking Penguin, 1978. "But once you get started in thinking..." Rhyming prose introduces the idea of houses for numerous animals and plants and non-living things, too. Gentle colored illustrations provide lots of details for careful observers. The lengthy poem can be edited for young children. 1983 National Book Award for Young People's Literature

Horenstein, Henry. *A Is for . . . ?* San Diego, CA: Gulliver Books, 1999. This animal alphabet book pairs sepia-colored photographs of single body parts of generally familiar animals with letters A-Z, and readers are encouraged to identify the animals from this limited information. The youngest readers may want to describe the body part only, while animal lovers can study the animal represented.

Jenkins, Steve. *Actual Size.* Boston: Houghton Mifflin, 2004. For young children who have not seen the actual animal, its size is sometimes hard to imagine. Using paper collages, this author provides actual, and sometimes comparative, body sizes (and formal measurements in small type) for numerous animals. Sometimes the whole animal is larger than book-size, and therefore only a body part is illustrated. The sizes and comparisons provide conversation and measuring opportunities. Notes about the specific animals are added at the end.

Jenkins, Steve, and Robin Page. *What Do You Do When Something Wants to Eat You?* New York: Houghton Mifflin, 1997. The author describes how various animals, including an octopus, bombardier beetle, pangolin, and gliding frog, defend themselves against predators. Limited text and earth-tone, cut-paper collages provide many observation and conversation opportunities.

Animals I

Jeunesse, Gallimard. *The Egg*. New York: Scholastic, 1989. Beginning with the chicken egg most children are familiar with, this author uses plastic overlays to show what eggs and the animals that produce them look like outside and inside. Text in several sizes describes the general process and provides additional information about egg-laying. Relative size of eggs and animals should not be taken literally, but the small book's format will be fascinating for some children.

Jordan, Sandra. *Frog Hunt*. Brookfield, CT: Roaring Brook Press, 2002. Three boys (and their mother, based on a hazy picture) go frog hunting at a nearby pond. In small tinted photographs and simple text, their search results in seeing several other pond animals, but it is not until late in the day that they find a frog. An easily overlooked author's endnote explains the "one-minute pond rule" in their family: animals must be returned where found within one minute of capture. Additional information there provides background information about the animals and kettle ponds.

Kalan, Robert. *Jump, Frog, Jump!* New York: HarperCollins, 1989. A cumulative tale with an appealing refrain actually explains predation—with the frog both the predator and the prey. A unexpected ending adds to the fun. Colorful almost-primitive illustrations with a touch of foreshadowing are good for both observation and prediction practice.

Kawata, Ken. *Animal Tails*. New York: Kane/Miller Book Publishers, 2001. Written in a guessing game format, this book suggest numerous ways animal tails are useful. Enough clues are given in the tail-only text/illustration that young children can give answers (complete animals are pictured on the next page), and focus on the use of the tail. Minimal habitats are sometimes illustrated, too.

Knowles, Sheena. *Edwina the Emu*. New York: Harper Collins, 1996. In this sequel to *Edward the Emu*, Edwina tries, in rhyming verse, to find the perfect job for an emu after she lays ten eggs. In the end, she discovers that she likes sharing the "sitting" job best, although in reality it is emu fathers who care for the eggs until hatching. The expressive faces in the illustrations generate fun conversation.

Kurtz, Jane, and Christopher Kurtz. *Water Hole Waiting*. New York: Greenwillow Books, 2002. As the sun rises over an African savanna, the little monkey wants a drink of water. His mother, however, knows the dangers that can await him at the water hole. Rhythmic, picture-painting text and earth-tone pastels detail the scene at the water hole. Scenes like the "reckless spraying" of the elephants and giraffe with "legs splayed" foster conversation.

Animals I

Lehn, Barbara. *What Is a Scientist?* Brookfield, CT: Millbrook Press, 1998. Scientists are people who learn from their senses, observe details, ask questions, design experiments, test predictions, communicate their findings, and have fun as they work. Simple text on two levels states a general activity of a scientist and then tells about a child practicing a similar skill. Photographs show the children demonstrating appropriate activities.

Lucas, David. *Halibut Jackson.* New York: Alfred A. Knopf. 2003. Shy Halibut Jackson rarely goes out, but when he does, he dresses to match his surroundings. This fanciful story perfectly illustrates camouflage.

Lunis, Natalie. *A Closer Look*. New York: Newbridge, 1999. Fascinating close-up photographs, many of animals or plants, introduce the detail that magnifying glasses, binoculars, and telescopes can provide. Text is limited and includes questions and directions to involve the reader and initiate discussion. A glossary, index, and several questions for scientist-like thinking are included.

McDonnell, Flora. *Splash!* Cambridge, MA: Candlewick Press, 1999. The temperature is high for the elephants, tiger, and rhinoceros, and only the baby elephant has an idea for improving the situation. Young children will love the watery remedy. Illustrations are large and simple. Text is sparse but dramatic. Even the end paper murals offer good observation and conversation experiences.

Minshull, Evelyn. *Eaglet's World.* Morton Grove, IL: Albert Whitman, 2002. A young eagle hesitantly begins to explore its new world, from the cozy inside of its egg, to a safe nest, and the big sky. Illustrations are earth tones with sufficient detail to encourage observation. Text is appropriately limited and gives the flavor of a sometimes-scary new adventure.

Moncure, Jane Belk. *Night Animals: Wake Up, Little Owl!* Chicago: Childrens Press, 1990. Judy and her grandpa go for a night hike. In helping her find animals, he suggests appropriate habitats and signs to look for. His attitude about quiet, the illustrations of animals in their natural space, and follow-up questions like why the night is full of animal activity generate conversation.

Post, Hans, and Kees Heij. *Sparrows*. Honesdale, PA: Lemniscaat, 2006. This story of house sparrows shows them to be much more interesting than the pest that they are sometimes thought to be. Nest building, food gathering, and survival are all major accomplishments for these little birds and their young. Beautiful softly colored drawings with detailed, nearby text tell a gentle but vibrant story.

Animals I

Rockwell, Anne. *Growing Like Me*. Orlando: Harcourt, 2001. One of the hallmarks of living things is growth. One young boy reflects on this concept in a meadow setting near a woods and pond. Noting various animals (and a few plants), he likens them to his own growth. The text describes the changes in simple but descriptive words. Colorful illustrations are rewarding for both the very young and keen observers.

Ryder, Joanne. *A Fawn in the Grass*. New York: Henry Holt, 2001. The fawn is just the first of the animals a little child sees as he goes for a walk. Where he finds each of the animals encourages a habitat study. Gentle rhyming text and soft watercolor illustrations portray the scenes and invite conversation.

Ryder, Joanne. *Night Gliders*. Mahwah, NJ: BridgeWater Books, 1996. Lyrical text and wonderful nighttime illustrations detail the world of a flying squirrel. The oil paintings provide various perspectives from above, below, and beside the squirrels. Prompted by information in an author's note, discussion flows easily about this unusual animal.

Sayre, April Pulley. *Dig, Wait, Listen: A Desert Toad's Tale*. New York: Greenwillow Books, 2001. Detailed earth-tone illustrations reveal the desert wonder of rain and what it means to the spadefoot toad. Both its life cycle and neighbors in the desert are detailed in simple, almost-lyrical text. 2002 NSTA Oustanding Science Trade Books for Students K-12

Schaefer, Lola M. *What's Up, What's Down?* New York: Greenwillow Books, 2002. This unique book must be turned sideways and read from bottom to top—mole to moon, and then from top to bottom—moon to ocean floor. This different perspective makes readers aware that the layers of a habitat support diverse living things. The bright pastel illustrations appropriately support each up and down viewpoint, even adding arrows in case you forget which way you are reading.

Schofield, Jennifer. *Animal Babies in Ponds and Rivers*. Boston: Kingfisher, 2004. Seven different animal babies each ask, after providing simple textual and photographic information about itself, "who is my mommy?" The following two pages show, again in text and photograph, mother and young together. Little information about ponds and rivers is provided, but text and illustration clues provide an opportunity to practice positional words like *in, on*, *near*, and *at*.

Seuling, Barbara. *Whose House?* Orlando, FL: Gulliver Books, 2004. As a child sits reading about animals, his imagination places him in each habitat. In the end, the white house with red roof, welcoming parents, and familiar objects are perfect for a little person. Gentle illustrations, sometimes with pictures of the child in the animal home, encourage observation. Conversation about the advantages and disadvantages of each home can follow.

Animals I

Seuling, Barbara. *Winter Lullaby* and *Spring Song.* San Diego, CA: Gulliver Books, 1998/2001. Where do animals go as winter approaches in one book and spring arrives in the second? In each book, one spread of pages poses, in simple text and crisp acrylic illustrations, the question for a given climate and animal. The next spread answers the question in equally simple text and illustration. Because the text always is brief and illustrations detailed, both conversation and observation practice can result.

Sill, Cathryn. *About Amphibians* (also *Arachnids, Crustaceans, Insects, Marsupials, Mollusks*)*: A Guide for Children*. Atlanta: Peachtree, 1991. In each book, readers are introduced to animals in a specific group. Alternating pages include a sentence of simple text and an accompanying detailed illustration. About 15 plates in each book of the series show the group's homes, unique body structure, food, behavior, and sometimes importance to humans. Additional information is provided in the back of each book.

Simmons, Jane. *Daisy and the Egg*. Boston: Little, Brown, 1998. Daisy the little duck, her mother, and aunt are busy awaiting the arrival of some new little chicks. Text is simple, and oil illustrations suggest the "busy-ness" of the occasion. While there are some scientific questions if one is very observant, the basic hatching and new-baby care is there.

Stewart, Melissa. *When Rain Falls*. Atlanta: Peachtree, 2008. People tend to have homes and can move or stay indoors when it rains, but what do animals do? The author's spare but descriptive text shows a variety of animals from forest, field, wetland, and desert. Some are like people—they return to their houses: chickadees to their tree holes and foxes to their dens. But squirrels use their bushy tails as umbrellas, and ducks have oily feathers so they just continue to float. The watercolor illustrations are perfect for a wet day and lend themselves to close observation and conversation about the places where animals live.

Stockdale, Susan. *Some Sleep Standing Up*. New York: Simon & Schuster Books for Young Readers, 1996. "Lying down" is the accepted way for people to sleep, but not so in many other parts of the animal world. The very simple text and easy-to-see illustrations invite a discussion. Illustrations look uncomplicated at first, but habitat details appear with study.

Swanson, Diane. *Animals Can Be So Sleepy*. Vancouver, BC: GreyStone Books, 2001. Single pictures of nine different animals (most are familiar) show them sleeping, with minimal habitat showing. Two sentences describe the event. Synonyms for "sleeping" are strung around the pages, effectively tying the theme together. Each double-page also includes an oval encouraging close observation of the picture. A final Points for Parents provides a bit more information about the nine animals illustrated.

Animals I

Tafuri, Nancy. *The Busy Little Squirrel*. New York: Simon & Schuster Books for Young Readers, 2007. Winter is coming. Other animals still have time for play but squirrel must prepare for the changing season. Text is simple, and children enjoy repeating the "he was so busy!" refrain. The playmate-seeking animals use both the traditional sounds (croak, meow, etc.) and talk in words. Simple but detailed illustrations manage to convey squirrel's busy activity. The real-life relationship of the various animals to squirrels is an interesting topic for conversation.

Tye, Laurie. *The Animal in Me Is Very Plain to See*. Portland, OR: WestWinds Press, 2005. The author uses animal behavior to exemplify human feelings and actions: "When I am excited, I am like a little hummingbird constantly..." Beautiful photographs invite close examination of the animals, while the text encourages discussion of feelings.

Tyers, Jenny. *When It Is Night, When It Is Day*. Boston: Houghton Mifflin, 1996. Some animals sleep at night, and some are active then. With seeming contradiction, the same can be said for day. The text is sparse but active (chews, swoops, snuffles), and almost rhythmical, while illustrations are somber, other world-looking, colored etchings that lack proportional sizes (e.g., the wolf and mouse appear the same size on side-by-side pages).

Van Laan, Nancy. *When Winter Comes*. New York: Atheneum Books for Young Readers, 2000. What happens to the plants and animals when winter comes with snow and wind? A bundled-up family goes for a walk looking for answers. Poetic text and gentle acrylic paintings give readers the feeling they are there in the winter's first snow as the family seeks explanations about the animals in their changed habitat.

Walsh, Melanie. *My Beak, Your Beak*. Boston: Houghton Mifflin, 2002. Minimal text and colorful illustrations demonstrate both the similarities and differences among several familiar animals. The unspoken extension is that two things seemingly diverse at first glance frequently have important similarities.

Ward, Jennifer. *Forest Bright, Forest Night.* Nevada City, CA: Dawn Publications, 2005. Night or day, someone is awake in the forest. Reading from front to mid-point, readers explore pairs of animals until the sun goes down; from back to mid-point, readers explore the opposite forest activity until the sun comes up. Simple rhyming text is filled with active language—leap and flash, climb and stumble—while rich, realistic-looking illustrations are filled with detail. Center pages (at the end of each night and day section) identify the pair involved in each activity/inactivity scene.

Animals I

Wilson, Karma. *A Frog in the Bog*. New York: Margaret K. McElderry Books, 2003. Who else lives in the bog? This silly cumulative counting tale told in rhyme demonstrates both the habitat where these animals live and a food chain. The watery illustrations show what happens in the bog when the growing frog's log starts to rise. The descriptive words—like "slink through the sludge"—are fun.

Wood, A.J. *Egg!* Boston: Little, Brown, 1993. Various animals (not all are birds!) that hatch from eggs are described in a clever picture layout. The reader must unfold the trifold page to discover to whom the pictured eggs belong. Ample accompanying text about each animal can be abbreviated for young children.

Wormell, Christopher. *Teeth, Tails, & Tentacles*. Philadelphia: Running Press, 2004. Various animal features are counted, from one rhinoceros horn to 20 barnacle shells on one whale. Each double-page spread includes the numeral, the number (in uppercase letters), a few words for the characteristic, and a striking lino-cut illustration so readers can find the appropriate number of the featured item. Most characteristics are easy for young children to find, but the larger numbers require greater observation skills. The book ends with additional information on each of the 20 featured animals. 2005 ALA Notable Children's Books

Zoehfeld, Kathleen Weidner. *What Lives in a Shell?* New York: HarperCollins, 1994. The advantage of a shell as an animal's home is the subject of this book. Shells and their animal residents are contrasted with human and other animal homes. Gentle but colorful illustrations detail the shells and should keep children studying. Text and detail are ample but can be edited and need not be read all at once.

Head Start Domains and Indicators Associated with Core and Center Experiences

Domain & Indicators	Experience																
LANGUAGE DEVELOPMENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	T-H
Demonstrates increasing ability to attend to and understand conversations.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Shows progress in understanding and following simple and multi-step directions.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Understands an increasingly complex and varied vocabulary.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
For Non-English speaking children, progress in listening to and understanding English.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Develops increasing abilities to understanding and use language to communicate information, experiences, ideas, feelings, opinions, needs, questions, and for other varied purposes.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Progresses in abilities to imitate and respond appropriately in conversation and discussions with peers and adults.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Uses an increasingly complex and varied spoken vocabulary.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Progresses in clarity of pronunciation and towards speaking in sentences of increasing length and grammatical complexity.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
For Non-English speaking children, progress in speaking English.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
LITERACY																	
Shows increasing ability to discriminate and identify sounds in spoken language.																	•
Shows growing awareness of the beginning and ending sounds of words.																	•
Progresses in recognizing matching sounds and rhymes in familiar words, games, songs, stories and poems.																	
Shows growing ability to hear and discriminate separate syllables in words.																	•

Head Start Domains and Indicators Associated with Core and Center Experiences

Domain & Indicators	Experience																
LITERACY CONTINUED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	T-H
Associates sounds with written words, such as awareness that different words begin with the same sound.																	
Shows growing interest and involvement in listening to and discussing a variety of fiction and nonfiction books and poetry.																	
Shows a growing interest in reading-related activities, such as asking to have a favorite book read; choosing to look at books; drawing pictures based on stories; asking to take books home; going to the library; and engaging in pretend-reading with other children.																	
Demonstrates progress in abilities to retell and dictate stories, to act out stories, and to predict what will happen next in a story.																	
Progresses in learning how to handle and care for books; knowing to view one page at a time in sequence from front to back; and understanding that a book has a title, author and illustrator.																	•
Shows increasing awareness of print in classroom.		•			•	•	•	•	•			•	•				•
Develops growing understanding of the different functions of forms or pint such as signs, letters, newspapers, lists, messages, and menus.		•			•	•	•	•	•			•	•				•
Demonstrates increasing awareness of concepts of print, such as that reading in English moves from top to bottom and from left to right, that speech can be written down, and that print conveys a message.		•			•	•	•	•	•			•	•				•
Shows progress in recognizing the association between spoken and written words by following print as it is read aloud.												•					•
Recognizes a word as a unit of print, or awareness that letters are grouped to form words, and that words are separated by spaces.		•			•	•	•	•	•			•	•				•
Develops understanding that writing is a way of communicating for a variety of purposes.	•															•	

Head Start Domains and Indicators Associated with Core and Center Experiences

Domain & Indicators	Experience																
LITERACY CONTINUED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	T-H
Begins to represent stories and experiences through pictures, dictation, and in play.																	
Experiments with a growing variety of writing tools and materials, such as pencils, crayons, and computers.																	
Progresses from using scribbles, shapes, or pictures to represent ideas, to using letter-like symbols, to copying or writing familiar words such as their own name.																	
Shows progress in associating the names of letters with their shapes and sounds.																	
Increases in ability to notice the beginning letters in familiar words.																	
Identifies at least 10 letters of the alphabet, especially those in their own name.																	
Knows the letters of the alphabet are a special category of visual graphics than can be individually named.																	
MATHEMATICS																	
Demonstrates increasing interest and awareness of numbers and counting as a means of solving problems and determining quantity.																	
Begins to associate number concepts, vocabulary, quantities, and written numerals in meaningful ways.						•											
Develops increasing ability to count in sequence to 10 and beyond.																	
Begins to make use of one-to-one correspondence in counting objects and in matching groups of objects.		•															
Begins to use language to compare numbers of objects with terms such as more, less, greater than, fewer, equal to.																	
Develops increased abilities to combine, separate and name “how many” concrete objects.																	
Begins to recognize, describe, compare, and name common shapes, their parts and attributes.						•											

Head Start Domains and Indicators Associated with Core and Center Experiences

Domain & Indicators	Experience																
MATHEMATICS CON'T	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	T-H
Progresses in ability to put together and take apart shapes.																	
Begins to be able to determine whether or not two shapes are the same size and shape.						•			•								
Shows growth in matching, sorting according to 1 or 2 attributes such as color, shape or size.			•		•	•			•								
Builds an increasing understanding of directionality, order and positions of objects, and words such as up, down, over, under, top, bottom, inside, outside, in front, and behind.	•	•	•			•				•	•	•			•	•	
Enhances abilities to recognize, duplicate and extend simple patterns using a variety of materials.																	
Shows increasing abilities to match, sort, put in a series, and regroup objects according to one or two attributes such as shape or size.																	
Begins to make comparisons between several objects based on a single attribute.			•		•	•			•								
Shows progress in using standard and non-standard measures for length and area of objects.																	
SCIENCE																	
Begins to use senses and a variety of tools and simple measuring devices to gather information, investigate materials, and observe processes and relationships.	•	•		•	•	•	•	•		•	•		•				
Develop increased ability to observe and discuss common properties, differences and comparisons among objects and materials.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Begins to participate in simple investigations to test observations, discuss and draw conclusions, and form generalizations.	•	•			•	•	•				•						
Develops growing abilities to collect, describe, and record information through a variety of means, including discussion, drawings, maps and charts.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Head Start Domains and Indicators Associated with Core and Center Experiences

Domain & Indicators	Experience																
SCIENCE CON'T	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	T-H
Begins to describe and discuss predictions, explanations, and generalizations based on past experiences.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Expands knowledge of and abilities to observe, describe and discuss the natural world, materials, living things and natural processes.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Expands knowledge of and respect for their body and the environment.																	
Develops growing awareness of ideas and language related to attributes of time and temperature.																	
Shows increased awareness and beginning understanding of changes in materials and cause-effect relationships.																	
CREATIVE ARTS																	
Participates with increasing interest and enjoyment in a variety of music activities, including listening, singing, finger plays, games, and performances.																	
Experiments with a variety of musical instruments.																	
Gains ability in using different art media and materials in a variety of ways for creative expression and representation.																	
Progresses in abilities to create drawings, paintings, models, and other art creations that are more detailed, creative or realistic.																	
Develops growing abilities to plan, work independently, and demonstrate care and persistence in a variety of art projects.																	
Begins to understand and share opinions about artistic products and experiences.																	
Expresses through movement and dancing what is felt and heard in various musical tempos and styles.																	
Shows growth in moving in time to different patterns of beat and rhythm in music.																	

Head Start Domains and Indicators Associated with Core and Center Experiences

Domain & Indicators	Experience																
CREATIVE ARTS CONTINUED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	T-H
Participates in a variety of dramatic play activities that become more extended and complex.																	
Shows growing creativity and imagination in using materials and in assuming different roles in dramatic play situations.																	
SOCIAL & EMOTIONAL DEVELOPMENT																	
Begins to develop and express awareness of self in terms of specific abilities, characteristics and preferences.	•		•	•	•		•	•	•	•	•	•	•		•	•	•
Develops growing capacity for independence in a range of activities, routines, and tasks.	•	•	•	•	•		•	•	•	•	•	•	•		•	•	•
Demonstrates growing confidence in range of abilities and expresses pride in accomplishments.	•		•	•	•		•	•	•		•						
Shows progress in expressing feelings, needs and opinions in difficult situations and conflicts without harming themselves, others, or property.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Develops growing understanding of how their actions affect others and begins to accept the consequences of their actions.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Demonstrates increasing capacity to follow rules and routines and use materials purposefully, safely, and respectfully.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Increases abilities to sustain interactions with peers by helping, sharing, and discussion.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Shows increasing abilities to use compromise and discussion in working, playing, and resolving conflicts with peers.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Develops increasing abilities to give and take in interactions; to take turns, and to interact without being overly submissive or directive.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Demonstrates increasing comfort in talking with and accepting guidance and directions from a range of familiar adults.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Shows progress in developing friendships with peers.																	

Head Start Domains and Indicators Associated with Core and Center Experiences

Domain & Indicators	Experience																
SOCIAL & EMOTIONAL CONTINUED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	T-H
Progresses in responding sympathetically to peers who are in need, upset, hurt, or angry; and in expressing empathy or caring for others.																	
Develops ability to identify personal characteristics including gender, and family composition.																	
Progress in understanding similarities and respecting differences among people, such as genders, race, special needs, culture, language, and family structures.																	
Develops growing awareness of jobs and what is required to perform them.																	
Begins to express and understand concepts and language of geography in the contexts of their classroom, home, and community.																	
APPROACHES TO LEARNING																	
Chooses to participate in an increasing variety of tasks and activities.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Develops increased ability to make independent choices.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Approaches tasks and activities with increased flexibility, imagination, and inventiveness.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Grows in eagerness to learn about and discuss a growing range of topics, ideas and tasks.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Grows in abilities to persist in and complete a variety of tasks, activities, projects, and experiences.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Demonstrates increasing ability to set goals and develop and follow through on plans.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Shows growing capacity to maintain concentration, despite distractions and interruptions.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Grows in recognizing and solving problems through active exploration, including trial and error, and interactions and discussions with peers and adults.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Develops increasing abilities to classify, compare, and contrast objects, events, and experiences.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Head Start Domains and Indicators Associated with Core and Center Experiences

Domain & Indicators	Experience																
APPROACHES TO LEARNING CONTINUED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	T-H
Develops increasing abilities to classify, compare, and contrast objects, events, and experiences.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
PHYSICAL HEALTH AND DEVELOPMENT																	
Develops growing strength, dexterity, and control needed to use tools such as scissors, paper punch, stapler, and hammer.																	
Grows in hand-eye coordination in building with blocks, putting together puzzles, reproducing shapes and patterns, stringing beads and using scissors.																	
Progresses in abilities to use writing, drawing and art tools including pencils, markers, chalk, paint brushes, and various types of technology.																	
Shows increasing levels of proficiency, control and balance in walking, climbing, running, jumping, hopping, skipping, marching and galloping.														•			
Demonstrates increasing abilities to coordinate movements in throwing, catching, kicking, bouncing balls, and using the slide and swing.																	
Progresses in physical growth, strength, stamina, and flexibility.														•			
Participates actively in games, outdoor play and other forms of exercise that enhance physical fitness.																	
Shows growing independence in hygiene, nutrition and personal care when eating, dressing, washing hands, brushing teeth and tolieting.																	
Builds awareness and ability to follow basic health and safety rules such as fire safety, traffic and pedestrian safety, and responding appropriately to potentially harmful objects, substances and activities.																	