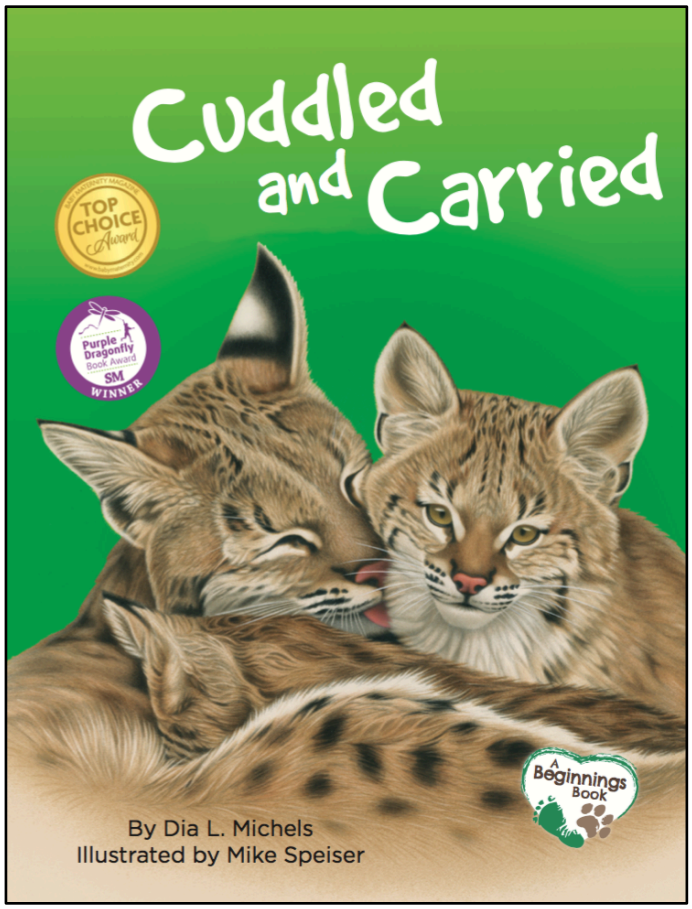


# Teacher's Guide

for

# *Cuddled and Carried*

Hardback: 978-1-930775-99-2 • 1-930775-99-7
Paperback: 978-1-930775-98-5 • 1-930775-98-9
eBook: 978-1-930775-97-8 • 1-930775-97-0

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This Teacher's Guide can be downloaded, free of charge, at PlatypusMedia.com

Compliant with NGSS Standards



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# Product Information

## Book Summary

Babies—whether in snowy dens, warm lagoons, cozy nests, or living rooms—are carried and cuddled, nurtured and nuzzled. Stunning images and gentle verse will capture the curiosity of even the youngest readers as they see how animal mothers tend to their cubs, pups, calves, and chicks.

Beautiful images introduce the reader to attachment in the natural world. Watching mothers lend a paw, wing, flipper, or hand to care for their young fosters empathy, kindness, and compassion. Supplemental back matter and a free Teacher's Guide helps parents, librarians, educators, and healthcare providers creatively describe caretaking, while introducing a range of early science concepts.

## *CUDDLED AND CARRIED*

Hardback ISBN 13: 978-1-930775-99-2 • ISBN 10: 1-930775-99-7 • $14.95
Paperback ISBN 13: 978-1-930775-98-5 • ISBN 10: 1-930775-98-9 • $9.95
eBook ISBN 13: 978-1-930775-97-8 • ISBN 10: 1-930775-97-0 • $8.99

First Edition: October 2018
Part of the Platypus Media collection, “Beginnings”


Also available in an English-only edition as *Cuddled and Carried / Consentido y cargado*
Hardback: 978-1-930775-96-1 • Paperback: 978-1-930775-95-4 • eBook: 978-1-930775-97-8

Published by:
Platypus Media
Washington, D.C.
202-546-1674 / Toll free 1-877-PLATYPS (1-877-752-8977)
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# Meet the Team

### About the Author

**Dia L. Michels** is an internationally published, award-winning science and parenting writer who has authored or edited over a dozen books for both children and adults. While her topics include science and math books for middle grade students, her passion is promoting attachment parenting and supporting breastfeeding. Her books have been translated into Spanish, Dutch, and Hebrew. A popular speaker, she lectures frequently at conferences, universities, libraries, and schools around the country. The mother of three grown children, she lives in the Capitol Hill neighborhood of Washington, D.C., with three cats and a dog. She can be reached at Dia@PlatypusMedia.com.

### About the Illustrator

**Mike Speiser**'s beautiful images of mother and baby animals have been featured on many covers of National Geographic's *Wild Animal Baby* magazine. His paintings, created with acrylics, have been used on fundraising products for science organizations and have been displayed at the Leigh Yawkey Woodson Art Museum in Wausau, WI. Mike hopes his art will help protect the natural world for future generations. He lives next to the Black Hills of South Dakota, and can be reached at Mike@PlatypusMedia.com

### About the Teacher's Guide Writer

**Sue Garcia** knows her way around science education. After 32 years in the classroom, 19 years math (4th-HS), 9 years science (6th-9th), 4 years language arts (7th-8th), 3 years history (6th), and 2 years art (middle school), she has retired from the classroom. She is now actively engaged in mentoring, consulting, and writing science curricula. She is also the author of the Teacher's Guides for the STEM fiction books: *Leonardo da Vinci Gets a Do-Over* and *Ghost in the Water*. Her hobbies include scrapbooking, horseback riding, and swimming on a Masters swim team. She can be reached at Sue@PlatypusMedia.com.

**Editorial help from Anna Cohen, Huneeya Siddiqui, and Allison Zaleski**

# Introduction

## Why does a 32-page book need a Teacher's Guide?

An explosion of research over the past decade has shown how important the first few years of a child's life are in terms of brain development. Parents and caregivers are the most important people in these early years. They keep kids safe; they feed, nurture, and teach them. They have an enormous impact on the child's physical, emotional, and intellectual development.

Developing cognitive and literacy skills early in life helps children get a head start. Helping kids develop these skills by reading to them at an early age builds their vocabulary and grows cognitive and literacy competence. The evidence is clear that the more powerful a child's vocabulary is when they start school, the more successful they will be in the classroom.

In general, upper and middle class children are exposed to many, many more words than lower-income children ("Closing The 'Word Gap' Between Rich And Poor"). Research has shown that, in general, the higher the level of education of the parents and caregivers, the more these adults talk and interact with the kids. One study found that the average child on welfare was hearing half as many words (616 words per hour) as the average working-class child (1,251 words per hour) and less than one-third that of the average child in a professional family (2,153 words per hour).This gap in the amount of words a child hears each day adds up! By the age of three, in the aggregate, children from low-incomes families have listened to up to 30 million fewer words than children from high-income families.

This difference in how many words a child hears has come to be known as the "Word Gap." It is actually not just the sheer number of words that counts, but positive, engaging verbal interaction with a baby—whether it's talking, singing, or reading. When adults interact in these ways, neural connections of all kinds are strengthened within the baby's rapidly growing brain. And children who grow up in homes with a lot of adult/child conversation, whose parents have a large vocabulary, and are read to, develop a larger vocabulary and can describe things and feelings with vivid language.

For children who don't have this verbal advantage, this deficiency leads to a struggle with language that lasts a lifetime. As the Atlantic Magazine recently declared, **"We believe that the poverty of vocabulary should be discussed with the same passion as child hunger."**

What can you do? Keep your children safe, feed them nutritious foods, make sure they get exercise and fresh air… and talk, sing and read to them. When you talk, sing, and read, use rich words, describe things with adjectives, use a large vocabulary, and, most importantly, engage and interact by asking questions.

This Teacher's Guide provides ideas and strategies for parents, loved ones, childcare providers, educators and librarians to use *Cuddled and Carried* as a teaching tool. We hope it will give you ideas to expand and extend the content and themes in the book. Find a nice, comfy chair, snuggle with your child, and enjoy this special reading time together.

# Welcome to the Beginnings Collection

Dear Reader,

We're excited to introduce you to our *Beginnings* collection. *Cuddled and Carried* is one of the first titles in this collection.

Scientific curiosity begins in childhood. Exposure to animals and their environments—whether in nature or in a book—is often at the root of a child's interest in science. Young Jane Goodall loved to observe the wildlife near her home, a passion that inspired her groundbreaking chimpanzee research. Charles Turner, pioneering entomologist, spent hours reading about ants and other insects in the pages of his father's books. Rachel Carson began writing stories about squirrels when she was eight. Spark curiosity in a child and watch them develop a lifelong enthusiasm for learning.

These beautifully illustrated, information-packed titles introduce youngsters to the wonderful world of animals, and, by extension, to themselves. They encourage children to make real-world connections that sharpen their analytical skills and give them a head start in STEM. Reading these titles together inspires children to think about how each species matures, what they need to survive, and what their communities look like—whether pride, flock, or family.

More than a simple scientific introduction, these animal stories illustrate and explore caring love across the mammal class. Showing children attachment in the natural world fosters empathy, kindness, and compassion in both their interpersonal and interspecies interactions.

An easy choice for the home, library, or classroom, our Beginnings collection has something to spark or sustain budding curiosity in any child.

Cheers!

Dia L. Michels
Publisher, Platypus Media

# Meet the Animals

***Cuddled and Carried***
contains illustrations of the following animals (in order):

Bobcat
Goose
Panda
Wolf
Manatee
Dolphin
Orangutan
Koala
Sea Otter
Elephant
Seal
Snow Leopard
Penguin
Flamingo
Fox
Polar Bear
Human
Cougar

# Background Information: Sorting/Classification

Scientists classify animals and plants into categories to find, identify, and study them, usually based on shared characteristics. Caolus Linnaeus was a Swedish botanist, physicist, and zoologist who, in the 18th century, created a system for naming animals and plants with seven levels, i.e., *kingdom, phylum, class, order, family, genus*, and *species*. Taxonomists (people who classify animals) still use his system today, but like most things in science, have altered it to reflect current knowledge. Today, domain precedes kingdom.

An easy way to remember the order of the classification system is with the pneumonic:

**D**aring **K**ing **P**hilip **C**ame **O**ver **F**or **G**ood **S**ausage.

The activities in this section explore other ways to sort and classify animals, based on the ways in which they interact with and care for their young. The animals that appear in *Cuddled and Carried* display many different characteristics, and these activities encourage critical thinking about the reasons for these differences, as well as possible similarities. Like scientists, kids will be given the chance to group animals based on their shared traits.

# Activity: Who Snuggles and Who Nuzzles?

**(Materials in Appendix A)**

*NGSS Articulation can be found on page 40*

**Overview:** In this activity, students are given the opportunity to see a variety of pictures showing mothers that are either snuggling or nuzzling their babies. Students will then sort and categorize differences between animal pairs that are either snuggling or nuzzling.

**Grade Levels:** Pre-K through 1st grade

**Subjects:** Science, Social Studies, and Language Arts

**Vocabulary:**

Snuggle— to be very close in an intimate fashion, to make oneself comfortable, usually by moving closer to one another, to embrace closely, as to show affection or offer warmth.

Nuzzle— to rub or push against gently with the nose or mouth, to prod with the nose or mouth.

**Concepts:** Some animals are born or hatched into the world and grow without any relationship to, or involvement from, their parents. This is the case with turtles, sharks and spiders. Other animal parents engage in nurturing behaviors with their young that help the offspring and provide them with the skills to survive. For these animals, which include all mammals, birds, and some others, the parents' involvement is essential for the survival of the young.

**Skills:** Observing, sorting, and categorizing.

**Materials:** Sets of "Who Snuggles and Who Nuzzles?" Mothers and Babies Flashcards for each group of students. Pictures for the Flashcards are provided in Appendix A of this Guide. Just cut each sheet of paper in Appendix A in half. These Flashcards show a variety of mothers and their babies. Students will be asked to sort the cards into three groups:

1) Mothers and babies who are being snuggled.
2) Mothers and babies who are being nuzzled.
3) Mothers and babies who are doing something that is not snuggling or nuzzling.

**Getting Ready:** Divide students into groups of 2-4 students. Give each group a set of Flashcards. Put the three pieces of paper labeled "Snuggled," "Nuzzled," and "Babies NOT being Snuggled or Nuzzled" in the center of the table where each group is sitting. For these three pieces of paper you can use the sheet provided at the end of Appendix A.

Instruct students in each group to look at each picture on their Flashcards together. Then, deciding as a group, sort each Flashcard into the correct category.

**Assessment:** At the end of the activity, hold up each Flashcard separately and ask the students into which pile it goes (students should respond verbally). Have the students self-check their choices, making sure that if they misplaced any cards, they are made aware of the visual characteristic that demonstrates each concept vocabulary word.

**Enrichment:** Using Internet resources, allow students to search/discover additional pictures of animal mothers and their babies.

# Activity: Babies Can Be Carried Many Different Ways

**(Flashcards in Appendix B)**

*NGSS Articulation can be found on page 41*

**Overview:** Students will understand why mothers carry their babies. Students will identify and compare the ways that parents carry their babies. Students will then design and build an alternate way to carry objects (babies). This is a good activity to introduce the beginning concept of motion. The goal is to construct a cart with wheels that turn.

**Grade Levels:** Pre-K through 3rd

**Subjects:** Science, Math, Social Studies

**Concepts:** Prekindergarten children learn to describe, observe, and investigate properties and their characteristics through investigations, which allow them to notice the attributes of each. These explorations continue as children use these attributes to compare, classify and problem solve.

**Skills:** Observing, comparing and contrasting, classifying, analyzing, and solving problems.

**Materials:**

- **Wheels** [with a hole in the center that the dowel can slide through]: any size, any material, at least 4 of each size per group (there can be more than that). Cardboard works fine. Students might need assistance with cutting.
- **Straws**: at least 2 per group (the larger the diameter of the straw, the better).
- **Skinny dowel**: one dowel length per straw, cut 1-2" longer than the straw (must be able to slide into the straw easily and stick out at the ends).
- **Tape.**
- **Clay** or any material that the dowel can be stuck into (mini-marshmallows, gumdrops, etc).
- A **platform**: almost anything can work: a piece of cardboard, empty candy box, small plastic microwave lunch container, etc.
- **String** to tie to the front of the platform, long enough to pull it.
- **Pictures** for flashcards available at Appendix B of this Guide.

**Getting Ready:** Discuss reasons why mothers carry their babies. Show Flashcards that depict different ways that mothers carry their babies. Discuss why all of the babies are not carried in the same way. What physical features make carrying their babies easier? How do humans carry their babies? What kind of vehicles do humans build to carry their babies?

**Assessment:** After discussion, put students into small groups (2-3). Hand out materials to each group. Instruct them to make their own cart to carry an object using the materials that they have been given (or can find in the classroom). Pre-make at least one cart to show students *one possible way* of construction. Allow students to observe the model of the cart. Stress the fact that there are other ways to make their carts. Allow the students to problem solve their own constructions. After sharing each finished cart with the rest of the class, discuss what kind of improvements could be made to the carts to do a better job of carrying a human baby (or point out groups that have already added improvements to their carts). What is the easiest way to carry a baby? Why does the answer change depending on the animal? (Animals and their babies have different anatomy, etc. Humans can use tools to build strollers, car seats, or sling carriers, monkey babies can just hang onto their mother, lions don't have hands but they do have loose skin at the nape of the neck that mothers can use to carry young, etc.)

**Building Instructions:**

- Cut platform base, if you are not already using a tray or box.
- Cut straws lengths (these are what the dowel will fit into) about ½" wider than platform base
- Cut dowel (one per straw) 1-2" wider than the straw.
- If the students are too young to cut the wheels out on their own, the teacher should provide them.
- Assembly:
    - Insert dowel into a straw
    - Push dowel through hole in center of the wheel, and keep dowel covered with the straw (straw will stop on the inside of the wheel, dowel will stick out the other side of the wheel)
    - Cover dowel END with a wad of clay (or gum drop). Do not stick the clay to the wheel, only the dowel. The wheel will not turn if the dowel and wheel are stuck together.
    - Now do the same thing to the other side of the straw.
    - You now have two wheels connected by an "axle."
    - Repeat the same process with the remaining two wheels, straw, and dowel.
    - You now have two sets of wheels and axles.
    - Using tape, connect your two axles to the underside base of your platform.
        - Make sure straws are at equal distance from the edges of the platform.
        - Make sure your wheels do not rub the platform.
    - Tie a string to the front of your platform to pull it.

**Enrichment:** Challenge the students to see if they can make a vehicle that can roll down a ramp without pushing. How much weight can their platform carry?

# Background Information: Language

Language is a system of oral, written, and/or signed communication. Linguistics is the scientific study of language. It is estimated that there are between 5,000 and 7,000 languages around the world, but due to the complexities of languages, it is hard for scholars to determine the exact number.

English was first spoken in medieval England, when a German tribe called the Angles emigrated there. It is the third-most spoken native language in the world, and, as a result of globalization and the role of the United States as a world leader, English has become the leading language in international settings.

Even though so many people around the world speak English, it is important to note that not all of them speak the same dialect. Each region or group of English speakers has a particular form of the language they speak. Dialects are distinguished by their vocabulary, grammar, and pronunciation. Despite these differences, English speakers are normally able to communicate effectively with those who speak the same language, regardless of a difference in dialect.

The following few activities are designed to build vocabulary, strengthen spelling skills, encourage the use of descriptive language, and help students communicate their knowledge of science and other topics.

## Activity: What Do We Call Them?

**(Flashcards in Appendix C)**

*NGSS Articulation can be found on page 43*

**Overview:** Using their previous knowledge of animal names, students will learn to name the animals that are featured in this book, their babies, and groups of these animals. This is a great way to build vocabulary.

**Grade Levels:** Pre-K through 2nd

**Subjects:** Science, Language Arts, and Language

**Concepts:** Children's early experiences with language begin to form the basis for their future school success. Children benefit from classroom activities that create an association between reading and feelings of pleasure and enjoyment. Through carefully planned and developed activities that engage students in their acquisition of language, their motivation to learn to read and communicate grow. Having a good grasp on basic vocabulary in a second language is a useful first step to becoming more comfortable speaking a second language and developing a broader knowledge of its vocabulary.

**Skills:** Observing, comparing, and contrasting.

**Materials:** Student worksheet, which can be found in Appendix C of this Guide.

**Getting Ready:** Have students sit in groups of 3-4. Discuss the mother and baby relationship. Ask them what some animals' babies are called and if they know the corresponding word in their second language. Have the students *guess* what we call a group of animals. You can check the table provided in Appendix C to compare the answers. Discuss why the collective name was chosen.

**Assessment:**

- Give each student a worksheet. Have the students work together to guess the collective name of each animal on the worksheet.
- After students have had a chance to complete their handout, come together as a class and (using a whiteboard), have each group list their choice of what they thought was the correct name. (Teacher may need to write the students/group answers on the board, depending upon the writing skills of the students).
- Compare the answers. [The purpose of this activity is the thinking process the students used to select the names they chose.] Discuss why some of the answers were chosen. Identify the correct answer and allow students to change their answers.

# Activity: Crossword Puzzle

**(Worksheets in Appendix D)**

**Overview:** Students will work through a fun crossword puzzle inspired by the animals in *Cuddled and Carried*. The interactive game lets kids use their trivia knowledge about the animals in the book to solve the crossword mystery.

**Grade Levels:** 2nd grade through 4th grade

**Subjects:** Language Arts, Science

**Concepts:** The classic crossword puzzle combines the knowledge that students have gained about these animals through reading *Cuddled and Carried*, the previous Teacher's Guide activities, and what they have learned in class. Using language arts skills, such as grammar, spelling, and context clues, combined with scientific knowledge, students will be able to competently fill out these puzzles on their own or in a group.

**Skills:** Vocabulary, spelling, grammar, context clues.

**Materials:** Book *Cuddled and Carried* and Crossword Puzzle (student copy found in Appendix D with answer key on the back).

**Getting Ready:** Read *Cuddled and Carried* out loud to familiarize students with the animals, habitats, and behaviors, referencing back matter and classroom content. Print enough student crossword puzzles to distribute to the class, and make sure to keep the key for your own reference.

**Assessment:** Individually or in small groups, have students fill out the crossword puzzle found in Appendix D. Discuss the answers as a class. Are there any other animals that could fit the clues provided?

**Enrichment:** For more advanced students, use a timer to see which team or student can finish the crossword puzzle first. Turn it into a game of charades by having each student act out the animal described in the clue, while the other students must fill it in correctly.

## Activity: Animal Adventure – Write Your Own Story!

**(Worksheets in Appendix E)**

*NGSS Articulation can be found on page 44*

**Overview:** Give students the chance to use what they have learned about each animal to write their own stories. Fill-in-the-blank worksheets will give students the opportunity to work with nouns, verbs, and adjectives to reinforce their knowledge of both animal lives and language skills.

**Grade Levels:** 3rd grade through 5th grade

**Subjects:** Language Arts

**Concepts:** Children's early exposure to creative writing not only increases their proficiency with a wide vocabulary, but also their ability to use proper grammar and sentence structure. By using their previous scientific knowledge of animal ecosystems, behaviors, and biological traits, students can choose the "proper" animals to include in each story. However, this open-ended activity also includes the chance to go beyond the traditional, scientific placement of each animal in an ecosystem and allows them to imagine the creative implications of, say, a flamingo living in the snow!

**Skills:** Creative thinking, vocabulary skills, writing, reading.

**Materials:** Choice of several student worksheets, which can be found in Appendix E of this guide.

**Getting Ready:**

- Provide students with one of the 3 worksheets in Appendix E.
- Discuss animals, ecosystems, and basic animal habits to provide them with a touchstone for writing their own stories.
- Encourage students to use creative verbs, adjectives, and animal nouns to write stories that are all different, and even a little silly.

**Assessment:** Individually, allow students to fill in the story worksheets that they have been given. Allow students to share their stories with small groups or the class, and discuss their word choices.

**Enrichment:** Choose one or two of the completed stories and discuss with the class whether the animals and actions in the story make sense based on what they know about the chosen animal's character traits. Does the animal fit in the given habitat? If not, what would the animal need in order to survive in that habitat? What characteristics would it need to perform the actions in the story? What animal character would make the story more realistic?

# Background Information: Senses

Animals use their senses in various ways to identify and communicate with each other. Our five senses (taste, touch, smell, sound, and sight) give us the information we need to survive.

Humans rely mainly on sight to understand the world around us, but other animals have poor eyesight—or no eyes at all. They must use their other senses to find food, communicate, and assess their surroundings in order to survive.

Taste and smell are closely related. In fact, when someone thinks they taste something, they actually smell it first, before their tongue dissolves it and allows it to be "tasted." That is why a person who has a cold or stuffy nose cannot smell or taste food very well. Ants, when they find a source of food, leave a scent trail for other ants to follow to find the food. These ants use their antennae to "smell" the scent. Fish also rely heavily upon smell for communication.

Our ears are constantly hearing sound. Some sounds can annoy us, while other sounds are pleasing to our ears. Mothers and their babies create sounds that help them identify each other from other sounds in their environment. Bats and whales use sound to help them find their way around. Animals that hunt use sounds to listen for movement by their prey.

Other animals, like some species of spider, use their sense of touch to hunt. They find their prey by feeling the vibrations of insects caught in their web. For other animals, physical touch is an important part of social bonding and communication, such as monkeys grooming each other. This bonding is essential for social animals, including humans, who use teamwork as a survival tactic.

The following activities will help students learn more about how our senses help us identify and communicate. These explorations allow students to use different attributes to classify and sort objects, to make observations and predictions, and to problem solve, compare, and question.

## Activity: Are You My Mother?

*NGSS Articulation can be found on page 45*

**Overview:** In this activity, students use the book *Are You My Mother* by P. D. Eastman to discuss how animal mothers and babies might identify one another. It will introduce the idea that we use our senses to gather and share information about the world around us.

**Grade Levels:** Pre-K through 1st grade

**Subjects:** Science, Language Arts, Visual Arts

**Concepts:** In nature, mothers and babies use their senses in many different ways to identify each other. Children explore some of these ways to learn how their senses can help them perceive others

**Skills:** Observing, classifying and categorizing, comparing and contrasting, and making predictions.

**Materials:**

- Book *Are You My Mother* by P. D. Eastman.
- Blindfolds or sleep masks.
- Items to make sounds (bell, bag of rice, stick or chopstick to drum on an item).

**Getting Ready:** Read the book *Are You My Mother* out loud to the class. On each page where the baby bird asks "Are you my mother," ask the students for their guesses. When they say "No!" ask them how they know. Encourage them to address the ways these animals look, feel, and sound different than the baby bird.

**Assessment:** Ask students to describe how each of their senses is important to them. How can each sense be used to find something? Which sense do they think is the most important to them? Which sense did they use to identify the baby bird's mother?

**Enrichment:** Ask students about their experiences listening in the dark. Do they think they could identify the source of a sound without using their sight? Have students put a blindfold or sleep mask over their eyes or keep their eyes shut, while having the students sit down. While the students are quietly sitting in the dark, produce a sound. Ask the students to point (without talking) in the direction of the sound. Next, ask them to raise their hand if they can identify what the sound is (still no talking). Choose one student to ask for the correct answer. (If it is incorrect, make the sound again. Choose from the raised hands for the correct answer.) Next, carefully move to another location. Students should remain quiet and seated in the dark. Produce a new sound. Repeat until satisfied with results.

# Activity: Sight

**(Flashcards in Appendix F)**

*NGSS Articulation can be found on page 46*

**Overview:** In this activity, students use sensory observations to determine how mothers can identify their babies, or how babies can identify their mothers, using their sense of sight.

**Grade Levels:** Pre-K through 1st grade

**Subjects:** Science, Language Arts, Visual Arts

**Concepts:** In nature, mothers and babies use visual characteristics to identify each other. For example, a zebra foal will memorize the stripe pattern on its mother's rump. Children will use their knowledge of animals to classify and sort images, and make comparisons and predictions.

**Skills:** Observing, classifying and categorizing, comparing and contrasting, and making predictions.

**Materials (one set per group):** "Baby Flash Cards" and matching "Mother Flash Cards." Provide several sets of one Mother and one matching Baby picture. Pictures for these Flashcards can be found in Appendix F of this Guide.

**Getting Ready:** Gather into groups of 3-4. Provide each group with several sets of Flashcards (there should be one mother and one matching baby card per set). Two sets per student in each group is suggested. *Example: Four students would have eight Mother and eight matching Baby cards.*

**Assessment:** Place all cards face up (and shuffled) on the group table. Have one student choose one Mother Card and then match it with one Baby Card. If the student is correct, the student gets to keep those cards and the cards are taken off the center of the table. If the cards are not matched correctly, both cards are returned to the group cards. The next student does the same thing, choosing only one set. This continues until all of the cards have been removed from the center of the table. The goal is to ultimately match all Mother cards with the corresponding Baby cards.

**Enrichment:** For a more challenging variation, allow each student to choose from the main pile of cards and continue matching until they make a mistake, then they stop, and put all of the removed cards back into the center. The next student then does the same thing; and so forth, until all of the students have had a turn.

# Activity: Touch

*NGSS Articulation can be found on page 47*

**Overview:** Students use sensory observations to determine how mothers can identify and communicate with their babies, or how babies can identify and bond with their mothers using their sense of touch.

**Grade Levels:** Pre-K through 1st grade

**Subjects:** Science, Language Arts, Visual Arts

**Concepts:** Mother and baby animals use tactile communication to bond with each other. For example, monkey mothers often hold and cuddle their infants, and mother tigers will lick and nuzzle their cubs. Children will use their knowledge of animals to classify and sort objects, and make comparisons and predictions.

**Skills:** Observing, classifying and categorizing, comparing and contrasting, and making predictions.

**Materials:** Find a variety of textures to simulate the texture of animal "skins":

| Suggestions for Animal Texture items | |
|---|---|
| fur | fake fur fabric swatch |
| slick skin | piece of chamois, silk fabric swatch |
| rough skin | sand paper |
| wool | cotton balls, felt squares |
| bird feathers | feathers |
| mane or tail | yarn, cotton cording |

**Getting Ready:** Split into groups of 3-4. Provide each group with several materials or other objects that can simulate what animal skins feel like.

**Assessment:**

- Provide each group with a bag containing several swatches of material or other objects that can simulate what mothers' or babies' "skins" might feel like.
- Have students take turns choosing samples until the sample baggie is empty. *It is important that each student has the same number of samples. Two for each student is generally enough*. Let them feel their samples.
- One by one have each student describe what their samples feel like, and what types of animals they think would have skin that feels like their samples. Let that sample be touched by all the other members of the group. Encourage additional comments by the other students. Put that sample back into the bag. Go to the second student. Have them follow the same procedure. Continue until all samples have been felt and discussed by all members of that group.
- Group discussion of the various samples, with attention to the ways the different skins help the animals survive in their environments.

# Activity: Sound

**(Flashcards in Appendix F)**

*NGSS Articulation can be found on page 48*

**Overview:** In this activity, students use sensory observations to determine how mothers can identify their babies, or how babies can identify their mothers using their hearing.

**Grade Levels:** Pre-K through 1st grade

**Subjects:** Science, Language Arts

**Skills:** Observing, comparing and contrasting, and making predictions.

**Concepts:** Sound is an important way mothers and babies communicate. For example, seals live in huge colonies that are home to hundreds of babies, but a mother seal will recognize her own baby by the sound of its cries. Children will use their knowledge of animals to classify and sort sounds, and make comparisons and predictions.

**Materials:** Flashcards from Appendix G, or other animal pictures. Can also use small animal figurines (**Safety Concern**: Small figurines can be a choking hazard) or stuffed animals. Also, see this website for a variety of sounds to play to the students: http://soundbible.com/tags-animal.html.

**Getting Ready:** Split into groups of 3-4. Provide several flashcards (or plastic figurines) of animals for each group.

**Assessment:** Have one student choose one card (or figurine/stuffed animal) and imitate the sound that that animal makes. Have all the students in the group make the sound together. *It is going to get noisy!* Continue with the next sound, following the same procedure. Continue until all the sounds have been expressed. Afterward, ask questions about how you can recognize each animal based on the sound that it makes. Do the animal noises sound different depending on the individual making the noise? How do humans use sound to recognize each other?

**Enrichment:** Sing "Old McDonald Had a Farm" and use the animals you discussed in class.

# Activity: Smell

*NGSS Articulation can be found on page 49*

**Overview:** In this activity, students use sensory observations to determine how mothers and babies can identify one another using their sense of smell.

**Grade Levels:** Pre-K through 1st grade

**Subjects:** Science, Language Arts, Visual Arts

**Skills:** Observing, comparing and contrasting, and classifying and categorizing.

**Concepts:** For example, dogs and cats recognize their babies by scent, and even human mothers can tell their newborn from other babies based on smell. Children will use their knowledge of animals to sort matching items and make comparisons.

**Materials:** Provide a variety of smells that each child can smell and match with another child's. Baby food jars with holes poked into the lid or coffee cups with lids work well. You can use cotton balls to absorb the scent. The containers do not have to be the same or transparent. Examples of possible scents include: cinnamon, vinegar, vanilla extract, peppermint extract, ground coffee, curry powder, cologne or perfume. **Safety Concern:** Make sure that none of your students are allergic to any of the scents you are using.

**Getting Ready:** Provide each group with several smells. These smells should be in closed small containers that can easily close. There should be two of each scent. Put an "X" on one container and an "O" on the other matching scent. Either use all the same type of container or different types; however, if using different types, do not use the same style for the same scent. Make the two containers different; mark one with an "X," and the other with an "O." If you have five scents, you will have ten containers—five "X's" and five "O's."

When you have completed the activity, put a piece of tape over the holes to keep the smells from drying out. [To further help the teacher identify all of these closed containers, for each matching set (for example all of the Cinnamon smell) - **on the bottom** of the container - mark *#1 on the X container* and *#A on the O container*, then (for example, all of the rubbing alcohol smell) mark a #2 on the X containers and #B on the O containers, #3/#C-vinegar, #4/#D-vanilla extract, #5/#E-peppermint extract, #6/F-cologne or perfume, etc.]

**Safety Concern:** Read the label on all items and make sure that the ones that are chosen are safe for students to inhale. Unfamiliar items should be smelled with caution. If containers are made of glass, they could pose risk of sharp edges if broken.

**Assessment:**

- For each group you will need 2 vials of each smell. One vial marked with an "X," and the second vial of the same smell marked with an "O." For a group of 10, there will be 5 smells (two containers of each smell, one marked with an "X" and one marked with an "O"). For a group of 8 students, there will be 4 smells (two containers of each smell, one marked with an "X" and one marked with an "O").

- For each group, the students need to pick up one container. [If there were 8 students, 4 of them will have a container marked with an "X" and 4 of them will have a container marked with an "O"] The "X" students need to find their "O" partner with the same smell by smelling the other containers. Once everyone in a group has identified their same smell partner, they need to sit down according to scent pairs.

- After all of the students in all of the groups have identified their partner smell, the teacher asks one pair in a group at random what they thought their smell was. Many students will not know the name, but that is okay. After this pair has attempted to identify their smell, have them look at the bottom of their vial for their "code." If the first pair groups say #3 and #C, have all of the rest of the students in the class that have a #3 and #C stand-up. [If you had four groups, you should have 8 students stand, four #3's and four #C's.] Have these students move to one side of the room away from the other students.

- Next the teacher asks a second pair in a group at random what they thought their smell was. Again, they might not know the answer. Have them call their code out to the rest of the class. Perhaps they had a #4 and #D. Have the rest of the class look at the bottom of their container. Have these students move together in a different part of the classroom.

- Continue this pattern until all of the containers have moved to different parts of the classroom. Again, 4 smells will have 4 different parts of the classroom occupied by 8 students, two of each smell.

- Have all of the students in each group of same smells check their fellow members. Everyone should have the same smell.

- The teacher asks for the classroom group that had the codes #1 and #A. Ask what they think the smell is.

- If students do not know the correct answer, tell them what their smell is and ask if anyone can give an example of where they might find that smell.

- Repeat until all groups have been asked what they think their smell is, and all scent pairs have been discussed.

**Enrichment:** Discuss what animals might be better than humans at matching the scents. (Give examples like dogs, bears, rats, sharks, snakes etc).

# Background Information: Lactation

Lactation is a normal biological process in which female mammals use their mammary glands to secrete milk after giving birth. Mammals release their milk differently; some do so through exposed nipples or teats, others have nipples in hidden pockets, others simply secrete it onto their skin for their young to lick, and some eject their milk into the water for their young to snatch. Each newborn mammal is anatomically ready to feed from their mother and the milk produced is tailor-made to help the young grow physically, emotionally, and intellectually.

Female mammary tissue grows during pregnancy and hormones from the ovaries and placenta start milk production. However, only after birth does the milk flow freely. The milk supply is established by supply and demand. The more a youngster nurses, the more milk the mother produces. Too much milk is undesirable and can cause problems, so baby mammals are designed to breastfeed on demand to maintain that equilibrium. (Tigers and pandas do not have watches or follow a calendar, after all.) In nature, each baby mammal breastfeeds when and for as long their body tells them it is needed.

For humans, the World Health Organization (WHO) recommends that babies exclusively breastfeed for six months "to achieve optimal growth, development, and health. Thereafter, they should be given nutritious complementary foods and continue breastfeeding up to the age of two years or beyond."

The following activities are designed to help children realize how normal the lactation process is and how each mammal is designed to breastfeed based on their physical characteristics and their habitats.

# Activity: Lactation Among Mammals

**(Handout in Appendix H)**

*NGSS Articulation can be found on page 50*

**Overview:** Children will learn what lactation is, why it is important for mammals, and the differences in lactation processes among them.

**Grade Levels:** K through 3rd grade

**Subjects:** Biology, Anatomy, and Language Arts

**Vocabulary:**

Lactation: the secretion of milk by mammary glands.
Secretion: the process of releasing chemicals from a cell.
Mammary glands: the organs that, in the female mammal, produce milk for the sustenance of the young.

**Concepts:** All mammals have mammary glands, though not all mammals have breasts, and some don't even have nipples, but the mammary glands are in charge of producing the milk for sustenance of the mammal's young. This milk is tailor-made to nourish their young and it is often fed through nipples. Some animals have exposed nipples, such as monkeys, and others have them hidden in a pocket, such as whales. There are also a third set of mammals that don't have nipples at all and secrete milk onto their skin, which their young then lick off the chest, such as the platypus.

In humans, breastfeeding is the normal way of providing young infants with the nutrients they need for healthy growth and development. Virtually all mothers can breastfeed, provided they have accurate information, the support of their family, the health care system, and society at large.

**Skills:** Reading, oral expression, writing, analyzing, and dramatizing.

**Materials:** Book *Babies Nurse* by Phoebe Fox (Platypus Media, 2018), Appendix H provided in this Guide, paper, coloring pencils, construction paper, scissors, popsicle sticks, and glue.

**Getting Ready:** Read *Babies Nurse* out loud and emphasize the position in which each animal is nursing. Explain to the children the babies are drinking their mother's milk and how this is a tailor-made fluid or liquid that has all the nutrients and fat necessary for their young to grow. The students will then draw an animal and their young from the book, cut them out, paste them separately onto construction paper, and glue on popsicle sticks to create little puppets.

**Assessment:** Once their puppets project is done, they will act out with their puppets how this particular animal nurses according to the book.

**Enrichment:** Discuss how the maturity level of the young at birth plays a role in how they breastfeed. Introduce older students to the three main groups of living mammals: monotremes, placentals, and marsupials presented in Appendix H. Divide the class in small groups and have them do a presentation on an animal in each of the main mammal groups. Discuss how the animal feeds its young.

# Breastfeeding Education

"There persists an attitude in much of society that you can 'spoil' a child with too much love. However, scientific study, particularly on premature babies, but also on all babies, has shown that physical closeness, often called 'skin to skin' care, has lasting, positive effects on the relationship between parents and babies. I like how this book includes breastfeeding as one of the many ways a child is cuddled, carried, and given security."

—Jack Newman, M.D., FRCPC, author of *The Ultimate Breastfeeding Book of Answers*


Illustration from page 21 of *Cuddled and Carried / Consentido y cargado*, by artist Mike Speiser

Breastfeeding is the natural way for all mammals to feed their young. Breastmilk is meant to be the first food for all baby mammals. Many human children are not familiar with breastfeeding because they do not remember it or they were bottle- or formula-fed in infancy.

Children need to understand that breastmilk is a powerful substance designed to be the first food for mammals because it is the optimal way to promote growth, develop a strong immune system, and connect the baby to the mother emotionally.

For many years, there were few children's books that portrayed human mothers nursing their babies. Recently, more and more breastfeeding-themed children's books are becoming available. Sharing these books with your kids can help show the beauty of this simple, natural, and normal act of mothering.

# Mammal Nursing Trivia

Breastfeeding is the crucial bridge between infancy and maturity.
Here's how some different mammals breastfeed...

- The female duck-billed platypus breastfeeds without the benefit of a breast or a nipple. The mammary glands rest underneath the mother's chest. The youngster pushes against the chest wall with his soft, pliable bill, then licks the oozing milk off his mother's skin and hair.

- Whales need to preserve their sleek, hydrodynamically efficient shape. The mother's milk glands are below her thick blubber layer. This interior location also protects the milk from the cold. The baby nudges the area and milk—thick as cream—spurts out. A baby Pacific gray whale can drink 50 pounds of breastmilk a day!

- Hippos are born underwater—and nurse underwater, too. Immediately after the birth, the mother and other female hippos push the newborn to the surface to breathe. Then the baby goes under again, finds a nipple, and suckles, instinctively folding down his ears and closing his nostrils. Every 20-40 seconds, he bobs to the surface to breathe and swallow.

- Female and young lions live together in a pride. In one pride, all the lionesses take care of all the cubs. Unlike almost all other mammals, any lioness will wet-nurse (breastfeed a baby who is not her own) any cub. A napping lioness who has been hunting all night doesn't pay much attention to who is suckling on her. And because they are all so closely related, a lioness helps the family, no matter whose baby she nurses.

- The hooded seal lives about thirty years, but spends only four days breastfeeding and being a child, the shortest nursing period of any mammal. They live at sea, but must give birth and nurse out of the water. The only surface available is floating ice. Pups are born in the spring, when the ice is beginning to melt and break up. A sudden storm might send pieces crashing together, crushing moms and pups. Or an ice floe might split, and moms and pups could be separated. A short childhood helps avoid these perils.

- Baby orangutans breastfeed, ride on their mother's body, and sleep on her chest for seven years—among the longest nursing period of any mammal. The young stay with their mothers at least until a new baby arrives; males begin to wander off then, but females may stay around for a while observing how babies are cared for. They are accomplished acrobats, often nursing upside down—hanging by a hand and a foot from a branch.

- Baby animals are weaned when the mother is newly pregnant or preparing for another pregnancy. In Western culture, today, the most common reason cited for human weaning is in preparation to return to a job outside the home.

Adapted from *If My Mom Were A Platypus: Mammal Babies and Their Mothers* by Dia L. Michels, published by Science Naturally. Used with Permission.

## Bibliography of Children's Books that Depict Breastfeeding

For many years, there were few children's books that portrayed breastfeeding. In recent years, some wonderful breastfeeding-themed children's books have been published.

Some of these books discuss breastfeeding itself, but many simply show the act of nursing within the story itself. Look for them in your library or favorite bookstore. Sharing these books with your kids helps show them the beauty of this natural and normal act of mothering**.**

- *All The World* by Liz Garton Scanlon
- *Babies Nurse* by Phoebe Fox
- *Best Milk* by Kate Carothers
- *Breastmilk Makes My Tummy Yummy* by Cecilia Moen
- *Breasts* by Genichiro Yagyu
- *I'm Made of Mama's Milk* by Mary Olsen
- *If My Mom Were a Platypus* by Dia L. Michels
- *Look What I See! Where Can I Be? In the Neighborhood* by Dia L. Michels
- *Mama Outside, Mama Inside by* Dianna Hutts Aston
- *Mama's Milk* by Michael Elsohn Ross
- *Mammals and Their Milk* by Lucia Anderson
- *Mariana and the Merchild* by Caroline Pitcher
- *Michelle the Nursing Toddler* by Jane Pinczuk
- *Mommy Breastfeeds my Baby Brother* by Mark Repkin
- *Mommy Feeds Baby* by Christina Jo Hendricks
- *My New Baby* by Rachel Fuller
- *Nursies When the Sun Shines* by Katherine Havener
- *Only The Cat Saw* by Ashley Wolff
- *Ruby's Baby Brother* by Kathryn White
- *The Mystery of the Breast* by Victoria de Aboitiz
- *The Wonders of Mother's Milk* by Mishawn Purnell-O'Neal
- *This Milk Tastes Good! A Breastfeeding Nursery Rhyme* by Chenniah Patrick
- *Tucking In! (Just Like Me)* by Jess Stockham
- *We Like to Nurse* by Chia Martin and Mary Young
- *We Like to Nurse, Too* by Chia Martin and Mary Young
- *Welcome with Love* by Jenni Overend
- *What Does Baby Want* by Tupera Tupera
- *Will There Be A Lap for Me?* By Dorothy Corey
- *You, Me and the Breast* by Monica Calaf

*Adapted from "Children's Books That Depict Breastfeeding" by Anne Altshuler, RN, MS, IBCLC. Used with permission. View it at https://bit.ly/2u3ZqX9

# Breastfeeding Bingo Game

Cut out each individual word. Place them face down to choose the bingo words one by one.

| | | | | | |
|---|---|---|---|---|---|
| Humans | Animals | Loving | Sheltering | Snuggling | Cuddling |
| Carrying | Guiding | Grooming | Nuzzling | Nurturing | Mother |
| Baby | Breastfeeding | | | | |

Cut out each bingo card and give one to each player.

| | | |
|---|---|---|
| Loving | Animals | Sheltering |
| Breastfeeding | Grooming | Mother |
| Humans | Carrying | Baby |
| Cuddling | Guiding | Nuzzling |

| | | |
|---|---|---|
| Baby | Cuddling | Humans |
| Mother | Nurturing | Breastfeeding |
| Carrying | Animals | Loving |
| Nuzzling | Guiding | Grooming |

| | | |
|---|---|---|
| Baby | Grooming | Animals |
| Humans | Loving | Breastfeeding |
| Cuddling | Sheltering | Nurturing |
| Carrying | Snuggling | Mother |

| | | |
|---|---|---|
| Nurturing | Sheltering | Humans |
| Snuggling | Mother | Grooming |
| Carrying | Loving | Cuddling |
| Baby | Animals | Breastfeeding |

Make your own cards at http://www.kiddiesgames.com/en/bingo_words.php

# Articulation to NGSS Standards

**Cuddled and Carried**

A resource for science education

This beautiful book celebrates the bond between parent and child, and is a richly illustrated exploration of the animal world.

The Next Generation Science Standards (NGSS) are a multi-state effort to create new educational science standards that are rich in content and practice. There are a number of themes in the kindergarten NGSS that include animals and lifecycle concepts. For instance, students are encouraged to formulate answers to questions such as:

- "Where do animals live and why do they live there?"
- "What do plants and animals (including humans) need to survive?"
- "What is the relationship between plants' and animals' needs and where they live?"

The early years are a time when kids are naturally curious and open to making sense of the world around them. Reading and discussing books like this can help your children develop that natural curiosity into the beginnings of more rigorous scientific inquiry and conceptual understanding.

Find more information on the NGSS at http://www.nextgenscience.org/

## What is the NGSS?

The Next Generation Science Standards is a multi-state effort to create new education standards rich in content and practice. They are arranged in a coherent manner across disciplines and grades to provide all students an internationally benchmarked science education. NGSS is based on a framework for K-12 Science Education and previous national standards. Read the Executive Summary of the NGSS for a good introduction to the document.

## How Do Kids Learn Science in the Early Years?

The NGSS is designed to guide and inspire education from K-12. In kindergarten, the performance expectations help students formulate answers to questions such as:

"What happens if you push or pull an object harder?"

"What is the weather like today and how is it different from yesterday?"

There are a number of themes in the kindergarten NGSS that include animals and lifecycle concepts, such as:

"Where do animals live and why do they live there?"

"What do plants and animals (including humans) need to survive?"

"What is the relationship between plants' and animals' needs and where they live?"

*Cuddled and Carried* introduces children to the concepts of habitats, reproduction, lifecycle, adaptations, and more.

## What About Science in Early Childhood Education?

**Excerpt from the NSTA Position Paper on Early Childhood Education**

There are no national science standards for kids in preschool, but that does not mean that young kids are not expected to talk about science or conduct science investigations. Kids are not supposed to begin school as empty slates, but to begin building on prior experiences. The early years are a time when kids are naturally curious and open to making sense of the world around them. It is a fertile time to begin the process of turning that natural curiosity into the beginnings of more rigorous scientific inquiry and conceptual understanding.

Adults should recognize the value and importance of nurturing young children's curiosity and provide experiences for science conversation and exploration in the early years. There are numerous opportunities every day for young children to engage in science inquiry and learning by intentionally designing a rich, positive, and safe environment for exploration and discovery. Using science and engineering practices in the early years can foster children's curiosity and enjoyment in exploring the world around them and lay the foundation for a progression of science learning in K–12 settings and throughout their entire lives.

## The Eight Practices of Science and Engineering that are Essential for All Students

**Excerpt from NGSS, APPENDIX F – Science and Engineering Practices in the NGSS**

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

## Key Principles to Guide the Learning of Science Among Young Children

**Excerpt from the National Academy of Science publication**
**A Science Framework for K-12 Science Education**

- Children have the capacity to engage in scientific practices and develop understanding at a conceptual level
- Adults play a central and important role in helping young children learn science
- Young children need multiple and varied opportunities to engage in science exploration and discovery
- Young children develop science skills and knowledge in both formal and informal settings
- Young children develop science skills and knowledge over time
- Young children develop science skills and learning by engaging in experiential learning

## Parent Involvement in Science Learning

**Excerpt from the NSTA Position Paper on Parent Involvement**

Involvement of parents and other caregivers in their children's learning is crucial to their children's interest in and ability to learn science. Research shows that when parents play an active role, their children achieve greater success as learners, regardless of socioeconomic status, ethnic/racial background, or the parents' own level of education. Furthermore, the more intensely parents are involved, the more confident and engaged their children are as learners and the more beneficial the effects on their achievement. Parents and other caregivers have a critical role to play in encouraging and supporting their children's science learning at home, in school, and throughout their community.

## Articulation of NGSS to Activity: *Who Snuggles and Who Nuzzles?*

**NGSS > K-LS1-1** > Science and Engineering Practices > Analyzing and Interpreting Data > Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

**NGSS > K-LS1-1** > Science and Engineering Practices > Connections to Nature of Science > Scientific Knowledge is Based on Empirical Evidence > Scientists look for patterns and order when making observations about the world.

**NGSS > K-ESS3-3** > Science and Engineering Practices > Obtaining, Evaluating, and Communicating Information > Obtaining, evaluating, and communicating information in K–2 builds on prior Experiences and uses observations and texts to communicate new information.

**NGSS > 3-LS3-1** > Disciplinary Core Ideas in Life Sciences > LS3.B: Variation of Traits > Different organisms vary in how they look and function because they have different inherited information.

**NGSS > K-LS1-1** > Crosscutting Concepts > Patterns > Patterns in the natural and human designed world can be observed and used as evidence > Use observations to describe patterns of what plants and animals (including humans) need to survive.

**NGSS > 3-LS3-1** > Crosscutting Concepts > Patterns > Similarities and differences in patterns can be used to sort and classify natural phenomena > Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

## Articulation of NGSS to Activity: *Babies Can Be Carried Many Different Ways*

**NGSS > K-LS1-1** > Science and Engineering Practices > Analyzing and Interpreting Data > Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

**NGSS > K-LS1-1** > Science and Engineering Practices > Connections to Nature of Science > Scientific Knowledge is Based on Empirical Evidence > Scientists look for patterns and order when making observations about the world.

**NGSS > K-2-ETS1-2** > Science and Engineering Practices > Developing and Using Models > K-2 Condensed Practices > Modeling in K-2 builds on prior experiences and progresses to include using and developing models (e.g., diagram, drawing, physical replica, diorama, dramatization, or story board) that represent concrete events or design solution > Develop a simple model based on evidence to represent a proposed object or tool.

**NGSS > K-2-ETS1-3** > Science and Engineering Practices > Analyzing and Interpreting Data > Analyzing data in K-2 builds on prior experiences and progresses to collecting, recording, and sharing observations > Analyze data from tests of an object or tool to determine if it works as intended.

**NGSS > 3-5-ETS1-3** > Science and Engineering Practices > Planning and Carrying Out Investigations > Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions > Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.

**NGSS > 3-5-ETS1-2** > Science and Engineering Practices > Constructing Explanations and Designing Solutions > Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems > Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem.

**NGSS > 3-LS2-1** > Science and Engineering Practices > Engaging in Argument from Evidence > Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed worlds > Construct an argument with evidence, data, and/or a model.

**NGSS > K-ESS3-1** > Crosscutting Concepts > Systems and system Models > A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems > Systems in the natural and designed world have parts that work together.

**NGSS > K-2-ETS1-2** > Crosscutting Concepts > Structure and Function > The shape and stability of structures of natural and designed objects are related to their function(s).

**NGSS > 3-LS2-1** > Crosscutting Concepts > Cause and Effect > Cause and effect relationships are routinely identified and used to explain change.

**NGSS > 3-LS2-1** > Disciplinary Core Ideas in Life Sciences > LS2.D: Social Interactions and Group Behavior > Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size. (Note: Moved from K–2).

**NGSS > 2-PS1-2** > Disciplinary Core Ideas in Physical Science > PS1.A: Structure and Properties of Matter > Different properties are suited to different purposes.

**NGSS > 2-PS1-3** > Disciplinary Core Ideas in Physical Science > PS1.A: Structure and Properties of Matter > A great variety of objects can be built up from a small set of pieces.

**NGSS > K-PS2-2** > Disciplinary Core Ideas in Physical Science > PS2.A: Forces and Motion > Pushes and pulls can have different strengths and directions > Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.

**NGSS > K-PS2-1** > Disciplinary Core Ideas in Physical Science > PS3.C: Relationship Between Energy and Forces > A bigger push or pull makes things speed up or slow down more quickly.

**NGSS > K-2-ETS1-1** > Disciplinary Core Ideas in Engineering Design > ETS1.A: Defining and Delineating Engineering Problems > A situation that people want to change or create can be approached as a problem to be solved through engineering > Asking questions, making observations, and gathering information are helpful in thinking about problems > Before beginning to design a solution, it is important to clearly understand the problem.

**NGSS > K-2-ETS1-2** > Disciplinary Core Ideas in Engineering Design > ETS1.B: Developing Possible Solutions > Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.

**NGSS > K-2-ETS1-3** > Disciplinary Core Ideas in Engineering Design > ETS1.C: Optimizing the Design Solution > Because there is always more than one possible solution to a problem, it is useful to compare and test designs.

**NGSS > K-PS2-1** > Connections to the Nature of Science > Understanding about the Nature of Science Most Closely Associated With Practices > Category: Scientific Investigations Use a Variety of Methods > Scientists use different ways to study the world.

**NGSS > 2-PS1-2** > Connections to Engineering, Technology, and Applications of Science > Influence of Science, Engineering, and Technology on Society and the Natural World > Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world.

## Articulation of NGSS to Activity: *What Do We Call Them?*

**NGSS > K-LS1-1** > Science and Engineering Practices > Analyzing and Interpreting Data > Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

**NGSS > K-LS1-1** > Science and Engineering Practices > Connections to Nature of Science > Scientific Knowledge is Based on Empirical Evidence > Scientists look for patterns and order when making observations about the world.

**NGSS > K-ESS3-3** > Science and Engineering Practices > Obtaining, Evaluating, and Communicating Information > Obtaining, evaluating, and communicating information in K-2 builds on prior experiences and uses observations and texts to communicate new information.

**NGSS > 3-LS3-1** > Disciplinary Core Ideas in Life Sciences > LS3.B: Variation of Traits > Different organisms vary in how they look and function because they have different inherited information.

**NGSS > 3-LS3-2** > Disciplinary Core Ideas in Life Sciences > LS3.B Variation of Traits > The environment also affects the traits that an organism develops.

**NGSS > K-LS1-1** > Crosscutting Concepts > Patterns > Patterns in the natural and human designed world can be observed and used as evidence > Use observations to describe patterns of what plants and animals (including humans) need to survive.

**NGSS > 3-LS3-1** > Crosscutting Concepts > Patterns > Similarities and differences in patterns can be used to sort and classify natural phenomena > Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

## Articulation of NGSS to Activity: *Animal Adventure – Write Your Own Story!*

**NGSS > K-LS1-1** > Science and Engineering Practices > Analyzing and Interpreting Data > Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

**NGSS > K-LS1-1** > Science and Engineering Practices > Connections to Nature of Science > Scientific Knowledge is Based on Empirical Evidence > Scientists look for patterns and order when making observations about the world.

**NGSS > K-ESS3-3** > Science and Engineering Practices > Obtaining, Evaluating, and Communicating Information > Obtaining, evaluating, and communicating information in K-2 builds on prior experiences and uses observations and texts to communicate new information.

**NGSS > 3-LS3-1** > Disciplinary Core Ideas in Life Sciences > LS3.B: Variation of Traits > Different organisms vary in how they look and function because they have different inherited information.

**NGSS > 3-LS3-2** > Disciplinary Core Ideas in Life Sciences > LS3.B Variation of Traits > The environment also affects the traits that an organism develops.

**NGSS > K-LS1-1** > Crosscutting Concepts > Patterns > Patterns in the natural and human designed world can be observed and used as evidence > Use observations to describe patterns of what plants and animals (including humans) need to survive.

## Articulation of NGSS to Activity: *Are You My Mother?*

**NGSS > K-LS1-1** > Science and Engineering Practices > Analyzing and Interpreting Data > Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

**NGSS > K-LS1-1** > Science and Engineering Practices > Connections to Nature of Science > Scientific Knowledge is Based on Empirical Evidence > Scientists look for patterns and order when making observations about the world.

**NGSS > 3-LS2-1** > Science and Engineering Practices > Engaging in Argument from Evidence > Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed worlds > Construct an argument with evidence, data, and/or a model.

**NGSS > K-ESS3-3** > Science and Engineering Practices > Obtaining, Evaluating, and Communicating Information > Obtaining, evaluating, and communicating information in K–2 builds on prior Experiences and uses observations and texts to communicate new information.

**NGSS > 3-LS1-1** > Disciplinary Core Ideas in Life Sciences > LS1.B: Growth and Development of Organisms > Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.

**NGSS > 3-LS2-1** > Disciplinary Core Ideas in Life Sciences > LS2.D: Social Interactions and Group Behavior > Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size. (Note: Moved from K–2).

**NGSS > 3-LS3-1** > Disciplinary Core Ideas in Life Sciences > LS3.B: Variation of Traits > Different organisms vary in how they look and function because they have different inherited information.

**NGSS > 3-LS3-2** > Disciplinary Core Ideas in Life Sciences > LS3.B Variation of Traits > The environment also affects the traits that an organism develops.

**NGSS > K-LS1-1** > Crosscutting Concepts > Patterns > Patterns in the natural and human designed world can be observed and used as evidence > Use observations to describe patterns of what plants and animals (including humans) need to survive.

# Articulation of NGSS to Activity: *Sight*

**NGSS > K-LS1-1** > Science and Engineering Practices > Analyzing and Interpreting Data > Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

**NGSS > K-LS1-1** > Science and Engineering Practices > Connections to Nature of Science > Scientific Knowledge Is Based on Empirical Evidence > Scientists look for patterns and order when making observations about the world.

**NGSS > 3-LS2-1** > Science and Engineering Practices > Engaging in Argument from Evidence > Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed worlds > Construct an argument with evidence, data, and/or a model.

**NGSS > K-ESS3-3** > Science and Engineering Practices > Obtaining, Evaluating, and Communicating Information > Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.

**NGSS > 3-LS1-1** > Disciplinary Core Ideas in Life Sciences > LS1.B: Growth and Development of Organisms > Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.

**NGSS > 3-LS2-1** > Disciplinary Core Ideas in Life Sciences > LS2.D: Social Interactions and Group Behavior>Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size. (Note: Moved from K–2).

**NGSS > 3-LS3-1** > Disciplinary Core Ideas in Life Sciences > LS3.B: Variation of Traits > Different organisms vary in how they look and function because they have different inherited information.

**NGSS > 3-LS3-2** > Disciplinary Core Ideas in Life Sciences > LS3.B Variation of Traits > The environment also affects the traits that an organism develops.

**NGSS > K-LS1-1** > Crosscutting Concepts > Patterns > Patterns in the natural and human designed world can be observed and used as evidence > Use observations to describe patterns of what plants and animals (including humans) need to survive.

**NGSS > 3-LS3-1** > Crosscutting Concepts > Patterns > Similarities and differences in patterns can be used to sort and classify natural phenomena > Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

# Articulation of NGSS to Activity: *Touch*

**NGSS > K-LS1-1** > Science and Engineering Practices > Analyzing and Interpreting Data > Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

**NGSS > K-LS1-1** > Science and Engineering Practices > Connections to Nature of Science > Scientific Knowledge is Based on Empirical Evidence > Scientists look for patterns and order when making observations about the world.

**NGSS > 3-LS2-1** > Science and Engineering Practices > Engaging in Argument from Evidence > Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed worlds > Construct an argument with evidence, data, and/or a model.

**NGSS > K-ESS3-3** > Science and Engineering Practices > Obtaining, Evaluating, and Communicating Information > Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.

**NGSS > 3-LS1-1** > Disciplinary Core Ideas in Life Sciences > LS1.B: Growth and Development of Organisms > Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.

**NGSS > 3-LS2-1** > Disciplinary Core Ideas in Life Sciences > LS2.D: Social Interactions and Group Behavior > Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size. (Note: Moved from K–2).

**NGSS > 3-LS3-1** > Disciplinary Core Ideas in Life Sciences > LS3.B: Variation of Traits > Different organisms vary in how they look and function because they have different inherited information.

**NGSS > 3-LS3-2** > Disciplinary Core Ideas in Life Sciences > LS3.B Variation of Traits > The environment also affects the traits that an organism develops.

**NGSS > K-LS1-1** > Crosscutting Concepts > Patterns > Patterns in the natural and human designed world can be observed and used as evidence > Use observations to describe patterns of what plants and animals (including humans) need to survive.

# Articulation of NGSS to Activity: *Sound*

**NGSS > K-LS1-1** > Science and Engineering Practices > Analyzing and Interpreting Data > Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

**NGSS > K-LS1-1** > Science and Engineering Practices > Connections to Nature of Science > Scientific Knowledge is Based on Empirical Evidence > Scientists look for patterns and order when making observations about the world.

**NGSS > 3-LS2-1** > Science and Engineering Practices > Engaging in Argument from Evidence > Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed worlds > Construct an argument with evidence, data, and/or a model.

**NGSS > K-ESS3-3** > Science and Engineering Practices > Obtaining, Evaluating, and Communicating Information > Obtaining, evaluating, and communicating information in K–2 builds on prior Experiences and uses observations and texts to communicate new information.

**NGSS > 3-LS1-1** > Disciplinary Core Ideas in Life Sciences > LS1.B: Growth and Development of Organisms > Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.

**NGSS > 3-LS2-1** > Disciplinary Core Ideas in Life Sciences > LS2.D: Social Interactions and Group Behavior > Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups May serve different functions and vary dramatically in size. (Note: Moved from K–2).

**NGSS > 3-LS3-1** > Disciplinary Core Ideas in Life Sciences > LS3.B: Variation of Traits > Different organisms vary in how they look and function because they have different inherited information.

**NGSS > 3-LS3-2** > Disciplinary Core Ideas in Life Sciences > LS3.B Variation of Traits > The environment also affects the traits that an organism develops.

**NGSS > K-LS1-1** > Crosscutting Concepts > Patterns > Patterns in the natural and human designed world can be observed and used as evidence > Use observations to describe patterns of what plants and animals (including humans) need to survive.

# Articulation of NGSS to Activity: *Smell*

**NGSS > K-LS1-1** > Science and Engineering Practices > Analyzing and Interpreting Data > Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

**NGSS > K-LS1-1** > Science and Engineering Practices > Connections to Nature of Science > Scientific Knowledge is Based on Empirical Evidence > Scientists look for patterns and order when making observations about the world.

**NGSS > 3-LS2-1** > Science and Engineering Practices > Engaging in Argument from Evidence > Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed worlds > Construct an argument with evidence, data, and/or a model.

**NGSS > K-ESS3-3** > Science and Engineering Practices > Obtaining, Evaluating, and Communicating Information > Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.

**NGSS > 3-LS1-1** > Disciplinary Core Ideas in Life Sciences > LS1.B: Growth and Development of Organisms > Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.

**NGSS > 3-LS2-1** > Disciplinary Core Ideas in Life Sciences > LS2.D: Social Interactions and Group Behavior > Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size. (Note: Moved from K–2).

**NGSS > 3-LS3-1** > Disciplinary Core Ideas in Life Sciences > LS3.B: Variation of Traits > Different organisms vary in how they look and function because they have different inherited information.

**NGSS > 3-LS3-2** > Disciplinary Core Ideas in Life Sciences > LS3.B Variation of Traits > The environment also affects the traits that an organism develops.

**NGSS > K-LS1-1** > Crosscutting Concepts > Patterns > Patterns in the natural and human designed world can be observed and used as evidence > Use observations to describe patterns of what plants and animals (including humans) need to survive

.

**NGSS > 3-LS3-1** > Crosscutting Concepts > Patterns > Similarities and differences in patterns can be used to sort and classify natural phenomena > Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

# Articulation of NGSS to Activity: *Lactation Among Mammals*

**NGSS > K-ESS3-1** > Science and Engineering Practices > Developing and Using Models > Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions. Use a model to represent relationships in the natural world.

**NGSS > 3-LS1-1** > Science and Engineering Practices > Developing and Using Models > Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions. Develop models to describe phenomena.

**NGSS > K-LS1-1** > Science and Engineering Practices > Analyzing and Interpreting Data > Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

**NGSS > K-LS1-1** > Science and Engineering Practices > Connections to Nature of Science > Scientific Knowledge is Based on Empirical Evidence > Scientists look for patterns and order when making observations about the world.

**NGSS > K-ESS2-2** > Science and Engineering Practices > Engaging in Argument from Evidence > Engaging in argument from evidence in K–2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s). Construct an argument with evidence to support a claim.

**NGSS > K-ESS3-3** > Science and Engineering Practices > Obtaining, Evaluating, and Communicating Information > Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.

**NGSS > 3-LS4-1** > Science and Engineering Practices > Analyzing and Interpreting Data > Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.

**NGSS > 3-LS3-2** > Constructing Explanations and Designing Solutions > Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems > Use evidence (e.g., observations, patterns) to support an explanation.

**NGSS > K-LS1-1** > Disciplinary Core Ideas in Life Sciences > LS1.C: Organization for Matter and Energy Flow in Organisms > All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.

**NGSS > K-ESS3-1** > Disciplinary Core Ideas in Earth and Space Sciences > ESS3.A: Natural Resources Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do.

**NGSS > 3-LS1-1** > Disciplinary Core Ideas in Life Sciences > LS1.B: Growth and Development of Organisms > Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.

**NGSS > 3-LS3-1** > Disciplinary Core Ideas in Life Sciences > LS3.B: Variation of Traits > Different organisms vary in how they look and function because they have different inherited information.

**NGSS > 3-LS3-2** > Disciplinary Core Ideas in Life Sciences > LS3.B Variation of Traits > The environment also affects the traits that an organism develops.

**NGSS > 3-LS3-2** > Disciplinary Core Ideas in Life Sciences > LS3.A: Inheritance of Traits > Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment.

**NGSS > K-LS1-1** > Crosscutting Concepts > Patterns > Patterns in the natural and human designed world can be observed and used as evidence > Use observations to describe patterns of what plants and animals (including humans) need to survive.

**NGSS > 3-LS3-1** > Crosscutting Concepts > Patterns > Similarities and differences in patterns can be used to sort and classify natural phenomena > Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

**NGSS > 3-LS3-2** > Crosscutting Concepts > Cause and Effect > Cause and effect relationships are routinely identified and used to explain change > Use evidence to support the explanation that traits can be influenced by the environment.

# Appendices

Appendix A. Snuggle or Nuzzle Flashcards

Appendix B. Carrying Babies Flashcards

Appendix C. What Do We Call Them?

Appendix D. *Cuddled and Carried* Crossword Puzzle

Appendix E. Fill-in-the-Blanks Worksheets

Appendix F. Mother and Baby Matching Flashcards

Appendix G. Animal Sounds Flashcards

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| Elephant | Photo by Megan Coughlin, flickr.com |
| Duck | Photo by Brendan Lally, flickr.com |

Photo credits for Carrying Babies Flashcards

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| Lemur mother | Photo by Tambako the Jaguar, flickr.com |
| Swan mother | Photo by monkeywing, flickr.com |
| Gorilla | Photo by mliu92, flickr.com |
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| Polar bear | Photo by beingmyself, flickr.com |
| Spider | Photo by Oregon Caves, flickr.com |
| Koala | Photo by Swallowtail Garden Seeds, flickr.com |

# Appendix A: Snuggle or Nuzzle Flashcards

To use the following pictures as Flashcards, cut the pages in half horizontally.

Nuzzling:

Figure 1: Dog

Figure 2: Hippo

Figure 3: Lemur

Snuggling:

Figure 4: Goat

Figure 5: Bobcat

Figure 6: Chimpanzee

NOT Nuzzling or Snuggling:

Figure 7: Ostrich

Figure 8: Rhino

Figure 9: Baboon

# Snuggled

---

# Nuzzled

---

# Babies NOT being Snuggled or Nuzzled

# Appendix B: Carrying Babies Flashcards

To use the following pictures as Flashcards, cut the pages in half horizontally.

Figure 7: Duck (Common Merganser) / Pato (Mergus Merganser)

Figure 8: Gorilla / Gorila

Figure 9: Kangaroo / Canguro

Figure 10: Koala / Koala

Figure 11: Lemur / Lémur

Figure 12: Lion / León

Figure 13: Polar Bear / Oso Polar

Figure 14: Spider / Araña

Figure 15: Swan / Cisne

## Appendix C: What Do We Call Them?

What is the collective name for the following animals?
Use the word bank provided to help you fill out the blanks.

Goose

_____

Otter

_____

Flamingo

_____

Polar Bear

_____

Human

_____

Penguin

_____

**<u>Word Bank</u>**:
Colony, Stand, Celebration, Gaggle, Raft, Community

## Appendix C: What Do We Call Them? Answer Key

What is the collective name for the following animals?
Use the word bank provided to help you fill out the blanks.

Goose
Gaggle

Otter
Raft

Flamingo
Stand

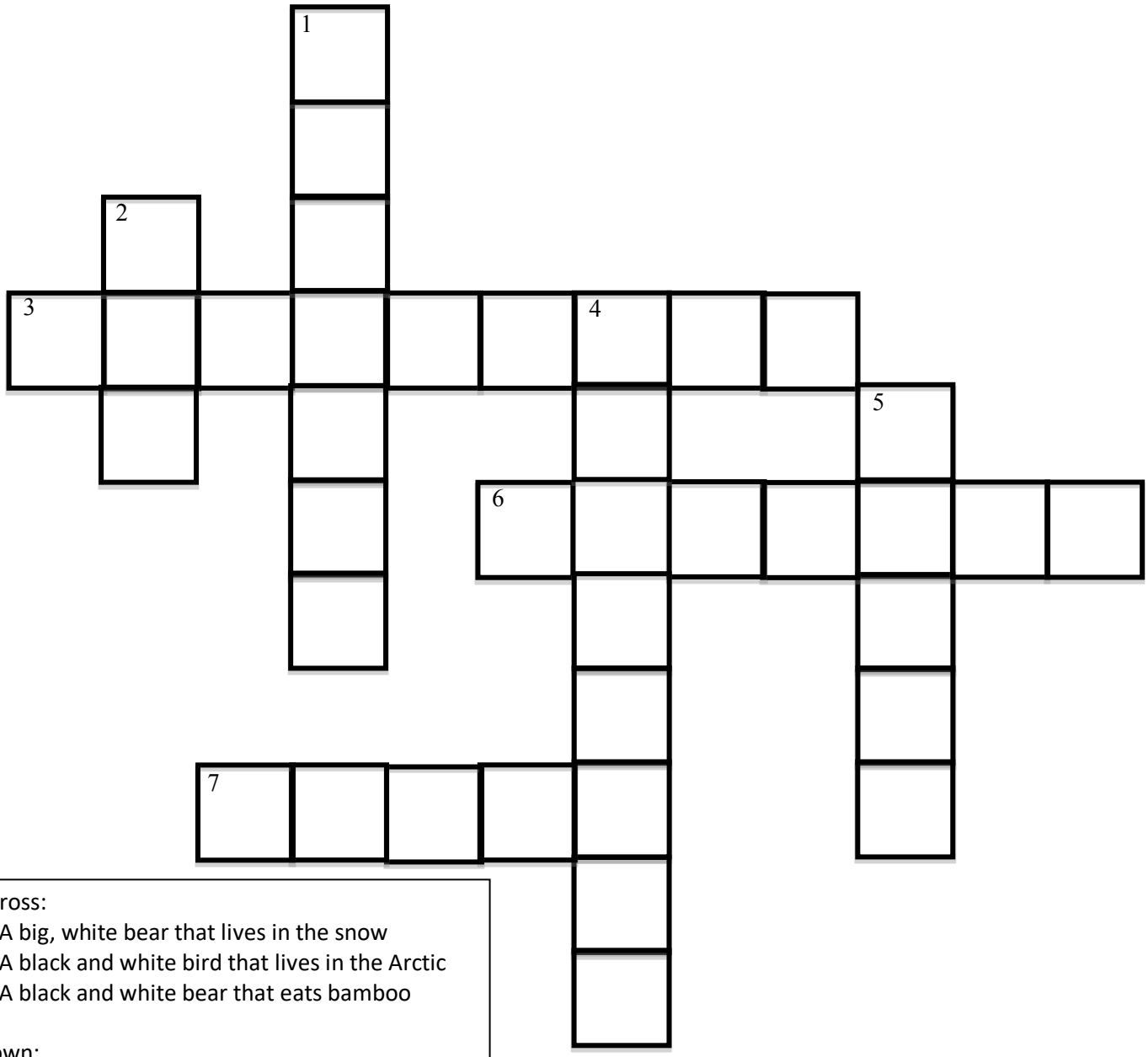
Polar Bear
Celebration

Human
Community

Penguin
Colony

# Appendix D: *Cuddled and Carried* Crossword Puzzle

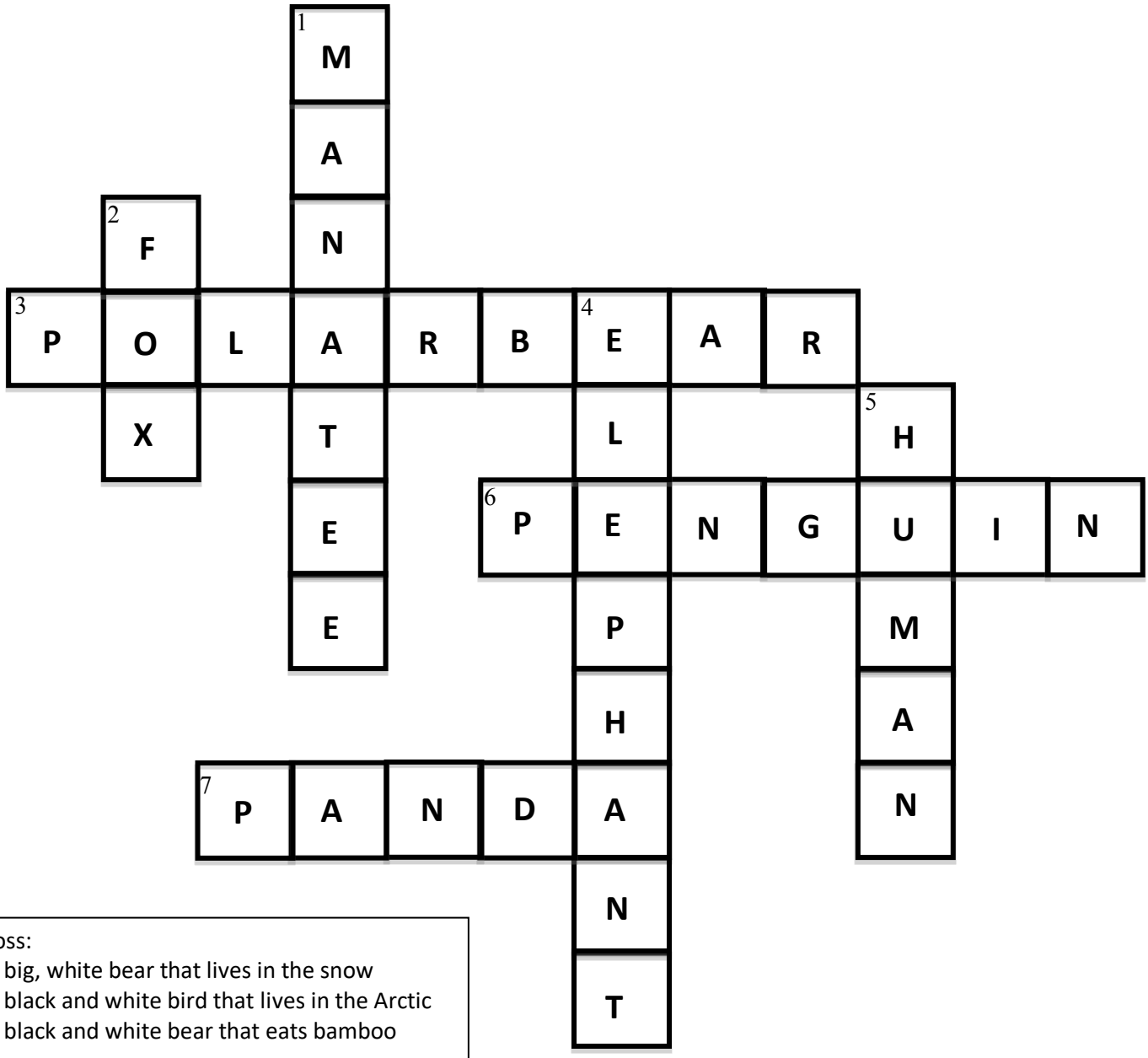
Name_____ Date:_____




Across:
3. A big, white bear that lives in the snow
6. A black and white bird that lives in the Arctic
7. A black and white bear that eats bamboo

Down:
1. A big, swimming mammal that can live in freshwater or seawater and moves very slowly
2. A quick, red and white animal that lives in the forest
4. The largest mammal that lives on land
5. What kind of animal are you?

## Appendix D: *Cuddled and Carried* Crossword Puzzle Answer Key




Across:
3. A big, white bear that lives in the snow
6. A black and white bird that lives in the Arctic
7. A black and white bear that eats bamboo

Down:
1. A big, swimming mammal that can live in freshwater or seawater and moves very slowly
2. A quick, red and white animal that lives in the forest
4. The largest mammal that lives on land
5. What kind of animal are you?

# Appendix E: Fill-in-the-Blanks Worksheets

**Out and About in the Jungle**

Fill-in-the-Blanks #1

**Treetop Adventure: Sights and Sounds**

Fill-in-the-Blanks #2

**Mama and Baby: Habitats at Home**

Fill-in-the-Blanks #3

**Ocean Exploration: Under the Sea Fun!**

Fill-in-the-Blanks #4

**Animal Kingdom: A Day at the Zoo**

Fill-in-the-Blanks #5

# Out and About in the Jungle

Fill-in-the-Blanks Story #1

It was a _____ day in the jungle, and the _____ was wandering
Adjective Animal #1

around on the ground. This _____ came upon a _____ near
Animal #1 Animal #2

a river and they both decided to go swimming. These two friends jumped into the

river and swam across to the other side. Once they were over there, they found

many_____ and lots of other plants. Some of the plants smelled like
Noun, Plural

_____, and others smelled _____! The _____
Adjective Adjective Animal #1

tried to eat one of the very many flowers, and the _____ decided to
Animal #2

_____ a tree to get some fruit. It was _____ so they
Verb Time of Day

ran quickly through the jungle and up a _____, where they came across
Noun

their mothers! Their mothers hugged and snuggled them before they went home

to go to sleep. After such a _____ day in the jungle, the animals
Adjective

were so _____, and they were _____ to be home.
Adjective Feeling

# Treetop Adventure: What Can You See?

Fill-in-the-Blanks Story #2

At the top of a _____ tree, there was a _____ looking out
Adjective Animal #1

over the _____ landscape. The day was _____ and the
Adjective Adjective

_____ could see very far into the distance. There were _____
Animal #1 Number

_____ around a big watering hole. The _____ thought they
Animals, plural Animal #1

were all _____ and _____ as they drank the water. Some
Adjective Adjective

of the animals were purring and others were screeching and others were braying!

and they all sounded _____! Turning around, the _____
Adjective Animal #1

could see a _____ mountain, and _____ flying in the sky.
Adjective Animals, plural

The views were so _____ that the _____ wanted to explore them.
Adjective Animal #1

So it climbed carefully down the tree and began to _____ towards the
Verb

mountain, and decided to _____ up it! From the top of the mountain,
Verb

_____ could see even more _____ views – even the ocean!
Animal #1 Adjective

# Mama and Baby Bonding: Habitats at Home

Fill-in-the-Blanks Story #3

Early in the morning a baby _____ woke up in its _____.
Animal #1 Habitat

It was snuggled with mama, and _____ to be awake. There were lots of
Emotion

places to _____ that day! Mama and baby ate their yummy breakfast
Verb

and went outside where they looked at a _____. They also noticed a
Noun

big, pink flower and went over to _____ it. It smelled like _____
Verb Noun

and was shaped like a _____. Mama and baby had never seen it before!
Noun

But they soon felt _____ and needed a snack. The baby _____
Adjective Animal #1

made a _____ noise, asking for mama's milk, and after it was fed, mama
Adjective

went out and ate a _____. After their snacks, they wandered along
Noun

back home for a nap. Baby _____ dreamt about _____ and
Animal #1 Noun

_____, while mama slept soundly. The two were _____
Noun Emotion

and _____ in their cozy little cave in the forest!
Adjective

# Dolphin Day: Under the Sea Fun!

Fill-in-the-Blanks Story #4

Out in the ocean, the _____ dolphin was swimming along with the pod.
Adjective

It was a _____ day, and the water was not too cold at all. The dolphin
Adjective

pod swam by many _____ and bubbles in the ocean which were
Animals, Plural

all around a _____ coral reef. There was a school of _____
Adjective Adjective

fish and the_____ eel peeking out from behind the coral reef. Off
Adjective

in the distance, the dolphin saw a _____ with _____ tentacles!
Animal Number

The pod of dolphins soon swam quickly up to the surface, where they saw a big

_____ sailing along with many _____ on it! Suddenly, the weather
Noun Noun, Plural

changed and lightning struck the ocean! The dolphin felt very _____
Emotion

so the pod hurried quickly back down and into a _____ cave! Inside was
Adjective

a _____ whale! It was much bigger than the dolphin, but when the whale
Adjective

woke up, it floated away. What a _____ day in the ocean!
Adjective

# Animal Kingdom: A Day at the Zoo

Fill-in-the-Blanks Story #5

Once upon a time, a kid named _____ went to the zoo with Mom! At
Name

the zoo, it was a _____ day and the animals were out! _____
Weather Adjective Name

went to the jungle exhibit and saw _____ and _____that
Animals, Plural Animals, Plural

were climbing up a tall _____ and all over a _____.
Noun Noun

Next up, in the forest habitat, there was a big _____ and a lot of
Animal

_____ that were by the river. The forest habitat was _____.
Animals, Plural Adjective

Next, the desert habitat had many _____ and _____. It
Animals, Plural Animals, Plural

was very _____ and the kid could see the animals _____.
Adjective Verb

After wandering around the desert for a while, they went to the bird habitat, where

there were many _____ flamingos and _____ parrots all over
Adjective Adjective

the place! It was very _____. After this adventure, the sun was setting
Adjective

and it was time to go home. What a _____ day at the zoo!
Adjective

## Appendix F: Mother and Baby Matching Flashcards

To use the following pictures as Flashcards, cut the pages in half horizontally.

Figure 16: Flamingo

Figure 17: Flamingo Chick

Figure 18: Horse

Figure 19: Foal

Figure 20: Fox

Figure 21: Fox Cub

Figure 22: Ostrich

Figure 23: Ostrich Chick

Figure 24: Penguin

Figure 25: Penguin Chick

Figure 26: Pig

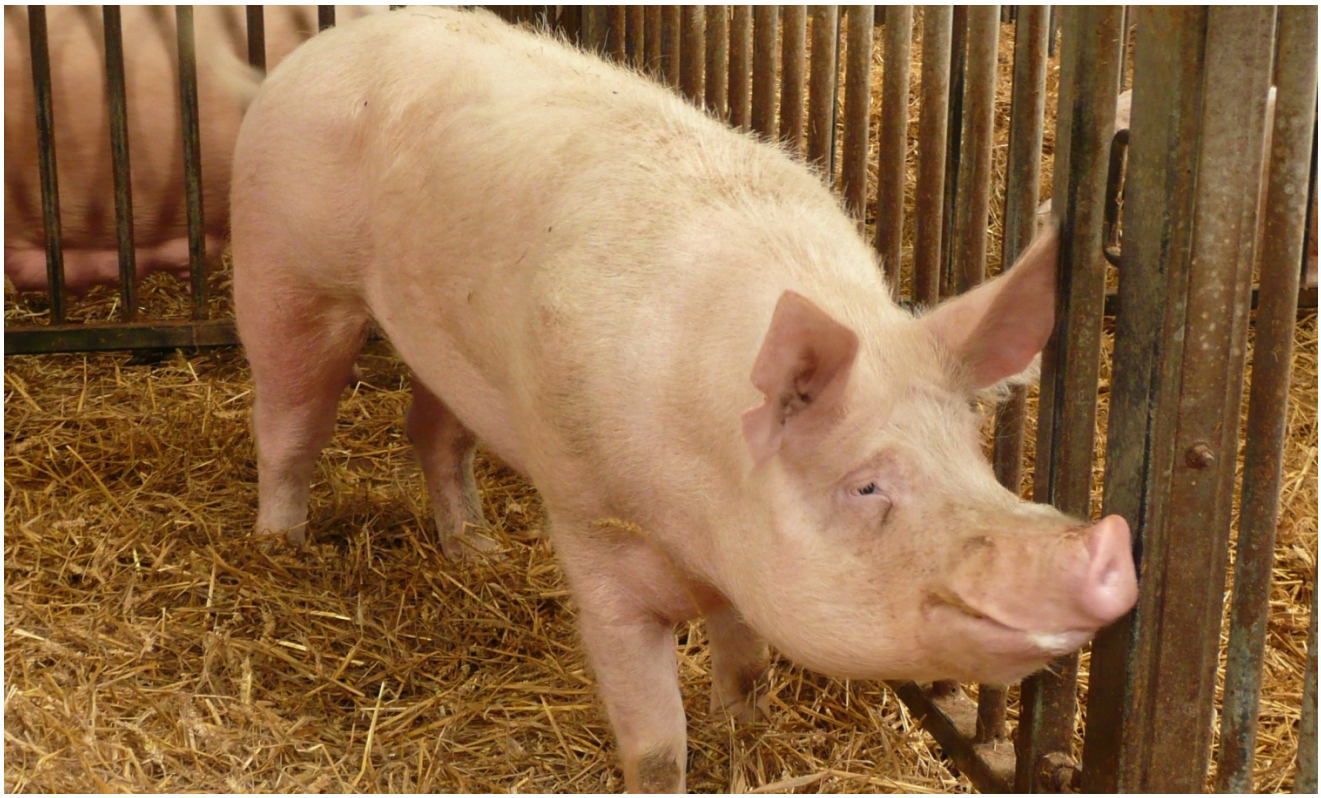
Figure 27: Piglet

Figure 28: Wolf

Figure 29: Wolf Pup

Figure 30: Chicken

Figure 31: Chick



# Appendix G: Animal Sounds Flashcards

To use the following pictures as Flashcards, cut the pages in half horizontally.

Figure 32: Cat

Figure 33: Chimpanzee

Figure 34: Cow

Figure 35: Donkey

Figure 36: Duck

Figure 37: Elephant

Figure 38: Lion

Figure 39: Rooster

Figure 40: Sheep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## Appendix H. Mammal Groups

**Plancentals:** Placental mammals all bear live young, which are nourished before birth in the mother's uterus through a specialized embryonic organ attached to the uterus wall, the *placenta*. The placenta is derived from the same membranes that surround the embryos in the amniote eggs of reptiles, birds, and monotreme mammals. The overwhelming majority of mammals are placental.

**Marsupials:** Marsupials are the group of mammals with pouches for their young. Unlike placental mammals, marsupials do not have long gestation times. Instead, they give birth very early and the newborn, essentially a helpless embryo, climbs from the mother's birth canal into the pouch, and latches on to a nipple. It continues to develop in the pouch, nourished by breastmilk for weeks or months, depending on the species. There are about 334 species of marsupials, most of which are native to Australia. In South and Central America there are about 113 marsupials. The Virginia opossum is the only marsupial species native to North America.

**Monotremes:** Monotremes, like reptiles and birds, lay eggs rather than having live birth. There are only five living monotreme species: the duck-billed platypus and four species of echidna (also known as spiny anteaters). All of them are found only in Australia and New Guinea. Neither platypuses nor echidnas can breastfeed in the usual manner. They do not have lips, so they cannot create a vacuum seal around a nipple in order to suckle. Instead, the moms secrete breastmilk onto their chest wall where the babies can lap it up.

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