Animal Classification

Grade Level: Third Grade

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Length of Unit: Seven lessons (1–2 hours per lesson)

I. ABSTRACT

This science unit focuses on animal classification as outlined in the *Core Knowledge Sequence* for third grade. Through a variety of lessons and projects, the students will explore the distinguishing characteristics of each of the five classes of vertebrates: fish, amphibians, reptiles, birds and mammals. As the students work individually, in pairs, and in small groups, they will be able to identify the basic structures and functions of animals belonging to each class and to differentiate between vertebrates and invertebrates.

II. OVERVIEW

A. Concept Objectives

1. Understand that scientists classify living things according to the characteristics they share. (From the *Core Knowledge Sequence*, Colorado State Standard 3, page 26, Arizona State Standard 2SC-F2)
2. Understand the different characteristics of animal classes. (From the *Core Knowledge Sequence*, Colorado State Standard 3, Arizona State Standard 4SC-F3)

B. Content from the *Core Knowledge Sequence* (3rd grade, page 81)

1. Vertebrates are animals with backbones and internal skeletons, and invertebrates are animals without backbones or internal skeletons
2. Fish: aquatic animals, breathe through gills, cold-blooded, most have scales, most develop from eggs that the female lays outside her body
3. Amphibians: live part of their lives in water and part on land, have gills when young, later develop lungs, cold-blooded, usually have moist skin
4. Reptiles: hatch from eggs, cold-blooded, dry, thick, scaly skin
5. Birds: warm-blooded, most can fly, feathers and wings, most build nests, hatch from eggs, most baby birds must be fed by parents and cared for until they can survive on their own
6. Mammals: warm-blooded, hair on their bodies, parents care for their young, females produce milk for babies, breathe through lungs, most are terrestrial (live on land) though some are aquatic
7. Poem: "The Crocodile" by Lewis Carroll (*Core Knowledge Sequence*, page 67)
8. Writing: Produce a variety of types of writing, write a narrative with a beginning, middle, and end, know how to gather information from basic print sources, and organize material in paragraphs (*Core Knowledge Sequence*, page 65)

C. Skill Objectives

1. Students will be able to classify animals as vertebrates or invertebrates. (*Core Knowledge Sequence*, page 81)
2. Students will be able to assemble a rodent skeleton.
3. Students will be able to identify basic animal structures. (AZ State Standard 4SC-F3; CO State Standard 3)
4. Students will be able to identify the basic structure of fish. (AZ State Standard 4SC-F3; CO State Standard 3)

5. Students will be able to describe the basic functions of fish features. (AZ State Standard 4SC-F3)
6. Students will be able to read a thermometer in Celsius or Fahrenheit to the nearest degree. (AZ State Standard 5M-F2)
7. Students will be able to record information gained through observation of a science experiment. (AZ State Standard W-F4)
8. Students will be able to demonstrate safe use and care of organisms in science inquiry. (AZ State Standard 1SC-R1)
9. Students will be able to describe the characteristics of the amphibian class. (CO State Standard 3; AZ State Standard 4SC-F4)
10. Students will be able to explain how the characteristics of amphibians allow them to live both in water and on land. (AZ State Standard 4SC-F4)
11. Students will be able to trace the life cycle of a frog. (CO State Standard 3; AZ State Standard 4SC-F2)
12. Students will be able to compose a story with a beginning, middle, and end using the first person. (*Core Knowledge Sequence*, page 65; AZ State Standard W-F3)
13. Students will describe the characteristics of the reptile class. *(Core Knowledge Sequence*, page 81; AZ State Standards 4SC-F3; CO State Standard 3)
14. Students will be able to recognize the poem, "The Crocodile" by Lewis Carroll. (*Core Knowledge Sequence*, page 67)
15. Students will be able to describe the characteristics of the bird class. (*Core Knowledge Sequence*, page 81; CO State Standard 3; AZ State Standard 4SC-F3)
16. Students will be able to gather information from print sources (encyclopedias) and write a short report representing the information in his/her own words. (*Core Knowledge Sequence*, page 65)
17. Students will be able to organize information in paragraph form. (*Core Knowledge Sequence*, page 65)
18. Students will be able to name the characteristics of the mammal class. (*Core Knowledge Sequence*, page 81; CO State Standard 3; AZ State Standard 4SC-F3)
19. Students will be able to identify where mammals belong on the food chain. (*Core Knowledge Sequence*, page 81; CO State Standard 3; AZ State Standard 4SC-F7)
20. Students will be able to draw and describe a food chain. (*Core Knowledge Sequence*, page 81; CO State Standard 3; AZ State Standard 4SC-F7)
21. Students will be able to organize (classify) animals by different characteristics. (AZ State Standards 1SC-R3)
22. Students will be able to construct a model that illustrates an animal and compare the model to the animal it represents. (AZ State Standards 1SC-F2)
23. Students will be able to identify analogous relationships.

III. BACKGROUND KNOWLEDGE

A. For Teachers
   1. *The Animal Kingdom*, by Kate Whyman (This entire book is a resource for implementing all lessons in this unit.)
   2. *Animal Skeletons*, by Judith Janda Presnall (Pertinent information for teaching each lesson is included throughout this book.)

B. For Students
   1. Students should be familiar with animal habitats as outlined in the *Core Knowledge Sequence*, First Grade.
   2. Review the distinguishing characteristics of insects as presented in the *Core Knowledge Sequence*, Second Grade.

3. Students should be familiar with measuring and reading a thermometer.
4. Students should be familiar with the terms insectivore, herbivore, carnivore, and omnivore as outlined in the *Core Knowledge Sequence*, First Grade
5. Students should be familiar with analogies.

IV. RESOURCES

A. *Animal Skeletons,* by Judith Janda Presnall (Lessons One, Two, Four, and Five)
B. *Science Project Ideas About Animal Behavior,* by Robert Gardner and David Webster (Lessons One and Two)
C. *Life in the Oceans,* by Norbert Wu (Lesson One)
D. Pellets, Inc. http://www.pelletsinc.com/ (Lesson One)
E. Science Stuff Inc. http://www.sciencestuff.com/life2.htm (Lesson One)
F. *Animal Life in Action*, Schlessinger Media video (Lesson Two)
G. *Hello Fish!* by Sylvia A. Earle (Lesson Two)
H. *What is a Reptile,* by Robert Snedden (Lesson Four)
I. *The Animal Kingdom* by Kate Whyman (Lesson Four)
J. *Amazing Birds,* by Alexandra Parsons (Lesson Five)
K. *Janice VanCleave's Animals,* by Janice VanCleave (Lesson Five)
L. *Birds and How They Live,* by David Burnie (Lesson Five)
M. *Mammals*, Tell Me Why video (Lesson Six)
N. *What are Food Chains and Webs?* by Bobbie Kalman and Jacqueline Langille (Lesson Six)
O. *Chickens Aren't the Only Ones,* by Ruth Heller (Lesson Seven)
P. *Zoo Life* (video) (Culminating Activity)

V. LESSONS

Lesson One: Vertebrates vs. Invertebrates

A. *Daily Objectives*
   1. Concept Objective
      a. Understand that scientists classify living things according to the characteristics they share.
   2. Lesson Content
      a. Vertebrates are animals with backbones and internal skeletons, and invertebrates are animals without backbones or internal skeletons.
   3. Skill Objectives
      a. Students will be able to classify animals as vertebrates or invertebrates.
      b. Students will be able to assemble a rodent skeleton.
      c. Students will be able to identify basic animal structures.

B. *Materials*
   1. *Animal Skeletons,* by Judith Janda Presnall (pages 7–15)
   2. *Science Project Ideas About Animal Behavior,* by Robert Gardner and David Webster (pages 43 – 44)
   3. *Life in the Oceans,* by Norbert Wu
   4. Reference information regarding owl pellets:
      a. http://www.fs.fed.us/htnf/pellets.htm?owl
      b. http://bsuvc.bsu.edu/home/smransom/owls.html
      c. http://www.ceismc.gatech.edu/zooary/zoo/tidbit/owl.html
      d. http://www.track0.com/canteach/elementary/life8.html
   5. Owl pellets (one pellet for each team of 2 – 3 students)
      Owl pellets can be ordered from the following retailers:

a. Project Wild, P. O. Box 59, Portland, OR 97207
b. Pellets, Inc., Phone: 1-800-466-OWLS Fax: 360-738-3402
Website: http://www.pelletsinc.com/
c. Science Stuff, Inc., 1104 Newport Ave., Austin, TX 78753-4019
Phone: 1-800-795-7315
Website: http://www.sciencestuff.com/life2.htm

6. Supplies needed for owl pellet activity:
   a. Pair of rubber gloves for each student
   b. Each team of students will need one of each of the following:
      i. Paper plate
      ii. Newspaper sheet
      iii. 9" x 12" black construction paper
      iv. Magnifying glass
      v. Tweezers
      vi. Plastic fork
      vii. Glue
7. Overhead transparency or poster of rodent skeleton (when ordering owl pellets, check for this item)
8. Appendix B (this comparison chart is only a sample and is included for the teacher's use on the chalkboard)
9. One 3" x 3" red square and one 3" x 3" blue square of construction paper for each student
10. Pictures of vertebrates and invertebrates (collect from magazines, picture files, books, postcards, calendars, etc.)
11. Construction paper, writing paper, markers, crayons, glue, and animal pictures for Animal Kingdom Journals
12. Various old magazines for the students to cut out animal pictures (begin several weeks before implementing this unit to collect magazines; sources for obtaining old magazines include students' parents, sales at libraries, thrift stores, used bookstores, yard sales, friends, etc.–especially look for magazines that feature many animal photos, i.e., National Geographic, World, Ranger Rick)

C. *Key Vocabulary*
1. Vertebrates – animals with backbones and internal skeletons
2. Invertebrates – animals without backbones and internal skeletons
3. Dissect – to cut apart or separate
4. Internal – located within the body
5. Endoskeleton – the inner bones as the framework of the body
6. Exoskeleton – the hard outside covering of some animals, such as the shells of lobsters and shrimp or the covering of grasshoppers

D. *Procedures/Activities*
1. Group students into teams of two or three.
2. Tell students they will be receiving a mystery object (owl pellet) to carefully take apart and dissect (explain definition of dissect to students).
3. Hand out a pellet and a plate of supplies to each team.
4. Allow time for students to dissect and examine contents of owl pellets. Tell students to carefully pull apart the objects, separate the fragments with tweezers, and place found items in piles of like objects on paper plates.
5. Ask students, "What do you notice?" Once students begin to find the small bones in the owl pellets, explain what an owl pellet is (they are the undigested matter of an owl's meal).

6. Using the diagram of the rodent skeleton, have students try to identify the bones. Instruct students to attempt to arrange the discovered bones into a skeleton of a mammal with the help of the overhead/poster of the rodent skeleton. If needed, teams can combine their bone findings to form a complete skeleton.
7. Assemble the bones into a rodent skeleton and glue on a 9" x 12" sheet of black construction paper. These can be displayed for later viewing and sharing.
8. Introduce the meanings of vertebrates and invertebrates. Display pictures of vertebrate and invertebrate animals and discuss the examples. Have the students write the words endoskeleton and exoskeleton in their journals. The students should also illustrate with examples of both. The book *Life in the Ocean* by Norbert Wu features good examples of invertebrates.
9. Make a comparison chart on chalkboard or overhead. See Appendix B. List the characteristics of vertebrates and invertebrates and identify animals that fit into each classification.
10. Distribute a red vertebrate card and a blue invertebrate card to each student. Ask students to write a large "V" on the red card and a large "I" on the blue card. Hold up pictures of animals. Tell students to respond to teacher's signal by holding up the appropriate card. Example: Teacher shows picture of a lion. Students think. Teacher says, "Show." Students hold up red "V" card.
11. Have students decorate Animal Kingdom Journals to be used in remaining lessons. These journals will be used throughout this unit as a means of recording and organizing data from each lesson. Possibilities include drawings of animals using markers or crayons, gluing pictures of animals, or creating a sign using a computer program.
12. In the students' free time they can begin to collect photographs and pictures of various animals from old magazines. Store these pictures in six different boxes/envelopes. Label the storage containers as invertebrates, fish, amphibians, reptiles, birds and mammals. These will be used for the collage in Lesson Seven.

E. *Assessment/Evaluation*
1. Teacher observation of owl pellet dissection. Students should be actively involved and trying to arrange skeleton.
2. Students will satisfactorily identify vertebrates and invertebrates by displaying correct card when shown a picture of an animal.

Lesson Two: Fish

A. *Daily Objectives*
1. Concept Objectives
   a. Understand that scientists classify living things according to the characteristics they share.
   b. Understand the different characteristics of animal classes.
2. Lesson Content
   a. Fish: aquatic animals, breathe through gills, cold-blooded, most have scales, most develop from eggs that the female lays outside her body
3. Skill Objectives
   a. Students will be able to identify the basic structure of fish.
   b. Students will be able to describe basic functions of fish features.
   c. Students will be able to read a thermometer in Celsius or Fahrenheit to the nearest degree.
   c. Students will be able to record information gained through observation of a science experiment.

d. Students will be able to demonstrate safe use and care of organisms in science inquiry.

B. *Materials*

1. *Animal Life in Action*, Fish video – 23 minutes
2. *Animal Skeletons*, by Judith Janda Presnall (pages 21–25)
3. *Science Project Ideas About Animal Behavior*, by Robert Gardner and David Webster (pages 62 – 64)
4. *Hello Fish!* by Sylvia A. Earle
5. Each team of students receives one of each of the following items:
   a. Thermometers
   b. Goldfish
   c. Fish bowl
   d. Timer
   e. Ziploc bag
4. Ice cubes (3–6 per team)
5. Students' Animal Kingdom Journals
6. Copy of Appendix I for teacher
7. Copy of Appendix C for teacher

C. *Key Vocabulary*

1. Cold-blooded – an animal that regulates its body temperature by exchanging heat with its surroundings
2. Gills – organs that fish and other aquatic animals use for respiration; oxygen from the water passes across the gills and into the bloodstream
3. Aquatic – living in water

D. *Procedures/Activities*

1. Read several pages of the teacher's choice from *Hello, Fish! Visiting The Coral Reef*, by Sylvia A. Earle or any other fish book that the teacher might find.
2. Tell students to watch the video, *Animal Life in Action*, closely and write down characteristics of fish in their Animal Kingdom Journals. (See Appendix I for suggestions.)
3. View *Animal Life In Action* –Fish video. Discuss the video with the students. Discussion questions that can be used might be:
   a. How does a fish's "swim bladder" help it float?
   b. How do fish breathe?
   c. How do fish reproduce?
   d. What does aquatic mean?
4. Draw a large fish on the chalkboard. See Appendix C for suggestions.
5. Using information learned in the video, ask the students to provide the teacher with the correct terms to label the fish features.
6. Tell students to diagram and label a fish in their Animal Kingdom Journals.
7. Teach the concept of cold-blooded by having the students write the term and definition in their journals.
8. Do the following experiment, which was adapted from *Science Project Ideas About Animal Behavior* by Robert Gardner and David Webster, page 62.
   a. Group the class into teams of four.
   b. Assign the following jobs to students: one recorder, one timer, and two counters.
   c. Provide each team with one goldfish in a bowl of tap water
   d. Have groups take the temperature of the water using their thermometers.
   e. Next, count the number of times the goldfish gulps water within a one minute time frame and record this number in journals.

f. Add three to six ice cubes in a plastic Ziploc bag and zip closed.
g. Place the Ziploc bag full of ice cubes into the fish bowl.
h. Place the thermometer into the fish bowl. Once the temperature drops by 5 degrees C or 10 degrees F, the counters will count the number of times the goldfish gulps water within a one-minute time frame. Record this number in the journals.

9. How did the temperature affect the goldfish gulping/breathing rate? (The gulping rate should decrease as the temperature falls.)
10. Summarize the experiment through class discussion and relate it to fish facts such as: fish breathe through gills, water temperature affects breathing rate, and fish are cold-blooded.
11. Have students invent their own fish by drawing a fish and labeling the correct parts. The fish should include all of the following: gills, fins, scales, and live in an aquatic environment.

E. *Assessment/Evaluation*

1. Teacher will assess the student's participation in the goldfish experiment.
2. Teacher will collect the Animal Kingdom Journals and evaluate the section with the experiment according to the Rubric. See Appendix D.
3. Teacher will collect fish creations and evaluate them for inclusion of all fish features.

Lesson Three: Amphibians

A. *Daily Objectives*

1. Concept Objectives
   a. Understand that scientists classify living things according to the characteristics they share.
   b. Understand the different characteristics of animal classes.
2. Lesson Content
   a. Amphibians: live part of their lives in water and part on land, have gills when young and later develop lungs, cold-blooded, usually have moist skin, live in damp environments
3. Skill Objectives
   a. Students will be able to describe the characteristics of the amphibian class.
   b. Students will be able to explain how the characteristics of amphibians allow them to live both in water and on land.
   c. Students will be able to trace the life cycle of an amphibian - the frog.
   d. Students will be able to compose a story with a beginning, middle, and end using first person.

B. *Materials*

1. Students' Animal Kingdom Journals
2. Chart paper or poster board
3. Copy of Appendix I for teacher
4. Copy of Appendix E for teacher

C. *Key Vocabulary*

1. Amphibian – from a Greek word, meaning "living a double life"
2. Metamorphosis – the process by which a young amphibian develops into the adult

D. *Procedures/Activities*

1. Introduce and discuss the characteristics of amphibians with the class. Have students record information in their Animal Kingdom Journals. (See Appendix I for suggestions.)
2. Using chart paper or poster board, the teacher draws a chart depicting the life cycle of a frog (examples can be found in both books listed as background knowledge for the teacher or Appendix E). Teach the meaning of the word metamorphosis by having the students write the word and meaning in their journals.
3. In their Animal Kingdom Journals, the students will draw their own charts showing the frog's life cycle.
4. Assign students the task of writing a narrative from the point of view of a frog. Make sure students understand the concept of first person, using words such as I, me, us, we, and mine in their stories. The narratives should display an understanding of the characteristics of amphibians. (See Rubric, Appendix F.)
5. As students finish their frog stories, they may search through magazines and clip pictures of various animals. In Lesson Seven, the class will be creating a group collage with these pictures.

E. *Assessment/Evaluation*

1. Collect the students' Animal Kingdom Journals and evaluate the stories according to the rubric in Appendix F.

Lesson Four: Reptiles

A. *Daily Objectives*

1. Concept Objectives
   a. Understand that scientists classify living things according to the characteristics they share.
   b. Understand the different characteristics of animal classes.
2. Lesson Content
   a. Reptiles: hatch from eggs, cold-blooded, dry, thick, scaly skin
   b. Poem: "The Crocodile" by Lewis Carroll
3. Skill Objectives
   a. Students will be able to describe the characteristics of the reptile class.
   b. Students will be able to recognize the poem, "The Crocodile" by Lewis Carroll.

B. *Materials*

1. *What is a Reptile*, by Robert Snedden
2. *The Animal Kingdom*, by Kate Whyman
3. *Animal Skeletons*, by Judith Janda Presnall (pages 31–39)
4. Poem: "The Crocodile" by Lewis Carroll
5. 12" x 18" sheet of drawing paper for each student
6. Various books about reptiles from school, city, and personal library collections
7. Guest Speakers: Reptile Man, Arizona Desert Center or City Zoo

C. *Key Vocabulary*

1. Tuatara – an order of reptiles
2. Crocodilian – an order of reptiles

D. *Procedures/Activities*

1. Read aloud the poem, "The Crocodile" by Lewis Carroll. Spend a few minutes doing a choral reading of the poem. Use this poem to introduce reptiles. A crocodile is a reptile. What characteristics does a crocodile have that causes it to be a member of the reptile class?

2. Invite a guest speaker to the classroom to present background information about reptiles and to show samples. "The Reptile Man" is available in the Denver area. In Arizona, speakers can be obtained from the Desert Center, The World Wildlife Zoo, and the Phoenix Zoo. Students may write a summary of what they learned from the presentation in their Animal Kingdom Journals. If this option is not available to you, the teacher will need to provide background information to the students. Use the books listed in the materials section above as well as any additional resources you may find. (See Appendix I for suggestions.)
3. Invite students to construct a classification map depicting the four orders of reptiles. A sample map is included in Appendix G.
4. Students will list the features of each order in the spaces on the map. They will also include illustrations of reptiles belonging to each order.
5. As students finish their classification maps, invite them to search magazines and clip pictures of various animals. These pictures will be used in Lesson Seven to make a class collage.

E. *Assessment/Evaluation*

1. Collect the classification maps and evaluate for completeness and accuracy.

Lesson Five: Birds

A. *Daily Objectives*

1. Concept Objectives
   a. Understand that scientists classify living things according to the characteristics they share.
   b. Understand the different characteristics of animal classes.
2. Lesson Content
   a. Birds: warm-blooded, most can fly, feathers and wings, most build nests, hatch from eggs, most baby birds must be fed by their parents and cared for until they can survive on their own
3. Skill Objectives
   a. Students will be able to describe the characteristics of the bird class.
   b. Students will be able to gather information from print sources (encyclopedia) and write a short report representing the information in his/her own words.
   c. Students will be able to organize material in paragraph form.

B. *Materials*

1. Ten sunflower seeds
2. Cup
3. Plastic bag
4. Aquarium gravel
5. An illustration of a bird (enlarged from a coloring book, clip art files, etc.) – this needs to be large enough for all students in the class to see at the same time (place pieces of Velcro on the bird in various spots as you will be attaching tag board strips to this bird)
6. 10 strips made from tag board – write specific characteristics of birds on each strip:
   a. Birds have two legs.
   b. Birds have two wings.
   c. Birds have a beak.
   d. Birds have feathers.
   e. Birds lay eggs.
   f. Most birds fly.

g. Birds are warm-blooded.
h. Most birds build nests.
i. Baby birds are fed by their parents.
j. Most birds have good eyesight.

3. Velcro pieces to attach to the back of each strip and on the enlarged bird drawing
4. A photocopy of a bird drawing for each student (these can be obtained from coloring books, clipart, black line masters, etc.)
5. Crayons or markers
6. 1" x 4" strips of construction paper – 10 per student
7. Set of World Book Encyclopedias, animal encyclopedias, World Book CD Rom, trade books, and/or other references that include information on birds
8. An Eyewitness Book - *Amazing Birds* by Alexandra Parsons
9. *Janice VanCleave's Animals,* by Janice Van Cleave
10. *Birds and How They Live,* by David Burnie
11. *Animal Skeletons,* by Judith Janda Presnall (pages 41–45)

C. *Key Vocabulary*

1. Warm-blooded – the property by which an organism maintains the same body temperature regardless of the temperature outside the body

D. *Procedures/Activities*

1. Do the following experiment to find out how birds eat without teeth. This experiment was adapted from *Janice VanCleave's Animals.*
   a. Use pliers to break open the shells of ten sunflower seeds.
   b. Separate the seeds from the shells.
   c. Discard the shells, and place the seeds in a cup.
   d. Add one teaspoon of water to the cup containing the seeds.
   e. Allow the seeds to soak for 30 minutes.
   f. Place the wet seeds in a plastic bag.
   g. Add aquarium gravel to the plastic bag.
   h. Place the bag between the palms of your hands.
   i. Rub your hands back and forth to cause the gravel to grind against the seeds inside the bag.
   j. Observe the seeds after grinding them with the stones for one minute.
   k. RESULTS: The seeds are ground into a mush by the stones.
   l. WHY? Birds do not have teeth to grind their food, but they are able to digest large amounts of food daily. Birds that eat seeds have strong beaks to crush the shells and then remove the inner seeds.
2. Begin a discussion by saying, "We've learned that birds have beaks. This is different from other animal classes. Let's learn other ways that birds are different."
3. Read aloud from one of the bird books listed in the materials section. Choose a few pages that highlight interesting facts about birds.
4. Display the enlarged bird drawing with the Velcro strips. Have students place the strips with the characteristics on the bird drawing. For example, they will attach the strip, "Birds have wings" next to the wing on the bird drawing.
5. Provide a photocopied drawing of a bird for the students to glue into their Animal Kingdom Journals. They will write bird characteristics on small strips of construction paper and glue in the appropriate places on the drawing. When finished, students may color the bird.
6. Summarize what the students have learned about birds. Do a THINK – PAIR – SHARE activity with a partner. Present a question to the class, for instance, "How are birds the same as reptiles?" Give the students a minute to <u>think</u> about

how they would answer the question. Next, have them pair up with their partners and discuss the question. Then, ask individual groups to stand up and share with the whole class. Other questions to ask include:

a. "In what way are birds different from reptiles?"
b. "Can you think of any ways that birds are similar to amphibians?"
c. "How are birds different from fish?"
d. "What characteristics do birds have that no other animal class we've learned about has?"

7. **Extension**: Make a class book of birds. Assign each student a specific bird on which to become an "expert." Students will gather information from an encyclopedia (or other source) about this bird. For their contribution in the class book, the students will illustrate the bird and write a short report representing the information they learned during their research.

E. *Assessment/Evaluation*

1. Students should be able to satisfactorily describe the characteristics of birds in the THINK – PAIR – SHARE activity.
2. Peruse the class book entries evaluating the report for paraphrasing and proper paragraph structure.

Lesson Six: Mammals

A. *Daily Objectives*

1. Concept Objectives
   a. Understand that scientists classify living things according to the characteristics they share.
   b. Understand the different characteristics of animal classes.
2. Lesson Content
   a. Mammals: warm-blooded, hair on their bodies, parents care for the young, females produce milk for their babies, breathe through lungs, most are terrestrial (live on land) though some are aquatic
3. Skill Objectives
   a. Students will be able to name the characteristics of mammal class.
   b. Students will be able to identify where mammals belong on the food chain.
   c. Students will be able to draw and describe a food chain.

B. *Materials*

1. *Tell Me Why – Mammals* Volume IX video – 30 minutes
2. Animal Kingdom Journals
3. *What are Food Chains and Webs?* by Bobbie Kalman and Jacqueline Langille

C. *Key Vocabulary*

1. Insectivore – animals that eat mainly insects
2. Herbivore – animals that eat mainly plants
3. Carnivore – animals that eat mainly other animals
4. Omnivore – animals that eat both plants and other animals
5. Food Chain – the pattern of eating and being eaten

D. *Procedures/Activities*

1. Introduce and discuss the characteristics of mammals with the class. Have the students record information discussed in their Animal Kingdom Journals. (See Appendix I for suggestions.)
2. Further classify mammals by what they eat. There are three groups: insectivores, herbivores and carnivores. Remember that omnivores are animals that eat both plants and other animals. Have students write several examples of each of the

three groups in their journals under the proper headings of insectivores, herbivores and carnivores.

3. Describe a typical food chain and put an example on the chalkboard.
4. Ask the students questions pertaining to the order of the food chain. Some examples may be:
   a. Why is a lion above a mouse on the food chain?
   b. Why is man at the top of the food chain?
   c. Are plants always at the bottom of the food chain?

   (*What Are Food Chains and Webs?* pages 4, 11, 22)
5. Have students complete a food chain in their Animal Kingdom Journals. Any number of animals can be used, but man **must** always be at the top.
6. If time permits, show the *Tell Me Why – Mammals* video volume IX.

E. *Assessment/Evaluation*

1. Collect Journals and assess the student's food chain for correct placement of the mammals.

Lesson Seven: Summary of the Animal Classes

A. *Daily Objectives*

1. Concept Objectives
   a. Understand that scientists classify living things according to the characteristic they share.
   b. Understand the different characteristics of animal classes.
2. Lesson Content
   a. Review fish, amphibians, reptiles, birds and mammals
3. Skill Objectives
   a. Students will be able to organize (classify) animals by different characteristics.
   b. Students will be able to construct a model that illustrates an animal and compare the model to the animal is represents.
   c. Students will be able to identify analogous relationships.

B. *Materials*

1. *Chickens Aren't The Only Ones,* by Ruth Heller (this book is also available as a Reading Rainbow video)
2. Analogies worksheet – Appendix H (copies for each student)
3. Five index cards per each pair of students
4. Animal pictures previously cut from magazines
5. Glue
6. Art materials to make 3-dimensional animal models: tissue paper, newspaper, construction paper, paper mache, string, masking tape, staples, scissors, staplers, buttons, tempera paints, etc.

C. *Key Vocabulary*

1. Collage – an artistic piece of work made by gluing pictures onto a surface
2. Analogy – a comparison based on similarities

D. *Procedures/Activities*

1. Teacher starts by verbally quizzing the entire class to briefly review the distinguishing characteristics of each animal class. For instance, have the students list all the characteristics of fish they can recall. List the classes and characteristics in an organized form on the board. Remind students of the differences between vertebrates and invertebrates during the discussion.

2. Read the book or view the video, *Chickens Aren't The Only Ones*. Review the different animal classes featured in the book or video. Before reading the book, brainstorm all the animals that lay eggs and list on the chalkboard.
3. Divide students into pairs.
4. Provide each pair with five index cards. The students write the name of an animal class on a card (fish, amphibian, reptile, bird, mammal). Use the index cards to play the "Guess Who" game. To play this game one student chooses a card and reads the name of the animal class to himself/herself. The other student asks yes/no questions to discover the mystery animal class. The questions continue until the student correctly guesses the animal class. The students switch roles and continue the game until the teacher determines the end of the game.
5. Hand out the analogies worksheet – Appendix H. Have students complete these individually.
6. Divide class into two groups for the following centers:
   a. Center One: Arrange the animal pictures to create an Animal Kingdom collage on the class bulletin board.
   b. Center Two: Individually or in groups, create a 3-D model of an animal of choice. One example would be to create a paper mache animal. Another example would be to draw an animal on two pieces of paper, decorate, stuff with newspaper and staple together.
7. **Extension**: Time permitting, students can choose from the following:
   a. Finish Animal Kingdom Journal to hand in for grading, to file in portfolios, and/or present at parent conferences.
   b. Compose and illustrate a poem about a favorite animal.
   c. Free reading time from classroom animal books.

E. *Assessment/Evaluation*
1. Collect and evaluate Animal Kingdom Journals according to rubric (Appendix J).
2. Collect analogy worksheets and check for accuracy.

VI. CULMINATING ACTIVITY (Optional)

A. Take the class to the city zoo for a field trip. Prior to visiting the zoo, view the video *Zoo Life* with Jack Hanna – Bonkers for Babies.

B. Have an ANIMAL FAIR in the classroom.
1. Divide the students into 5 - 6 groups:
   a. Fish
   b. Amphibians
   c. Reptiles
   d. Birds
   e. Mammals
   f. Invertebrates (Optional - Use if you have a large class.)
2. Provide two class periods for the groups to prepare a booth and oral presentation to present at a fair. The visual aids could include two or more media, for example, drawings, collages, PowerPoint programs, graphs, charts, cartoons, etc. Possibilities for oral presentations include skits, news broadcast, reports, panel discussion groups, etc. Allow students to use their imaginations to create an exhibit to teach their classmates about their assigned animal class.

VII. HANDOUTS/WORKSHEETS

A. Appendix A – Classifying Living Things
B. Appendix B – Vertebrate and Invertebrate Comparison Chart
C. Appendix C – Fish Diagram

D. Appendix D – Report of Science Experiment Rubric
E. Appendix E – Diagram of the Life Cycle of a Frog
F. Appendix F – Amphibian Writing Rubric
G. Appendix G – Orders of Reptiles Classification Map
H. Appendix H – Analogies Worksheet
I. Appendix I – Animal Classification Chart
J. Appendix J – Animal Kingdom Journal Scoring Rubric

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APPENDIX A- ANIMAL CLASSIFICATION
Classifying Living Things

Scientists classify living things into five groups, called kingdoms: 1) Animals; 2) Plants; 3) Fungi; 4) Protists and 5) Monerans.

Each kingdom can be divided into smaller groups, each containing organisms that have features in common.

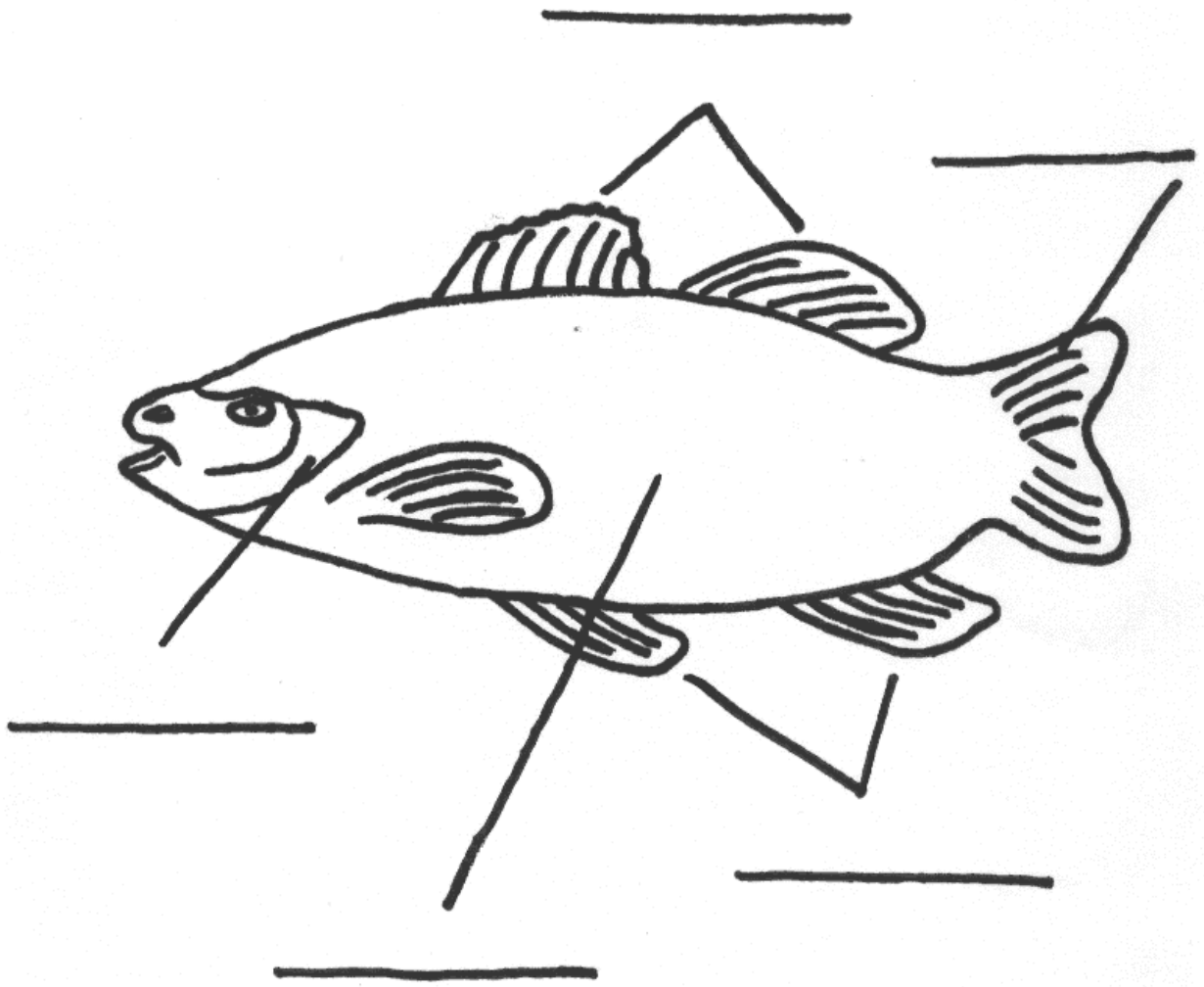
Living Things
Kingdoms
Phyla
Classes
Orders
Families
Genera
Species

*The information was adapted from *The Animal Kingdom* by Kate Whyman.

APPENDIX B – ANIMAL CLASSIFICATION
Vertebrate and Invertebrate Comparison Chart

Vertebrates	Invertebrates
Have backbones	Do not have backbones
Have internal skeletons	Do not have internal skeletons
Examples of animals that belong in this category:	*Examples of animals that belong in this category:*
Whale	Octopus
Dog	Snail
Penguin	Worm
Ostrich	Centipede
Shark	Butterfly
Goldfish	Crab
Crocodile	Starfish
Turtle	Clam
Frog	Spider

APPENDIX C – ANIMAL CLASSIFICATION
Fish Diagram



Adapted from *Science Project Ideas About Animal Behaviors*
by Robert Gardner and David Webster

APPENDIX D – ANIMAL CLASSIFICATION

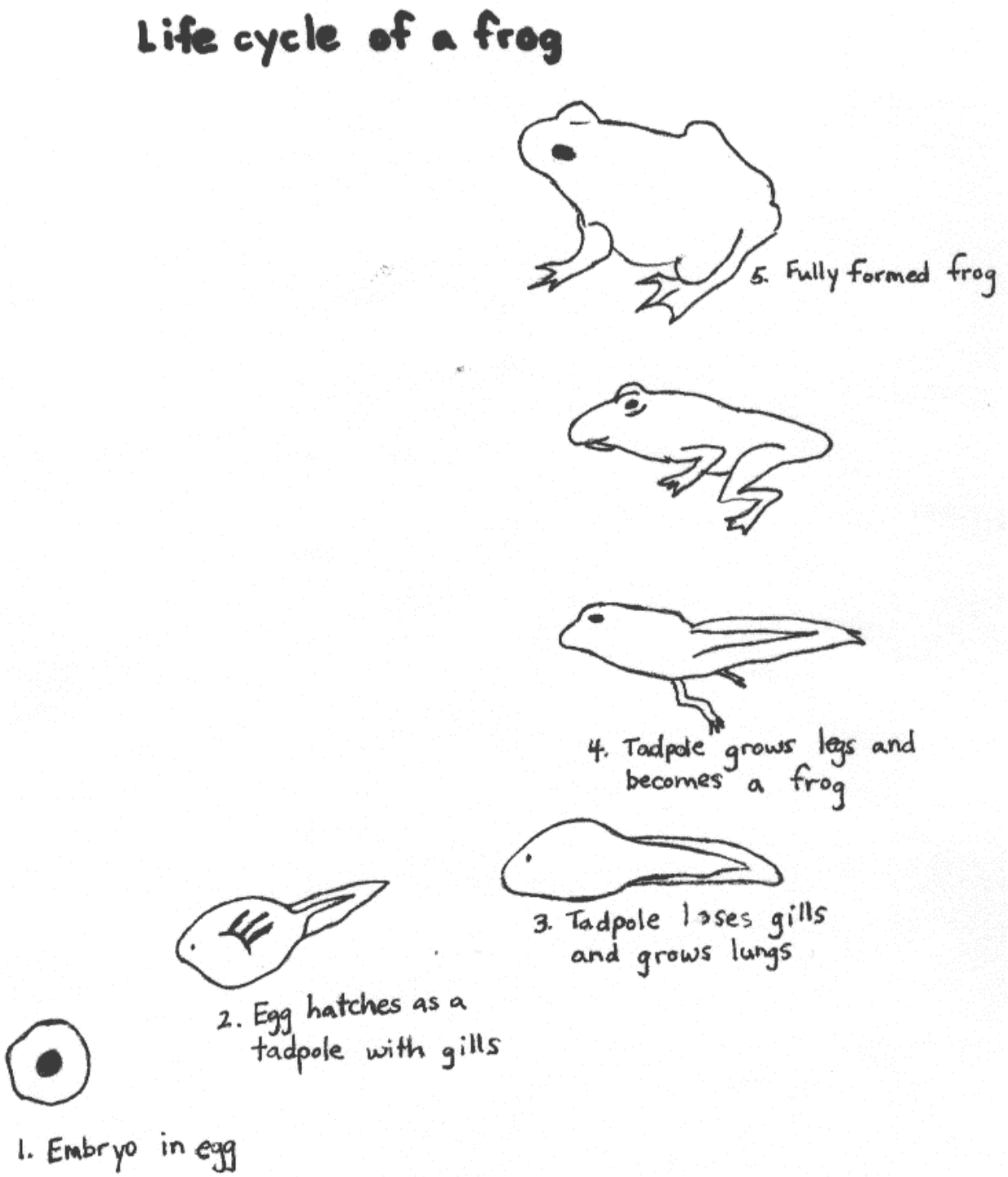
Report of Science Experiment

Scoring Rubric

Criterion	Yes	No	Notes
Did you include an introductory statement? (What you are trying to find out)			
Are your observations recorded? (temperature of water, breath rates)			
Did you record the steps of the experiment in order?			
Did you writes a conclusion of what you learned?			

APPENDIX E – ANIMAL CLASSIFICATION

Diagram of the Life Cycle of a Frog



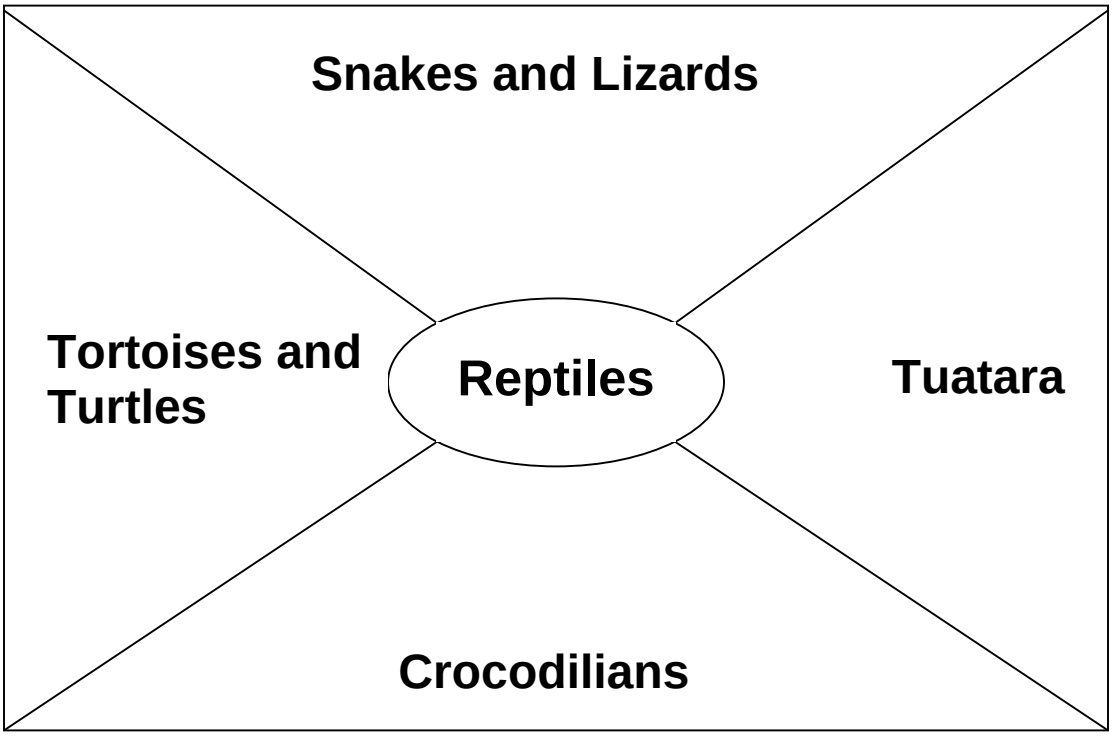
Adapted from *The Animal Kingdom* by Kate Whyman

Amphibian Writing Rubric

Criterion	Yes	No	Notes
Does the story have a title?			
Is there a beginning to the story?			
Is there a middle to the story?			
Does the middle of the story relate to the beginning?			
Is there an ending to the story?			
Are all life cycle stages depicted in the story?			
Is the story creative?			
Does the habitat and stage of life coincide?			

APPENDIX G – ANIMAL CLASSIFICATION

Orders of Reptiles Classification Map



Scientists have classified the reptile class into four orders. Listed below are the names of each order. The reference for this information is the book *The Animal Kingdom* by Kate Whyman.

2. Snakes and lizards
3. Tortoises and turtles
4. Crocodilians
5. Tuatara

APPENDIX H – ANIMAL CLASSIFICATION

Part – to – Whole Analogies

1. Feathers : Bird :: _____ : Fish

2. Mammal : Hair :: _____ : Scales

3. Cold-Blooded : Reptiles :: _____ : Mammals

4. _____: Fish :: Lungs : Birds

5. Amphibian : Vertebrate :: Insect : _____

6. Birds : Hatch from eggs :: _____ : Gives birth to live young

7. Turtle : Reptile :: Frog : _____

8. _____ : Backbone :: Invertebrate : No Backbone

9. Endoskeleton : Vertebrate :: _____ : Invertebrate

10. Whale : _____ :: Salmon : Fish

11. Tadpole : _____ :: Caterpillar : Butterfly

12. Bird : _____ :: Dolphin : Swim

Make up your own analogies:

_____ : _____ :: _____:_____

_____ : _____ :: _____:_____

APPENDIX I – ANIMAL CLASSIFICATION

Main characteristics of the Animal Kingdom – Teacher's Resource

Vertebrates

Backbone
Internal Skeleton (Endoskeleton)

Invertebrates

No Backbone
External Skeleton (Exoskeleton)

Fish

Aquatic Animals
Breathe through gills
Cold-blooded
Most have scales
Most develop from eggs that female lays outside her body

Amphibians

Live part of lives in water and part on land
Have gills when young
Later develop lungs
Cold-blooded
Usually have moist skin

Reptiles

Hatch from eggs
Cold-blooded
Dry, thick, scaly skin

Birds

Warm-blooded
Most can fly
Have feathers
Have wings
Most build nests
Hatch from eggs
Most babies are fed by parents and cared for until they can survive on their own

Mammals

Warm-blooded
Hair on their bodies
Parents care for their young
Females produce milk for babies
Breathe through lungs
Most are terrestrial (live on land)
Some are aquatic (live in water)

APPENDIX J – ANIMAL CLASSIFICATION

ANIMAL KINGDOM JOURNAL SCORING RUBRIC

Criterion	**Yes**	**No**	**Notes**
Is cover decorated in an original fashion?			
Are characteristics complete for:			
Fish?			
Amphibians?			
Reptiles?			
Birds?			
Mammals?			
Is frog life cycle accurate?			
Are mammals placed correctly on the food chain?			