

Learning and Writing about Animals in Kindergarten

Renee Ziegler

Introduction

In this cross-curricular unit, which continues throughout the kindergarten year, my students will be immersed in observing, talking, learning, drawing, and writing about animals!

I come from a family of readers. My earliest memories are of my mother reading to me before bed, from books such as *Curious George* and *Peter Rabbit*. I loved learning to read in first grade from the Sally, Dick, and Jane books, basal readers that have gotten much negative press in recent years. I looked forward to going to the library each week and checking out a new book, which I would read immediately upon returning home. My love of books has continued throughout my life. My dad is a lawyer, my mother an antiques dealer, my stepmother and brother are journalists. We have a number of educators in the family, as well. We all love books, and our homes are filled with the evidence - overflowing bookshelves, etc. We are not, however, good at math... or science. I can remember never enjoying science as a child. It was my least favorite subject in school. I guess my family just never encouraged any of us in that area. I never had a pet as a child (and was therefore terrified of dogs and most other animals). In college, I took the least amount of science classes possible for graduation.

Imagine my surprise, when as a new teacher, I discovered that most kids LOVE science! Truly, I was shocked! However, year after year, I have watched children be enthralled by the world around them. I have delighted in reading nonfiction books to children, and finally learning a little about science myself. My reason for taking the seminar on aquatic animal adaptations is three-fold: children love science (especially anything that has to do with animals), children need interesting content to write about, and I could certainly use more background knowledge in order to teach my students effectively. All of my professional development in the last several years has focused on writing and Common Core Standards. Our youngest learners must write more and more, but there is no information about how to motivate them to do the hard work that is writing. Learning new science content that I can use in my classroom to encourage my budding writers was very appealing to me.

Demographics

I teach kindergarten at West Park Place Elementary School in the Christina School District. West Park is a neat little school in the city limits of Newark, a couple of blocks

from the University of Delaware. The school is racially and economically diverse. The neighborhoods surrounding the school include beautiful, single family homes, as well as apartments. Our students are the children of college professors, graduate students, immigrants, and struggling single parents. We also receive children from the University's Early Learning Center daycare, which has a sliding scale and "no expulsion" (for behavior issues) policy. In addition, the University has a large English Language Institute, so West Park has been fortunate to have children from many other countries in our student population. About 30-40% of the families are receiving free or reduced lunch.

On average, I have twenty two students in my class each year. They come to school with varying skills, background knowledge, and school experiences. While the occasional student enters kindergarten reading, a number of children come to school with no knowledge of letters or numbers. Many children have attended daycare or preschool (and the experiences in these different settings varies widely), but some have never been away from home. Some children are adept at using writing utensils and others are struggling to write (or even recognize in print) their first names. Some children have never held pencils, crayons, or markers. A yearly first day assessment for me is to ask the children to draw a self-portrait. This simple (and developmentally appropriate) assessment tells me so much more about my students than the district kindergarten assessment or Dibels test!

Rationale

Despite entering school with varying readiness for academic learning, we are required to teach to the Common Core Standards. The writing standards, in particular, are rigorous for kindergarten. They include requiring five and six year olds to participate in shared writing and research projects, and to draw and write about a topic, supplying accurate information about the topic. If you have ever talked with a five year old, you know that it is hard for them, sometimes, to even respond verbally to specific questions without going off-topic!

In addition, Common Core pushes non-fiction reading and writing. With that in mind, our district adopted a writing curriculum Explorations in Nonfiction Writing. Our youngest learners are charged with writing to inform, instruct, narrate, persuade, and respond- and some cannot write their own names upon entering kindergarten! So, we kindergarten teachers need to find ways to make writing motivating and meaningful, if we are to be successful. Writing can be very taxing work for small children!

The "Instruct" chapter of our writing curriculum has the children viewing a mentor text on "Crickets" and then writing a report on another animal. Simply reading a nonfiction animal book to my students and asking them to then use that information to inform others through a research writing project seems unrealistic. They are, after all, five years old! They want to play, move, talk, sing, and create. Above all, they want to play!

Since I know kids love animals, and they respond to real life experiences, I want them to learn about animal adaptations and then talk and write about their observations and experiences. I want them to observe animals in the classroom and around the school grounds, and talk, draw, and write about what they see so that others can learn. I want them to observe animals - squirrels, reptiles, tadpoles - and write about what they see. I know that these real life experiences will motivate my young writers and give their writing purpose and meaning.

To ready the children for all this rigorous writing, I would like to work on speaking and listening standards with this unit, especially early in the school year. In order to be able to write, they need to be able to speak!

Lastly, for the past several years, our principal has asked us to devise lessons that integrate content (social studies and science) with literacy skills. Thankfully, the Next Generation Science Standards for kindergarten include learning about animals! This unit will integrate many curricular areas and has the potential to be an ongoing unit for the school year.

Background Knowledge

Science Education and Children

On any given day at recess in suburban Delaware, I watch my kindergarten students engaged in their natural world. Yes, we have swings, slides, and climbers, and the children do love and utilize the playground equipment. However, they are just as likely to be using a stick to dig in the dirt, be hunched over in a group, watching ants or other insects, picking flowers (weeds) for mom or teacher, collecting and sorting leaves, etc. They marvel at the wind, the clouds, the trees, squirrels, and birds. Nearly all children do engage with the world around them naturally. According to Meier and Sisk-Hilton, “These kinds of experiences pull children into what really matters in nature education - calling on children’s powers of attention and focus, of wonderment and joy, analysis and reflection, individual exploration and collaborative discovery, and sifting and sorting of information, data, and concepts over time”¹

We encounter nature everywhere- outside in rural, suburban or urban areas; in woods, forests, streams, or mountains; and inside in books and terraria. Research in learning and young children has shown the validity of building connections between ideas in a discipline in order for children to construct complex understanding. Teaching skills in isolation does not lead to mastery or application in other areas. However, exposing children to scientific big ideas can help children learn concepts we think are out of reach. Most children are able to develop complicated understandings about happenings and objects when they have repeated, meaningful experiences.

Adults also have a significant ability to influence children's interests and learning. It is not enough to just allow children to spend time observing and interacting with nature, although this is certainly preferable to watching television or completing worksheets. The teacher plays a key role in developing understanding and language by engaging students in conversations based on their experiences. Teachers assist children in making predictions and comparing ideas by open-ended conversation starters like "I wonder..." The goals of an inquiry-based nature education program are that children see themselves as thinkers, the learning process is valued, and listening, observing, and speaking skills are developed.

Throughout this unit, I will ask children to record what they observe and learn about animals by drawing and writing. When we ask children to draw and write about nature, it furthers their understanding of big ideas. Writing is a higher-order thinking process. When we write about nature, it develops our understanding of concepts. When children write, their understanding of vocabulary deepens. Children can revisit their observations by rereading work from a previous day. They can share their work by explaining drawings to others. Meier and Sisk-Hilton state, "Art and writing, then, add levels of symbolic sophistication to the nature inquiry process by allowing children to produce symbolic or representational products. In essence, they are creating works of art (painting, drawing, dictating, labeling, writing, making marks) that are stand-alone symbolic representations of elements (the branches of a tree or dried flowers or a bird's nest), characteristics (colors of a butterfly), processes (decomposition), and cycles (tadpoles to frogs) in nature education."¹

Writing is a way to document understanding and learning.

Writing in Kindergarten

Kindergarten students love to communicate and to be heard. They come to school with ideas to share, regardless of their literacy development. Our challenge as kindergarten teachers is to develop fine motor skills and language skills during the first half of the school year, in order to prepare children to be writers that will meet the goals of the Common Core Writing Standards. In addition, it is imperative that children feel successful and view themselves as writers with something of importance to communicate.

For early fives, the child's world is the focus of literacy development. Children share their ideas through drawings. Telling personal stories - verbally and through drawing - helps children to develop language skills and an understanding of how stories work. Drawing detailed pictures, and explaining them, are the foundation for learning to read and write. During the early months of school, kindergarten teachers are hard at work, teaching their young ones phonics skills that will help them become successful readers and writers. The first half of the year in kindergarten is all about the big ideas reading and writing.

During the second half of the year, students are moving toward writing for different purposes. They know how to print letters efficiently and know all or most consonant sounds, and perhaps some vowel sounds, as well. Each child is able to write and draw independently for a longer period of time. The teacher can model explanatory writing skills using science and social studies content areas. Publishing of written work during the second half of the year plays an important role in the development of the beginning writer. Publishing student work in kindergarten can be as simple as hanging written pieces in the hallway so that everyone in the school knows what we are learning about. Or, it can be more complex, such as editing student work and placing in an actual binding to be read by others in the reading area. Writers write for a purpose - to communicate ideas! When they are learning interesting content- animal life cycles, growing seeds, for example- wanting to 'instruct' others is a motivating reason to write.

Animal Adaptations

In seminar, we learned that animals adapt in order to survive in their environment. An adaptation is a genetic trait that has survivorship value, and occurs over many generations. Animals need to be able to have a place to live, find food, escape predators, and reproduce. Adaptations can be morphological, physiological, or behavioral. Morphological adaptations have to do with body form: arms, legs, tails, shells, eyes, etc. An example of a morphological adaptation for the American Toad is the coloring that allows it to blend in with its environment. Physiological adaptations are chemical or metabolic (how quickly the body processes things, for example). The American Toad secretes a milky toxin from two glands behind the ears. The toxin tastes and smells bad and this scares away predators. Behavioral adaptations have to do with how an organism acts: herds, flocks, schools, etc. For example, American Toad females lay eggs in ponds that don't tend to have fish, thereby reducing the risk of the eggs being eaten. Adaptations define the survival and perpetuation of the genes.

Animal Habitats

A habitat is the natural environment or home of an organism. Within their habitat, animals must get shelter, find food, be safe, and reproduce.

Mammals

Mammals are warm-blooded animals that have backbones, mammary glands, and fur or hair on their bodies. They are found on every continent and in a wide variety of habitats like forests, oceans, mountains, grasslands, deserts, and wetlands. Mammals have lived on Earth for about 200 million years. The first mammals were small, nocturnal creatures that ate insects. Over time, as the climate changed and many reptiles died out, mammals diversified. Today, mammals can be as small as a bumblebee bat (3 centimeters in length) or as huge as a blue whale (over 100 feet long from head to tail).

There are between 4,500 and 5,000 species of mammals, divided into about 21 groups (elephants, rodents, primates, bats, marsupials, carnivores, monotremes). The most diverse group of mammals is the rodent group, with over 1,700 species

Squirrels

Squirrels are mammals in the rodent group, which includes hamsters, rats, mice, and porcupines. Squirrels live in the wild, but they are also commonly found in suburban and urban areas, which is one reason that I chose to have my kindergarten students observe squirrels. Most children are familiar with this animal and we have many squirrels in the trees surrounding my school.

Tree squirrels do not hibernate. They are busy in the fall, storing food.

Reptiles

Reptiles are cold-blooded animals with dry skin and backbones. They can be found throughout the world, but they need warm air or water to live. During the winter in northern areas, reptiles hibernate. There are almost 8,000 species of reptiles on Earth today and they are divided into four groups: Crocodylians, Squamates (lizards and snakes), Tuatara, and Turtles. Reptiles live in a variety of temperate and tropical habitats such as wetlands, deserts, gardens, backyards, and forests. The skin of reptiles is covered with hard plates called scales, which provide protection for the animal. Most reptiles lay hard-shelled eggs, which are leathery. Adult reptiles do not care for their young- the babies must survive on their own. Nearly all reptiles are predators, meaning they hunt other animals for food.

Amphibians

“Amphibian” comes from a Latin word meaning “both lives”. Amphibians are animals that are vertebrates, meaning that they have a backbone. Amphibians are unique because they are the only vertebrates to begin their lives under water and then later live on land (*many insects, like mosquitoes, do this, too*). Many scientists believe that earthly life began in water. Amphibians are important because they were the first group to abandon a completely aquatic existence 350 million years ago. Their bodies changed, or evolved, over a long period of time. They developed legs for moving on land and lungs for breathing air. Frogs, toads, salamanders, and caecilians are all part of this animal group.

There are more than 4500 types of amphibians and they are divided into three orders or groups. Toads and frogs are part of the order Anura; salamanders make up the order Caudata; and caecilians belong to the order Gymnophiona.

Amphibians have moist skin and are more often found in humid, damp environments. Their bodies are soft, and they do not have feathers, fur, or scales. These animals are cold-blooded (like fish and reptiles). This means that the amphibian is as cold or as warm as the water or air around it. Amphibians cannot live where it is extremely cold or hot. However, they do live in all parts of the world except Antarctica.

Frogs and Toads

Frogs are among the oldest creatures on Earth; frogs existed before there were dinosaurs! Frogs and toads are the most widespread group of amphibians. They are found all over the world, except for Antarctica. They live in various habitats and therefore have adapted over time to the differing conditions. There are 5,858 species of frogs and toads, and they are divided into 49 different families. Some species are referred to as “frogs” and others are known as ‘toads’. People generally think of the smooth, slimy species as frogs, and the dry, warty species as toads. We think of frogs as jumpers and toads as hoppers. However, scientists do not separate frogs and toads; they are all part of the order “Anura.” Although there are many different kinds of frogs, there are some characteristics that they all share. All frogs depend on water during some part of their lives.

Frogs and toads come in a variety of colors, shapes, and sizes. They can be anywhere from less than an inch long, to up to 12 inches in length. The Goliath frog, from West Africa, is the largest known species. The bullfrog is the biggest North American frog, and it measures about 6 inches. The Brazilian Golden Toad is the smallest, at about 1/2 inch long. Their bodies are short and their heads are large. With eyes on top of their heads, they can see when the rest of their body is in water. The front legs of frogs are short, with long fingers. Frogs have long back legs and webbed feet. With these features, they are good swimmers and jumpers. Many frogs are able to jump up to ten times their body length. As adults, frogs and toads are tailless.

Common colors of frogs and toads include brown, grey, and green. These colors allow the animal to blend in to its environment and help to protect it from predators. Many frogs and toads that live on the ground are brown or greyish in color. Tree frogs are often green. However, there are a small number of brightly colored frogs, such as the poison dart frogs, that are red, yellow, or even blue. The bright color serves as a warning to other animals that this little frog tastes bad and is toxic.

Frogs have two sets of eyelids and one is transparent. They are able to close their eyelids while under water to protect their eyes. The ears are located behind the eyes, seen in most cases as a circular area of skin called the tympanum.

Frogs live all over the world. Rivers, swamps, and marshes are all places frogs are found. They do not live in salt water. Some frogs live in forests, especially tropical areas, and these frogs have developed special characteristics in order to live in trees. Arboreal

frogs are often lighter and more slender than other species. They have expanded toe disks to help them climb and adhere to their habitat.

American Toad

The American Toad inhabits nearly all of the United States east of the Rocky Mountains and from central Canada into Mexico. Due to its prolific occupation of numerous environments, both natural and man-made, it is informally referred to as the “common toad.” You can find these animals in yards and parks after a spring rain, forests (both deciduous and evergreen), shrub lands, open fields, and urban areas. This nocturnal species is active at night. The toad is active during warmer months, typically April to November. During the day, they can be found under soil, logs, or leaves. They come out at night to eat. During the colder months, they hibernate in burrows

American Toads measure between two and four inches long; the males are slightly smaller than the females. They have plump, round bodies with short legs. Their rough, thick skin is black, brown, reddish, or darker green. The skin color can change, depending on the season, time of day, age, sex, or environment. They often have spots of beige or brown, with some spots being raised (referred to as warts). They have a long, sticky tongue for gathering food like bees, beetles, spiders, slugs, flies, snails, etc. This toad is well-liked by farmers and gardeners, as it eats thousands of insects each month. During the day, they can be found under soil, logs, or leaves. They come out at night to eat. During the colder months, they hibernate in burrows. Many toads live only for a year in their natural environment, but may live up to five or ten years. Since the American Toad avoids daylight and has good camouflage, it does not have many predators. The American toad is a solitary animal, with the exception being breeding season.

In the spring, the toad spends a few days breeding. Flooded areas, lakes, ponds, and marshes all make good breeding grounds for the toad. When the weather is warm enough, the males move to breeding sites and begin their harmonious trilling. Females hear the call of the males and arrive a few days later. The fertilized eggs (between 4,000 and 12,000) are released in strings into the water and the plants growing in the water. The fertilized eggs hatch within three to twelve days and tadpoles emerge.

The groups of tadpoles feed on algae and grow quickly. After twelve to twenty days, the tadpoles are about one inch long and hind legs begin to grow. Front legs begin to form in another two weeks. At this time, the gills close and the tadpoles are land-living toadlets. This process can take anywhere from 35 to 70 days.

Special adaptations include excreting a toxic substance from the skin and urinating on themselves. They can also inflate their bodies to scare away predators, such as snakes. When American toads grow and shed skin, they eat the skin for the added nutrients.

Common Core Standards (“I Can” format)

Speaking/Listening:

K.SL.2- I can confirm my understanding by asking and answering questions about key details and requesting clarification if something is not understood.

K.SL.3- I can ask and answer questions in order to seek help, get information, or clarify something that is not understood.

K.SL.6- I can speak audibly and express thoughts, feelings, and ideas clearly.

Writing:

K.W.2- I can use drawing, dictating, and writing to compose informative/explanatory texts in which I name what I am writing about and supply some information about a topic.

K.W.3- I can use drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened.

K.W.7- I can participate in shared research and writing projects.

K.W.8- I can recall information from experiences or gather information from provided sources to answer a question

Next Generation Science Standards- Plants and Animal Needs

K-LS1-1 Use Observation to describe patterns of what plants and animals (including humans) need to survive.

K-ESS3-1 Use a model to represent the relationship between the needs of different animals (including humans) and the places they live.

Classroom Activities

Activity 1- Squirrels

Objective: After reading about and observing squirrels, the students will demonstrate understanding of the features of a squirrel’s body by drawing, writing, and verbally describing.

Materials: Squirrels by Brian Wildsmith, Squirrels All Through the Year by Melvin Berger, watercolor paints, crayons, white paper

Procedure: To address the speaking and listening standards, ask the children what they know about squirrels and make predictions about what they may learn from reading Melvin Berger’s nonfiction book about squirrels. Read and discuss, in particular, the features of the squirrel’s body - teeth, tail, claws, etc. Lead the class on a walk (or several walks) of the school yard to look for squirrels. Remind them to be quiet, so they don’t scare the squirrels away. Use open-ended questions like “I wonder why the squirrel is

scampering around the oak trees...” Lead class discussions where the children describe what they have seen, using appropriate voice volume. Day 2: Read Squirrels by Brian Wildsmith and note that this is a nonfiction book, even though it does not contain photographs, as the Melvin Berger book did. This book is a wealth of information about the squirrel’s body. The descriptions are excellent, as are the pictures. Of particular importance are the tail, which is used as a blanket, parachute, and sail, strong front teeth for eating acorns, sharp claws for climbing trees. To demonstrate understanding of the squirrel’s body features, the students can draw a picture of a squirrel, using the information from books and observations. Later, they can add watercolor, fanciful details in order to be artists like Brian Wildsmith. Conclude the study of squirrels by verbally sharing art/writing. Encourage the students to describe and tell about their squirrel’s body.

Activity 2- Ashland Nature Center Classroom Outreach Program on Reptiles and Amphibians

Objective: After learning about reptiles in an outreach classroom visit, the children will participate in various writing projects.

Materials: outreach program, paper, crayons, pencils, library books on turtles and snakes.

Procedure: The Ashland Nature Center will provide an outreach program where they bring a variety of live animals into the classroom, such as snake, lizard, turtles, frogs, etc. The children have a chance to observe and touch the animals, and learn about the animal adaptations, as well as the similarities and differences between reptiles and amphibians.

Following the outreach visit, give the students an opportunity to draw and write about their experience. Emphasize the idea of writing/drawing as a scientist, to record facts learned. An example of a similar lesson (called a “science summary”) is described in the “Inform” chapter of Explorations in Nonfiction Writing.

Later in the week, children can choose a turtle or snake to research, using nonfiction library books. They then complete an illustration with words to give information about their animal (“Investigation” power write in “Inform’ chapter of Explorations in Nonfiction Writing)

Activity 3- Toads

Part 1- Tadpole to Toad

Objective: The students will learn about the toad life cycle and record daily observations in a log.

Materials: aquarium, American Toad tadpoles, observation logs

Procedure: After learning about amphibians during the previous outreach program, the children will be somewhat familiar with frogs and toads. You may want to read a nonfiction book about the frog/toad lifecycle to introduce the lesson.

Obtain frog or toad eggs and set up an aquarium in the classroom. The life cycle process can take up to three weeks, depending on the temperature. If you are unable to obtain frog or toad eggs naturally in the spring, there are online resources where you can order eggs/tadpoles. Create an observation log for each child, and arrange a time daily for the children to observe and record what they see in the aquarium (see appendix A). Emphasize to the students that they are scientists, recording exactly what they see, using appropriate colors and details.

Part 2- Toad Research Project

Objective: The students research facts about toads (what they look like, where they live, what they eat, etc.) and use drawing and writing to record the information.

Materials: library books about toads, research notebook for each child, pencils and markers/crayons

Procedure: Create a Research Notebook for each child, which includes the following pages: What I Think I Know, What Toads Look Like, Where Toads Live, What Toads Eat, Other Amazing Facts (from the “Inform” section of Explorations in Nonfiction Writing).

Each day, plan to read to the class from a variety of nonfiction books about toads. Have the students fill out one page each day in the research notebook, using drawing and writing to record facts about toads. Encourage the students to use good descriptions and to make sure their pictures match the words that they write.

The following week, if desired, the children can use their research notebooks to write a report about toads. These one page reports can be “published” in the classroom or hallway by hanging to display. In this way, everyone in the school can learn about toads (our young writers are writing to inform others)!

Part 3- Shoebox Diorama of Frog/Toad Habitat

Objective: The students demonstrate understanding of a frog/toad’s habitat by creating a shoebox diorama, depicting pond life.

Materials: shoebox for each child, newspaper, glue, paint, objects to represent frog/toad life cycle (beads for eggs, clay or putty for frog, etc.)

Procedure: Each child uses a shoebox to create a pond environment that includes water and grassy areas surrounding the water. Newspaper strips dipped in watered down glue or a mixture of flour and water (to make a runny paste) work well. When dry, the dioramas can be painted the appropriate colors to represent water and land. Straw or other art materials can be added to make grass, cattails, etc. Have the children place eggs (beads on a string or pipe cleaner) and paper or clay/putty tadpoles in the water. The clay/putty or even small plastic frogs/toads could be on land or in the water, to show understanding of amphibians and where they live.

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Endnotes

¹ *Ibid*, 43.

Appendix A

Day	Day	Day
Day	Day	Day
Day	Day	Day

Curriculum Unit Title

Learning and Writing About Animals in Kindergarten

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KEY LEARNING, ENDURING UNDERSTANDING, ETC.

Animals are uniquely suited to the homes where they live.
Animals need to be able to find shelter, food, and reproduce.

ESSENTIAL QUESTION(S) for the UNIT

Why do animals live where they do? (Next Generation Science Standards for Unit 2- Animals, Plants and Their Environment)

CONCEPT A

CONCEPT B

CONCEPT C

Animal bodies are adapted to the homes where they live.

Animals need to find food in order to survive.

Animals need to protect themselves from predators.

ESSENTIAL QUESTIONS A

ESSENTIAL QUESTIONS B

ESSENTIAL QUESTIONS C

Why do squirrels live in and around trees?
Why are frog and toad eggs found in water?

What do squirrels eat?
What do reptiles eat?
What do tadpoles and frogs/toads eat?

How do squirrels keep safe from predators?
How does a reptile's body keep it safe from harm?
How do frogs/ toads keep from being prey?

VOCABULARY A

VOCABULARY B

VOCABULARY C

mammal, egg, amphibian, reptile, tadpole, habitat

acorns, nuts, insects, algae

scales, predator, prey

ADDITIONAL INFORMATION/MATERIAL/TEXT/FILM/RESOURCES