

DRAFT - DO NOT COPY - FOR DISCUSSION/FEEDBACK PURPOSES ONLY

Unit Title: Animal Studies	Content Area: Life Science	Grade Level: 4
<p>Unit Summary: Animal Studies centers around students caring for and observing three unique animals - the dwarf African frog, the fiddler crab, and the millipede—students are able to focus on animal behavior, comparing and contrasting the needs, behaviors, and anatomical structures of each organism.</p> <p>Each student creates and maintains a personal observation log in which he or she records notes about each animal throughout the unit. Students apply what they learn about body structure, habitat, survival needs, and behavior to a fourth animal—the human—identifying ways that humans are similar to and different from other animals. Students practice observing and recording data in their logs as well as in Venn diagrams, class webs, tables, and drawings. Students conduct a research-based inquiry that moves students away from general observations and asks them to apply their scientific process skills as they gather and synthesize information about their animals' behavior.</p> <p>Students will engage in Practices of Science throughout this unit as follows: Asking Questions & Defining Problems, Developing & Using Models, Planning & Carrying out Investigations, Engaging in Argument from Evidence</p>		
Unit Essential Questions: <ul style="list-style-type: none">• What do all living things have in common?• How is matter transformed, and energy transferred/transformed in living systems?• In what ways do organisms interact within ecosystems?• How do organisms change as they go through their life cycle?• In what ways are organisms of the same kind different from each other? How does this help them reproduce and survive?	Unit Enduring Understandings: <ul style="list-style-type: none">• Living organisms have a variety of observable features that enable them to obtain food and reproduce.• All organisms transfer matter and convert energy from one form to another.• All animals and most plants depend on both other organisms and their environments for their basic needs.• Organisms reproduce, develop, have predictable life cycles, and pass on some traits to their offspring.• Differences between organisms of the same kind offer advantages in surviving and reproducing in different environments.	
Possible Student Misconceptions: <ul style="list-style-type: none">• If a living thing can move on its own then scientists call it an animal.• Children think animals grow or stretch to accommodate the food they eat.• Humans are often not thought of as animals; rather they are contrasted with animals. Humans, insects, birds, and fish are often thought of as alternatives other than animals, not as subsets of animals.• If the producers (plants) disappeared from Earth, organisms that prey on other organisms for food (carnivores) would only be slightly affected.• Typically, the arrows of a food chain symbolize what each organism is eating (e.g., grass -> mouse -> snake -> hawk.)• Some populations of organisms are numerous in order to fulfill a demand for food by another population.• Students often think of organisms as independent of each other but dependent on people to supply them with food and shelter.• Some environmentally produced characteristics can be inherited, especially over several generations.• Many students tend to see adaptation as an intention by the organism to satisfy a desire or need for survival.• Students tend to equate life cycles only with the examples they observe in school, such as certain types of plant, butterfly, frog, or mealworm life cycles or organisms that are similar to those they studied.• When Students encounter organisms that are different from the ones they studied, they fail to recognize that all organisms have a life cycle.• Death is not a part of the life cycle.• Students typically use criteria such as "movement," "breathe," "reproduction," and "death" to decide whether things are alive. Thus, some believe fire, clouds, and the sun are alive, but others think plants and certain animals are nonliving.		
NJCCCS: <ul style="list-style-type: none">• 5.3.4.A.1 Develop and use evidence-based criteria to determine if an unfamiliar object is living or nonliving.• 5.3.4.A.2 Compare and contrast structures that have similar functions in various organisms, and explain how those functions may be carried out by structures that have different physical appearances.• 5.3.4.A.3 Describe the interactions of systems involved in carrying out everyday life activities.• 5.3.4.B.1 Identify sources of energy (food) in a variety of settings (farm, zoo, ocean, forest).• 5.3.4.C.1 Predict the biotic and abiotic characteristics of an unfamiliar organism's habitat.• 5.3.4.C.2 Explain the consequences of rapid ecosystem change (e.g., flooding, wind storms, snowfall, volcanic eruptions), and compare them to consequences of gradual ecosystem change (e.g., gradual		

DRAFT - DO NOT COPY - FOR DISCUSSION/FEEDBACK PURPOSES ONLY

<p>increase or decrease in daily temperatures, change in yearly rainfall).</p> <ul style="list-style-type: none"> 5.3.4.D.1 Compare the physical characteristics of the different stages of the life cycle of an individual organism and characteristics of stages among species. 5.3.4.E.1 Model an adaptation to a species that would increase its chances of survival, should the environment become wetter, dryer, warmer, or colder over time. 5.3.4.E.2 Evaluate similar populations in an ecosystem with regard to their ability to thrive and grow. 	
<p>NGSS Performance Expectations: <i>Students who demonstrate understanding can...</i></p> <ul style="list-style-type: none"> 3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. 3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. 4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. 	
<p>Primary CCSS ELA/Literacy Connections:</p> <ul style="list-style-type: none"> W.4.1 Write opinion pieces on topics or texts, supporting a point of view with reasons and information. (4-LS1-1) SL.4.5 Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes. (4-LS1-2) 	<p>Primary CCSS Mathematics Connections:</p> <ul style="list-style-type: none"> 4.G.A.3 Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded across the line into matching parts. Identify line-symmetric figures and draw lines of symmetry. (4-LS1-1)

Lesson Pace & Sequence

Lesson Title/Number: 1 Pre-Unit Assessment		Learning Objective(s): Students discuss what they know about animals and their habitats.			Lesson Duration: 50 Minutes
Learning Cycle	Learning Activities	Resources/Materials	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p><i>What lesson elements will support students' progress towards mastery of the learning objective(s)?</i></p> <p><i>*Elements do not have to be in conducted in sequence.</i></p>	<p><i>What specific learning experiences will support ALL students' progress towards mastery of the learning objective(s)?</i></p>	<p><i>What curricular resources/materials are available to facilitate the implementation of the learning activities?</i></p>	<p><i>What specific practices do students need to use in order to progress towards mastery of the learning objective(s)?</i></p>	<p><i>What core ideas do students need to understand in order to progress towards mastery of the learning objective(s)?</i></p>	<p><i>What crosscutting concepts will enrich students' application of practices and their understanding of core ideas?</i></p>
<p>Elicit: <i>How will you access students' prior knowledge?</i></p>	<p>Ask students to think about how animal scientists, or zoologists, learn about animals. Discuss possible methods scientists may use to approach learning about animals as a whole group.</p>	<ul style="list-style-type: none"> Prepare 4 News Sheets (poster paper) entitled "Frogs", "Crabs", "Millipedes", and "Comparing Frogs, Crabs, and Millipedes." Have markers, extra newsprint, and tape on hand. 	<p>Asking Questions & Defining Problems: Identify Scientific and non-scientific questions</p>		<p>Systems and System Models § A system can be described in terms of its components and their interactions. (4-LS1-1),(4-LS1-2)</p>
<p>Engage: <i>How will you capture students' interest and get students' minds focused on the concept/topic?</i></p>	<p>Students spend about 5 minutes individually recording what they think they know about each group of animals in their notebooks. As a whole group again, share ideas and thoughts recorded individually.</p>			<p>LS1.A: Structure and Function § Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction. (4-LS1-1)</p>	

DRAFT - DO NOT COPY - FOR DISCUSSION/FEEDBACK PURPOSES ONLY

<p>Explore: What hands-on/minds-on common experience(s) will you provide for students?</p>	<p>In groups of four, students will work collaboratively to discuss response to questions regarding their similarities & differences.</p>	<ul style="list-style-type: none"> "Comparing Frogs, Crabs, and Millipedes" Chart. TE Questions Section 4, page 6 Procedure #5 to guide questioning during this session. 	<p>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 world(s). § Construct an argument with evidence, data, and/or a model. (4-LS1-1)</p>	<p>LS1.A: Structure and Function</p>	<p>Patterns Patterns of change can be used to make predictions. (3-LS1-1)</p> <p>Cause and Effect Cause and effect relationships are routinely identified and used to explain change. (3-LS4-3)</p>
<p>Explain: How will you help students connect their exploration to the concept/topic under investigation?</p>	<p>Students respond in their notebooks to questions referencing the study of animals in the classroom that would be difficult to study in their natural habitats.</p>	<ul style="list-style-type: none"> TE Section 4, page 6 Final Activities 		<p>LS1.A: Structure and Function LS4.C: Adaptation For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)</p>	<p>Patterns Patterns of change can be used to make predictions. (3-LS1-1)</p> <p>Cause and Effect Cause and effect relationships are routinely identified and used to explain change. (3-LS4-3)</p>
<p>Elaborate: How will students apply their learning and develop a more sophisticated understanding of the concept/topic?</p>	<p>Students will think about what needs to be done before bringing an organism into the classroom. Review questions on Record Sheet 1-A: Studying Animals.</p>	<ul style="list-style-type: none"> Record Sheet 1-A 	<p>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. § Use a model to test interactions concerning the functioning of a natural system. (4-LS1-2)</p>	<p>LS1.A: Structure and Function § LS4.C: Adaptation</p>	<p>Patterns Cause and Effect Systems and System Models</p>
<p>Evaluate: How will students demonstrate their mastery of the learning objective(s)?</p>	<p>Students complete Record Sheet 1-A, and submit for review.</p>			<p>LS1.A: Structure and Function LS4.C: Adaptation</p>	<p>Patterns Cause and Effect Systems and System Models</p>

DRAFT - DO NOT COPY - FOR DISCUSSION/FEEDBACK PURPOSES ONLY

Extend: How will students deepen their conceptual understanding through use in new context?	Read "Animal Signs" pages 26-29	<ul style="list-style-type: none"> STC Literacy Series, "Animal Studies", Part 2 		LS1.A: Structure and Function LS4.C: Adaptation	Patterns
Lesson Title/Number: 2		Learning Objective(s): Students read about the habitats of the dwarf African frog, fiddler crab, and millipede and identify the needs of each organism.			Lesson Duration: 50 Minutes
<p align="center">Learning Cycle</p> <p align="center"><i>What lesson elements will support students' progress towards mastery of the learning objective(s)?</i></p> <p align="center"><i>*Elements do not have to be in conducted in sequence.</i></p>	<p align="center">Learning Activities</p> <p align="center"><i>What specific learning experiences will support ALL students' progress towards mastery of the learning objective(s)?</i></p>	<p align="center">Resources/Materials</p> <p align="center"><i>What curricular resources/materials are available to facilitate the implementation of the learning activities?</i></p>	<p align="center">Science and Engineering Practices</p> <p align="center"><i>What specific practices do students need to use in order to progress towards mastery of the learning objective(s)?</i></p>	<p align="center">Disciplinary Core Ideas</p> <p align="center"><i>What core ideas do students need to understand in order to progress towards mastery of the learning objective(s)?</i></p>	<p align="center">Crosscutting Concepts</p> <p align="center"><i>What crosscutting concepts will enrich students' application of practices and their understanding of core ideas?</i></p>
Elicit: How will you access students' prior knowledge?	Ask students to observe surroundings (classroom) and note all the living and nonliving parts of their classroom. Create a web with school in the center. Students will extend from the center with ideas, and help teacher create categories and group them with titles. Include other places in the school. (Students can do this as a homework assignment or throughout the day).	<ul style="list-style-type: none"> Newsprint, markers, tape. 	-Developing and Using Models	LS1.A: Structure and Function § 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. (3-LS1-1) LS4.C: Adaptation	Systems and System Models § A system can be described in terms of its components and their interactions. (4-LS1-1),(4-LS1-2)

DRAFT - DO NOT COPY - FOR DISCUSSION/FEEDBACK PURPOSES ONLY

<p>Engage: How will you capture students' interest and get students' minds focused on the concept/topic?</p>	<p>Review Record Sheet 1-A, guiding students to think about what they need to know in order to bring frogs, millipedes, and crabs into the classroom to live. Students should contemplate methods of finding information about each type of animal. In small groups (with roles if possible), students will study information provided by the teacher including a picture of its natural home. How are we going to meet the survival needs of this animal in our class?</p>	<ul style="list-style-type: none"> Record Sheet 1-A 	<p>Developing and Using Models Obtaining, Evaluating, and Communicating Information</p>	<p>LS1.A: Structure and Function § LS1.B: Growth and Development of Organisms LS4.C: Adaptation</p>	<p>Patterns Patterns of change can be used to make predictions. (3-LS1-1)</p> <p>Cause and Effect Cause and effect relationships are routinely identified and used to explain change. (3-LS4-3)</p> <p>Systems and System Models</p>
<p>Explore: What hands-on/minds-on common experience(s) will you provide for students?</p>	<p>Students will spend some time completing an animal habitat proposal utilizing their group's assigned animal. Each group will have a "reporter" display and describe their group's ideas for the animal' classroom habitat.</p>	<ul style="list-style-type: none"> Animal Background 2-A, 2B, 2C Sheet of paper 	<p>Developing and Using Models -Obtaining, Evaluating, and Communicating Information</p>	<p>LS1.A: Structure and Function § LS1.B: Growth and Development of Organisms LS4.C: Adaptation</p>	<p>Patterns Cause and Effect Systems and System Models Structure and Function</p>
<p>Explain: How will you help students connect their exploration to the concept/topic under investigation?</p>	<p>As a whole group, discuss the "Basic" necessities and "Special" by starting a T-Chart with these two titles. The students will describe what was mentioned in each group's report out. These ideas will be basic needs or things that all the animals will need to survive. In the "Special" column, note what was included in the proposals for frog, but that was not included for the millipedes or crabs and vice versa? Record these on the chart.</p>	<ul style="list-style-type: none"> Newsprint, markers, tape. 	<p>Developing and Using Models -Obtaining, Evaluating, and Communicating Information -Planning and Carrying Out Investigations</p>	<p>LS1.A: Structure and Function § LS1.B: Growth and Development of Organisms LS4.C: Adaptation</p>	<p>Patterns Cause and Effect Systems and System Models Structure and Function</p>
<p>Lesson Title/Number: Food Chain</p>	<p>Learning Objective(s):</p> <ol style="list-style-type: none"> Identify and list examples of producers, consumers and decomposers. Draw a food chain to illustrate how energy flows through an ecosystem. Describe how energy derived from the Sun is used by plants to produce sugars and is transferred within a food chain from producers to consumers 			<p>Lesson Duration: 50-100 Minutes</p>	

DRAFT - DO NOT COPY - FOR DISCUSSION/FEEDBACK PURPOSES ONLY

<p>Learning Cycle</p> <p><i>What lesson elements will support students' progress towards mastery of the learning objective(s)?</i></p> <p><i>*Elements do not have to be in conducted in sequence.</i></p>	<p>Learning Activities</p> <p><i>What specific learning experiences will support ALL students' progress towards mastery of the learning objective(s)?</i></p>	<p>Resources/Materials</p> <p><i>What curricular resources/materials are available to facilitate the implementation of the learning activities?</i></p>	<p>Science and Engineering Practices</p> <p><i>What specific practices do students need to use in order to progress towards mastery of the learning objective(s)?</i></p>	<p>Disciplinary Core Ideas</p> <p><i>What core ideas do students need to understand in order to progress towards mastery of the learning objective(s)?</i></p>	<p>Crosscutting Concepts</p> <p><i>What crosscutting concepts will enrich students' application of practices and their understanding of core ideas?</i></p>
<p>Engage: How will you capture students' interest and get students' minds focused on the concept/topic?</p>	<p>Where Do Plants and Animals Get Their Energy? 1. Ask students what they had for lunch. List their responses on the board. Write the words plant and animal on the board. Ask students to sort the food items into these two categories. 2. Ask students: • Why do we need to eat? • Where do cows get the energy they need to build muscle and produce milk? • Where do plants get the energy they need to make leaves, like the lettuce we eat?</p> <p>Listen to their ideas, and then explain that they are going to explore an Energy Flow Web activity that will help in answering these questions.</p>		<p>-Developing and Using Models</p>	<p>LS1.A: Structure and Function § LS1.B: Growth and Development of Organisms</p> <p>LS4.C: Adaptation</p>	<p>Systems and System Models</p> <p>Structure and Function</p> <p>Energy and Matter: Flows, Cycles, and Conservation: Energy can be transferred in various ways and between object.</p>
<p>Explore: What hands-on/minds-on common experience(s) will you provide for students?</p>	<p>Students or teacher accesses the following website to achieve the objectives: http://www.teachersdomain.org/resource/tdc02.sci.life.oate.lp_energyweb/</p> <p>Assign each student a partner, and distribute copies of the Handout: Where Do Plants Get Their Energy? (PDF) handout. Have students explore the Energy Flow Web activity and</p>	<ul style="list-style-type: none"> Where Do Plants Get Their Energy? Handout: http://www.teachersdomain.org/asset/tdc02_doc_plante_nergy/ 	<p>Developing and Using Models</p> <p>Obtaining, Evaluating, and Communicating Information</p>	<p>LS1.A: Structure and Function § LS1.B: Growth and Development of Organisms</p> <p>LS4.C: Adaptation</p>	<p>Systems and System Models</p> <p>Structure and Function</p> <p>Energy and Matter: Flows, Cycles, and Conservation:</p>

DRAFT - DO NOT COPY - FOR DISCUSSION/FEEDBACK PURPOSES ONLY

	use the information it contains to answer the questions on the handout.				
		<ul style="list-style-type: none"> Energy Flow Web Activity: http://www.teachersdomain.org/resource/tdc02.sci.life.0ate.energyflow/ 			
<i>Explain: How will you help students connect their exploration to the concept/topic under investigation?</i>	<p>Assess students' understanding of the Energy Flow Web activity by reviewing their answers to the questions on the handout:</p> <ul style="list-style-type: none"> Where do plants get the energy they need to grow? What do plants use the sun's energy to manufacture? What do plants use most of their energy for? How much of the energy that the plant captures through photosynthesis ends up stored as starch in the kernel? For what does the cow use the energy from the corn? How much of the energy stored in the corn gets passed on to you in burgers? For what do you use the energy in the burgers? How would eating more plants help us better feed the many people in the world? What else besides energy do we get from plants and animals? When we eat them? 		-Obtaining, Evaluating, and Communicating Information	LS1.A: Structure and Function § LS1.B: Growth and Development of Organisms LS4.C: Adaptation	Systems and System Models Structure and Function Energy and Matter: Flows, Cycles, and Conservation:

DRAFT - DO NOT COPY - FOR DISCUSSION/FEEDBACK PURPOSES ONLY

<p>Evaluate: How will students demonstrate their mastery of the learning objective(s)?</p>	<p>Summarize by drawing examples of food chains that shows how energy in an ecosystem comes from the Sun and flows from producers to consumers to decomposers. For example: Sun -> grass -> rabbit -> fox -> bacteria (decomposers) feeding on dead fox</p>			<p>LS1.A: Structure and Function § LS1.B: Growth and Development of Organisms LS4.C: Adaptation</p>	<p>Systems and System Models Structure and Function Energy and Matter: Flows, Cycles, and Conservation:</p>
<p>Extend: How will students deepen their conceptual understanding through use in new context?</p>	<p>As an extension/homework, students complete the Food Chain Informational Article</p>	<ul style="list-style-type: none"> Food Chain Article: http://www.lessonsniips.com/docs/pdf/foodchainweb.pdf 			<p>Energy can be transferred in various ways and between object.</p>
<p>Lesson Title/Number: (These Lessons will follow similar format with each organism) While Waiting for the arrival of the organisms, you may continue to complete sections on the Life Cycle Lesson 3- Living in Water: Dwarf African Frogs(Habitat Table Information Sheet) Lesson 5- Living Where Land and Water Meets: Fiddler Crabs(Habitat Table Information Sheet) Lesson 8-Living on Land: Millipedes (Habitat Table Information Sheet)</p>		<p>Learning Objective(s): Develop an Animal Behavior Log for regular measurable observations to aid in constructing an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all by devising a set of questions in collaboration with the whole class.</p>		<p>Lesson Duration: All of these lessons can be done together in 2-3 periods (50 Minutes each period) to create the animal's habitats</p>	
<p align="center">Learning Cycle</p> <p><i>What lesson elements will support students' progress towards mastery of the learning objective(s)?</i></p> <p><i>*Elements do not have to be in conducted in sequence.</i></p>	<p align="center">Learning Activities</p> <p><i>What specific learning experiences will support ALL students' progress towards mastery of the learning objective(s)?</i></p>	<p align="center">Resources/Materials</p> <p><i>What curricular resources/materials are available to facilitate the implementation of the learning activities?</i></p>	<p align="center">Science and Engineering Practices</p> <p><i>What specific practices do students need to use in order to progress towards mastery of the learning objective(s)?</i></p>	<p align="center">Disciplinary Core Ideas</p> <p><i>What core ideas do students need to understand in order to progress towards mastery of the learning objective(s)?</i></p>	<p align="center">Crosscutting Concepts</p> <p><i>What crosscutting concepts will enrich students' application of practices and their understanding of core ideas?</i></p>

DRAFT - DO NOT COPY - FOR DISCUSSION/FEEDBACK PURPOSES ONLY

<p>Engage: How will you capture students' interest and get students' minds focused on the concept/topic?</p>	<p>*Access previous knowledge gained from Lesson 1 and subsequently of the construction of the frog, crab, habitat. Discuss the Habitat Care, Feeding Schedule, and care for the organisms respectively as the habitats are constructed. Students write a question they have about the Dwarf Frogs on a post-it note to place on a chart entitled "What We'd Like to Know"</p> <p>After discussion each student records lists of questions to help them know what to record about each animal. (i.e. feeding behaviors, general behaviors, interactions, activity, etc.)</p>	<ul style="list-style-type: none"> • Poster Chart for Each organism entitled, "What we'd like to Know" • Animal Log Checklist 	<p>Asking Questions and Defining Problems</p>	<p>LS1.A: Structure and Function § LS1.B: Growth and Development of Organisms</p> <p>LS4.C: Adaptation</p>	<p>Systems and System Models</p> <p>Structure and Function</p> <p>Energy and Matter: Flows, Cycles, and Conservation:</p>
<p>Explore: What hands-on/minds-on common experience(s) will you provide for students?</p>	<p>Allow students time to observe the habitats as the organisms are introduced into their environments.</p> <p>Have students feed frogs to observe change in behavior when fed. *Students check list as they make observations.</p>	<ul style="list-style-type: none"> • Animal Log Checklist 	<p>Obtaining, Evaluating and Communicating Information</p>	<p>LS4.C: Adaptation</p>	<p>Systems and System Models</p> <p>Structure and Function</p> <p>Energy and Matter: Flows, Cycles, and Conservation:</p>
<p>Evaluate: How will students demonstrate their mastery of the learning objective(s)?</p>	<p>Completion of Animal Behavior Log and Checklist</p> <p>Participation in Class</p>			<p>LS4.C: Adaptation</p>	<p>Systems and System Models</p> <p>Structure and Function</p> <p>Energy and Matter: Flows, Cycles, and Conservation:</p>
<p>Extend: How will students deepen their conceptual understanding through use in new context?</p>	<p>Read "A Close Look at Birds" p. 12-15</p>	<ul style="list-style-type: none"> • *STC Literacy Series, Animal Studies, Part 1, "A Close Look at Birds" p. 12-15 read, discuss, and respond. 		<p>LS4.C: Adaptation</p>	<p>-Systems and System Models</p> <p>-Structure and Function</p> <p>-Energy and Matter: Flows, Cycles, and Conservation:</p>

DRAFT - DO NOT COPY - FOR DISCUSSION/FEEDBACK PURPOSES ONLY

Lesson Title/Number: Lesson 4: Observing Frogs More Closely Lesson 6: Observing Fiddler Crabs More Closely Lesson 9: Observing Millipedes More Closely Lesson 11: Observing Humans More Closely		Learning Objective(s): Construct an argument that animals have internal and external structures that function to support survival, growth, behavior, and reproduction by working collaboratively recording specific characteristic observations and diagram of each organism.			Lesson Duration: 50 Minutes for each lesson	
Learning Cycle What lesson elements will support students' progress towards mastery of the learning objective(s)? *Elements do not have to be in conducted in sequence.	Learning Activities What specific learning experiences will support ALL students' progress towards mastery of the learning objective(s)?	Resources/Materials What curricular resources/materials are available to facilitate the implementation of the learning activities?	Science and Engineering Practices What specific practices do students need to use in order to progress towards mastery of the learning objective(s)?	Disciplinary Core Ideas What core ideas do students need to understand in order to progress towards mastery of the learning objective(s)?	Crosscutting Concepts What crosscutting concepts will enrich students' application of practices and their understanding of core ideas?	
Elicit: How will you access students' prior knowledge?	Ask students to think about observations in Lesson 3, 5, and 8. Ask, "What characteristics of each animal should we focus on?" Guide discussion so that the students move from general categories to more specific categories such as size, color, shape, structure, and movement.			LS1.A: Structure and Function § LS1.B: Growth and Development of Organisms LS4.C: Adaptation	Patterns Structure and Function	

DRAFT - DO NOT COPY - FOR DISCUSSION/FEEDBACK PURPOSES ONLY

<p>Explore: What hands-on/minds-on common experience(s) will you provide for students?</p>	<p>Students will focus on observing their organisms and recording their observations. Teachers may decide to have the entire class observe one characteristic, or assign each group a different one. Students will share their results/observations with the class.</p> <p>Students will then have the opportunity to create a scientific drawing of their organism. Discuss with the class what the expectations are of a scientific drawing (labeling, title, appropriate features, etc.)</p>	<ul style="list-style-type: none"> Record Sheet 4-A: Observing the Frog Record Sheet 4-B: Drawing the Frog Record Sheet 6-A: Observing the Fiddler Crab Record Sheet 6-B: Drawing the Fiddler Crab Record Sheet 8-A: Observing the Millipede Record Sheet 8-B: Drawing the Millipede 	<p>Asking Questions and Defining Problems</p> <p>Planning & Carrying Out Investigations</p>	<p>LS1.A: Structure and Function</p> <p>LS4.C: Adaptation</p>	<p>Connections to Nature of Science: Scientific Knowledge is Based on Empirical Evidence Science findings are based on recognizing patterns.</p> <p>Patterns</p>
<p>Elaborate: How will students apply their learning and develop a more sophisticated understanding of the concept/topic?</p>	<p>Students should add to their Charts from Previous lesson "What We Would Like to Know about Our Frogs" if there are any new questions after this lesson.</p>		<p>Asking Questions and Defining Problems</p>	<p>LS1.A: Structure and Function</p> <p>LS4.C: Adaptation</p>	<p>Connections to Nature of Science</p> <p>Patterns</p>
<p>Evaluate: How will students demonstrate their mastery of the learning objective(s)?</p>	<p>Recorded observations in notebook Class Discussion participation Group work collaboration</p>		<p>Analyzing & Interpreting Data</p>	<p>LS1.A: Structure and Function</p> <p>LS4.C: Adaptation</p>	<p>Connections to Nature of Science</p> <p>Patterns</p>
<p>Extend: How will students deepen their conceptual understanding through use in new context?</p>	<p>Read Article, "Diving into Dolphin Behavior" in small groups or independently. Record 2-3 findings about how people study dolphins to compare to their animal logs.</p> <p>"A Crab's Life" p. 9-11 and "Jane Goodall and Her Life with the Chimps" p. 80-82 STC Literacy Series</p>	<ul style="list-style-type: none"> Student Investigation Book STC Literacy Series 		<p>LS1.A: Structure and Function</p> <p>LS4.C: Adaptation</p>	<p>Connections to Nature of Science</p> <p>Patterns</p>
<p>Lesson Title/Number: Life Cycles (In Between the arrival of each organism, the following lessons should be completed to achieve the standard)</p>		<p>Learning Objective(s): Compare the physical characteristics of the different stages of the life cycle of an individual organism and characteristics of stages among species.</p>			<p>Lesson Duration: 50 Minutes</p>

DRAFT - DO NOT COPY - FOR DISCUSSION/FEEDBACK PURPOSES ONLY

<p>Learning Cycle</p> <p><i>What lesson elements will support students' progress towards mastery of the learning objective(s)?</i></p> <p><i>*Elements do not have to be in conducted in sequence.</i></p>	<p>Learning Activities</p> <p><i>What specific learning experiences will support ALL students' progress towards mastery of the learning objective(s)?</i></p>	<p>Resources/Materials</p> <p><i>What curricular resources/materials are available to facilitate the implementation of the learning activities?</i></p>	<p>Science and Engineering Practices</p> <p><i>What specific practices do students need to use in order to progress towards mastery of the learning objective(s)?</i></p>	<p>Disciplinary Core Ideas</p> <p><i>What core ideas do students need to understand in order to progress towards mastery of the learning objective(s)?</i></p>	<p>Crosscutting Concepts</p> <p><i>What crosscutting concepts will enrich students' application of practices and their understanding of core ideas?</i></p>
<p>Elicit: <i>How will you access students' prior knowledge?</i></p>	<p>Review the life cycle of the butterfly. Ask if all organisms have the same stages in their life cycles. Record responses for each organism. (This is a good opportunity to clarify any misconceptions.)</p>	<ul style="list-style-type: none"> Butterfly Life Cycle Interactive Review: http://www.sheppardsoftware.com/scienceforkids/life_cycle/butterfly_lifecycle.htm 	<p>Asking Questions & Defining Problems</p>	<p>LS1.A: Structure and Function</p> <p>LS1.B: Growth and Development of Organisms</p>	<p>Patterns</p>
<p>Explore: <i>What hands-on/minds-on common experience(s) will you provide for students?</i></p>	<p>Students explore further information about the life cycle of a frog, crab, or millipede. Create a life cycle wheel for each organism.</p>		<p>Obtaining, Evaluating, and Communicating Information</p>	<p>LS1.B: Growth and Development of Organisms</p>	<p>Systems and System Models</p>
<p>Explain: <i>How will you help students connect their exploration to the concept/topic under investigation?</i></p>	<p>Create a chart displaying all the organisms on the left side vertically with headings indicating life cycle stages (larva, egg, pupa, tadpole, etc.)</p>				
<p>Elaborate: <i>How will students apply their learning and develop a more sophisticated understanding of the concept/topic?</i></p>	<p>Utilizing their observation charts completed thus far, students complete checklist on chart to compare and contrast life cycles for each organism.</p>				
<p>Evaluate: <i>How will students demonstrate their mastery of the learning objective(s)?</i></p>	<p>Checklist Table comparing and contrasting life cycles and/or a narrative explaining the similarities/differences</p>				
<p>Lesson Title/Number: Animal Adaptations</p>		<p>Learning Objective(s): Identify key ideas in an informational reading selection. Describe how Darwin developed the theory of natural selection.</p>			<p>Lesson Duration: 50 Minutes</p>

DRAFT - DO NOT COPY - FOR DISCUSSION/FEEDBACK PURPOSES ONLY

<p>Learning Cycle</p> <p><i>What lesson elements will support students' progress towards mastery of the learning objective(s)?</i></p> <p><i>*Elements do not have to be in conducted in sequence.</i></p>	<p>Learning Activities</p> <p><i>What specific learning experiences will support ALL students' progress towards mastery of the learning objective(s)?</i></p>	<p>Resources/Materials</p> <p><i>What curricular resources/materials are available to facilitate the implementation of the learning activities?</i></p>	<p>Science and Engineering Practices</p> <p><i>What specific practices do students need to use in order to progress towards mastery of the learning objective(s)?</i></p>	<p>Disciplinary Core Ideas</p> <p><i>What core ideas do students need to understand in order to progress towards mastery of the learning objective(s)?</i></p>	<p>Crosscutting Concepts</p> <p><i>What crosscutting concepts will enrich students' application of practices and their understanding of core ideas?</i></p>
<p>Engage: <i>How will you capture students' interest and get students' minds focused on the concept/topic?</i></p>	<p>*Give Background to Charles Darwin and his studies.</p>	<ul style="list-style-type: none"> STC™ Animal Studies Interactive Whiteboard Activity 	<p>Obtaining, Evaluating, Communicating Information</p>	<p>LS1.A: Structure and Function LS4.C: Adaptation</p>	<p>Patterns Systems and System Models</p>
<p>Explore: <i>What hands-on/minds-on common experience(s) will you provide for students?</i></p>	<p>*Students read article in small groups to pull main ideas and key points about Darwin's work.</p>	<ul style="list-style-type: none"> STC Literacy Series ""The Amazing Discoveries of Charles Darwin" pgs. 45-49 	<p>Obtaining, Evaluating, Communicating Information</p>	<p>LS1.A: Structure and Function LS4.C: Adaptation</p>	<p>Patterns Systems and System Models</p>
<p>Explain: <i>How will you help students connect their exploration to the concept/topic under investigation?</i></p>	<p>*Discuss and Evaluate how Darwin's evidence showed organisms' adaptations to their surroundings based on the interactive whiteboard activity and article.</p>		<p>Obtaining, Evaluating, Communicating Information</p>	<p>LS1.A: Structure and Function LS4.C: Adaptation</p>	<p>Patterns Systems and System Models</p>
<p>Evaluate: <i>How will students demonstrate their mastery of the learning objective(s)?</i></p>	<p>Cooperative Groups Class Discussion Participation</p>		<p>Obtaining, Evaluating, Communicating Information</p>	<p>LS1.A: Structure and Function LS4.C: Adaptation</p>	<p>Patterns Systems and System Models</p>
<p>Lesson Title/Number: Lesson 10 How do the animals respond to a change in their Environment? (Animal Adaptations)</p>		<p>Learning Objective(s): Students design, perform, and discuss a controlled test to examine how the frog, crab, and millipede adapt to a change in one element of their habitats.</p>			<p>Lesson Duration: 100 Minutes</p>
<p>Learning Cycle</p> <p><i>What lesson elements will support students' progress towards mastery of the learning objective(s)?</i></p> <p><i>*Elements do not have to be in conducted in sequence.</i></p>	<p>Learning Activities</p> <p><i>What specific learning experiences will support ALL students' progress towards mastery of the learning objective(s)?</i></p>	<p>Resources/Materials</p> <p><i>What curricular resources/materials are available to facilitate the implementation of the learning activities?</i></p>	<p>Science and Engineering Practices</p> <p><i>What specific practices do students need to use in order to progress towards mastery of the learning objective(s)?</i></p>	<p>Disciplinary Core Ideas</p> <p><i>What core ideas do students need to understand in order to progress towards mastery of the learning objective(s)?</i></p>	<p>Crosscutting Concepts</p> <p><i>What crosscutting concepts will enrich students' application of practices and their understanding of core ideas?</i></p>
<p>Elicit: <i>How will you access students' prior knowledge?</i></p>	<p>Review knowledge gained about Charles Darwin's work</p>	<ul style="list-style-type: none"> STC™ Animal Studies Interactive Whiteboard Activity Literacy Series "The Amazing Discoveries of 			

DRAFT - DO NOT COPY - FOR DISCUSSION/FEEDBACK PURPOSES ONLY

		Charles Darwin” pgs. 45-49			
Engage: How will you capture students’ interest and get students’ minds focused on the concept/topic?	Students predict how each animal will respond to the penlight	<ul style="list-style-type: none"> TG, Section 4, pgs. 108-109 *Advance prep for Lesson 11 on page 110 	Asking Questions & Defining Problems	LS1.A: Structure and Function LS4.C: Adaptation	Cause & Effect
Explore: What hands-on/minds-on common experience(s) will you provide for students?	Challenge students to create the steps to an investigation by starting with a prediction of what they think will happen.		Asking Questions & Defining Problems Planning & Carrying Out Investigations	LS1.A: Structure and Function LS4.C: Adaptation	Cause & Effect
Explain: How will you help students connect their exploration to the concept/topic under investigation?	<p>Students continue to gather information about each animal and compare their results with other groups and whole class.</p> <p>Students collect information about an animal’s response to light. This is the beginning stages of developing an understanding of how experiments are designed.</p>	<ul style="list-style-type: none"> Flashlights Black Construction Paper Record Sheet 10-A: Our Investigation (TG, pg. 111-112) 	Obtaining, Evaluating, and Communicating Information Planning & Carrying Out Investigations	LS1.A: Structure and Function LS4.C: Adaptation	Cause & Effect
Elaborate: How will students apply their learning and develop a more sophisticated understanding of the concept/topic?	Recap with the whole class with one organism at a time discussing what they predicted and why. Ask guiding questions to determine whether animal’s responses fit with their observations of their behavior under a normal habitat condition.		Obtaining, Evaluating, and Communicating Information Planning & Carrying Out Investigations	LS1.A: Structure and Function LS4.C: Adaptation	Cause & Effect
Evaluate: How will students demonstrate their mastery of the learning objective(s)?	<p>Design, review, and start a stimulus investigation</p> <p>Completion of Record Sheet Appropriate use of vocabulary related to habitat elements</p>		Obtaining, Evaluating, and Communicating Information	LS1.A: Structure and Function LS4.C: Adaptation	Cause & Effect

DRAFT - DO NOT COPY - FOR DISCUSSION/FEEDBACK PURPOSES ONLY

<p>Extend: How will students deepen their conceptual understanding through use in new context?</p>	<p>Investigate animal responses to other stimuli (Investigating Animal Behavior PDF in blackline master of TG) Read "Orangutans and How They Learn" pgs. 53-55</p>	<ul style="list-style-type: none"> Investigating Animal Behavior Sheet STC Literacy Series Part 4 	<p>Obtaining, Evaluating, and Communicating Information</p>	<p>LS1.A: Structure and Function LS4.C: Adaptation</p>	<p>Cause & Effect</p>
<p>Lesson Title/Number: Lesson 12: Animal Behavior Research</p>		<p>Learning Objective(s): Students begin a team investigation that involves exploring one specific behavior of one animal.</p>			<p>Lesson Duration: 150 Minutes</p>
<p align="center">Learning Cycle</p> <p><i>What lesson elements will support students' progress towards mastery of the learning objective(s)?</i></p> <p><i>*Elements do not have to be in conducted in sequence.</i></p>	<p align="center">Learning Activities</p> <p><i>What specific learning experiences will support ALL students' progress towards mastery of the learning objective(s)?</i></p>	<p align="center">Resources/Materials</p> <p><i>What curricular resources/materials are available to facilitate the implementation of the learning activities?</i></p>	<p align="center">Science and Engineering Practices</p> <p><i>What specific practices do students need to use in order to progress towards mastery of the learning objective(s)?</i></p>	<p align="center">Disciplinary Core Ideas</p> <p><i>What core ideas do students need to understand in order to progress towards mastery of the learning objective(s)?</i></p>	<p align="center">Crosscutting Concepts</p> <p><i>What crosscutting concepts will enrich students' application of practices and their understanding of core ideas?</i></p>
<p>Elicit: How will you access students' prior knowledge?</p>	<p>Review Class Posters/Lists from Lessons 1, 3, 5, & 8. Analyze animal logs to discuss behavioral observations and record observable in an appropriate habitat and create a class list.</p>	<ul style="list-style-type: none"> Class Lists generated from previous lessons 	<p>Obtaining, Evaluating, and Communicating Information</p> <p>Planning & Carrying Out Investigations</p>	<p>LS4.C: Adaptation</p>	<p>Systems and System Models</p> <p>Patterns</p> <p>Cause and Effect</p>
<p>Engage: How will you capture students' interest and get students' minds focused on the concept/topic?</p>	<p>Students in small groups (assigned) choose a behavior from class list (i.e. male crabs wave claw) and formulate a question to research with emphasis on resisting yes/no questions.</p>	<ul style="list-style-type: none"> Record Sheet 12-A: Animal Behavior Research 	<p>Obtaining, Evaluating, and Communicating Information</p> <p>Planning & Carrying Out Investigations</p>	<p>LS4.C: Adaptation</p>	<p>Systems and System Models</p> <p>Patterns</p> <p>Cause and Effect</p>
<p>Explore: What hands-on/minds-on common experience(s) will you provide for students?</p>	<p>Each team works to formulate their research question, and then shares it with the class. Section B allows students to then decide when to observe, how often, how long each time, what tools, how to record, and how to keep the animals safe in order to answer their research questions.</p>		<p>Obtaining, Evaluating, and Communicating Information</p> <p>Developing & Using Models</p> <p>Planning & Carrying Out Investigations</p>	<p>LS4.C: Adaptation</p>	<p>Systems and System Models</p> <p>Patterns</p> <p>Cause and Effect</p>

DRAFT - DO NOT COPY - FOR DISCUSSION/FEEDBACK PURPOSES ONLY

<p>Explain: How will you help students connect their exploration to the concept/topic under investigation?</p>	<p>Answer any questions students may have and assist in guiding them in the direction of a measurable observation.</p>		<p>Obtaining, Evaluating, and Communicating Information Planning & Carrying Out Investigations</p>	<p>LS4.C: Adaptation</p>	
<p>Elaborate: How will students apply their learning and develop a more sophisticated understanding of the concept/topic?</p>	<p>Students report out their research log sheets design, and move to Section C: Presenting our Results. Students should understand that observations can include tools such as graphs, charts, videos, or habitat maps indicating animal movements. They may also construct a narrative/explanation of what they observed without visual aids.</p>		<p>Obtaining, Evaluating, and Communicating Information Planning & Carrying Out Investigations Analyzing & Interpreting Data</p>	<p>LS4.C: Adaptation</p>	<p>Systems and System Models Patterns Cause and Effect</p>
<p>Evaluate: How will students demonstrate their mastery of the learning objective(s)?</p>	<p>Class Discussions (TG, Section 4, pg. 128) Planning Section of Record Sheet 12-A</p>		<p>Obtaining, Evaluating, and Communicating Information</p>	<p>LS4.C: Adaptation</p>	<p>Systems and System Models Patterns Cause and Effect</p>
<p>Extend: How will students deepen their conceptual understanding through use in new context?</p>	<p>"Going Home Again" pgs. 40-42 Writing an article for the school newspaper about your findings of animal habitats and behaviors, (TG Section 4, pg. 128)</p>	<ul style="list-style-type: none"> STC Literacy Series, Part 3 	<p>Obtaining, Evaluating, and Communicating Information</p>	<p>LS4.C: Adaptation</p>	
<p>Lesson Title/Number: Lesson 13 - Part 1 What Makes an Animal Special?</p>		<p>Learning Objective(s): Continued from Lesson 12: Explore the characteristics that enable humans to survive in a variety of habitats.</p>			<p>Lesson Duration: 100 Minutes</p>
<p align="center">Learning Cycle</p> <p><i>What lesson elements will support students' progress towards mastery of the learning objectives(s)?</i></p> <p><i>*Elements do not have to be in conducted in sequence.</i></p>	<p align="center">Learning Activities</p> <p><i>What specific learning experiences will support ALL students' progress towards mastery of the learning objective(s)?</i></p>	<p align="center">Resources/Materials</p> <p><i>What curricular resources/materials are available to facilitate the implementation of the learning activities?</i></p>	<p align="center">Science and Engineering Practices</p> <p><i>What specific practices do students need to use in order to progress towards mastery of the learning objective(s)?</i></p>	<p align="center">Disciplinary Core Ideas</p> <p><i>What core ideas do students need to understand in order to progress towards mastery of the learning objective(s)?</i></p>	<p align="center">Crosscutting Concepts</p> <p><i>What crosscutting concepts will enrich students' application of practices and their understanding of core ideas?</i></p>

DRAFT - DO NOT COPY - FOR DISCUSSION/FEEDBACK PURPOSES ONLY

<p>Engage: How will you capture students' interest and get students' minds focused on the concept/topic?</p>	<p>Students choose one human structure to record with the class (e.g. hand)</p> <p>Guided questioning TG, Section 4, pg. 136 #4</p>	<ul style="list-style-type: none"> TG, Section 4, pgs. 135-136 		<p>LS1.A: Structure and Function</p>	<p>Structure and Function</p>
<p>Explain: How will you help students connect their exploration to the concept/topic under investigation?</p>	<p>Look for and clarify evidence that our body structures help us achieve successful adaptation to our habitats.</p>	<ul style="list-style-type: none"> Record Sheet 13-A "Humans: Structures and Behaviors" 	<p>Engaging in Argument from Evidence</p> <p>Obtaining, Evaluating and Communicating Information</p>	<p>LS1.A: Structure and Function</p>	<p>Structure and Function</p> <p>Patterns</p>
<p>Elaborate: How will students apply their learning and develop a more sophisticated understanding of the concept/topic?</p>	<p>Class discussion about form and function of the human body structures.</p>		<p>Obtaining, Evaluating and Communicating Information</p>	<p>LS1.A: Structure and Function</p>	<p>Structure and Function</p> <p>Patterns</p>
<p>Evaluate: How will students demonstrate their mastery of the learning objective(s)?</p>	<p>Appropriate use of vocabulary for animal habitats and behaviors.</p> <p>Participation in class discussion about animals</p> <p>Working in Cooperative groups</p> <p>Completion of Record Sheet 13-A</p> <p>Animal logs to assist in drawing logical conclusions</p>	<ul style="list-style-type: none"> Record Sheet 13-A "Humans: Structures and Behaviors" 	<p>Obtaining, Evaluating and Communicating Information</p>	<p>LS1.A: Structure and Function</p>	<p>Structure and Function</p> <p>Patterns</p>
<p>Extend: How will students deepen their conceptual understanding through use in new context?</p>		<ul style="list-style-type: none"> Human Body System (Teachers Domain): http://www.teachersdomain.org/asset/lsp07_int_bodysystems/ 			
<p>Lesson Title/Number: Lesson 14-Part 2: What Makes an Animal Special?</p>		<p>Learning Objective(s): Students continue to examine the structures and behaviors of each animal in relation to its habitat. (Students will complete their research begun in Lesson 12 by the end of this lesson prepared to present)</p>			<p>Lesson Duration: 150 Minutes</p>

DRAFT - DO NOT COPY - FOR DISCUSSION/FEEDBACK PURPOSES ONLY

<p>Learning Cycle</p> <p><i>What lesson elements will support students' progress towards mastery of the learning objective(s)?</i></p> <p><i>*Elements do not have to be in conducted in sequence.</i></p>	<p>Learning Activities</p> <p><i>What specific learning experiences will support ALL students' progress towards mastery of the learning objective(s)?</i></p>	<p>Resources/Materials</p> <p><i>What curricular resources/materials are available to facilitate the implementation of the learning activities?</i></p>	<p>Science and Engineering Practices</p> <p><i>What specific practices do students need to use in order to progress towards mastery of the learning objective(s)?</i></p>	<p>Disciplinary Core Ideas</p> <p><i>What core ideas do students need to understand in order to progress towards mastery of the learning objective(s)?</i></p>	<p>Crosscutting Concepts</p> <p><i>What crosscutting concepts will enrich students' application of practices and their understanding of core ideas?</i></p>
<p>Elicit: <i>How will you access students' prior knowledge?</i></p>	<p>Engage in a discussion to clarify any questions, groups may have regarding previous lessons. (Groups of 10, then into pairs)</p>	<ul style="list-style-type: none"> Completed Record Sheets 4-B, 6-B, and 9-B 		<p>LS1.A: Structure and Function</p>	<p>Structure and Function</p>
<p>Engage: <i>How will you capture students' interest and get students' minds focused on the concept/topic?</i></p>	<p>Each group will focus on one animal just as they did for humans.</p>	<ul style="list-style-type: none"> 10 copies of Record Sheet 14-A: Dwarf African Frog—Structures and Behaviors 10 copies of Record Sheet 14-B: Fiddler Crab—Structures and Behaviors 10 copies of Record Sheet 14-C: Millipede—Structures and Behaviors 	<p>Obtaining, Evaluating and Communicating Information</p>	<p>LS1.A: Structure and Function</p> <p>LS1.B: Growth and Development of Organisms</p> <p>LS4.C: Adaptation</p>	<p>Structure and Function</p>
<p>Explain: <i>How will you help students connect their exploration to the concept/topic under investigation?</i></p>	<p>Students look for and clarify evidence that body structures help animals get what they need from their habitat.</p>			<p>LS1.A: Structure and Function</p> <p>LS1.B: Growth and Development of Organisms</p> <p>LS4.C: Adaptation</p>	<p>Structure and Function</p> <p>Patterns</p>
<p>Elaborate: <i>How will students apply their learning and develop a more sophisticated understanding of the concept/topic?</i></p>	<p>Lesson 14 continues to center around form and function. Students study the function, shape, and location of certain structures of the dwarf African frog, the fiddler crab, and the millipede.</p>				

DRAFT - DO NOT COPY - FOR DISCUSSION/FEEDBACK PURPOSES ONLY

<p><i>Evaluate: How will students demonstrate their mastery of the learning objective(s)?</i></p>	<p>-Revision of original drawings of animals - Record Sheets 14-A, 14-B, and 14-C - Completion of "Did you Discover..." - Assessment Guide</p>	<ul style="list-style-type: none"> • TG, Section 4, pgs. 142-143 			
<p><i>Extend: How will students deepen their conceptual understanding through use in new context?</i></p>	<p>-Write a poem about animals -Reading one of the resources in TG, Section 8, pgs. 5–7: □"Bash's Urban Roosts: Where Birds Nest in the City"; "Koss' Curious Creatures in Peculiar Places"; or "Evan's An Elephant Never Forgets Its Snorkel: How Animals Survive without Tools and Gadgets"</p>	<ul style="list-style-type: none"> • TG, Section 4, pgs. 142-143 		<p>LS1.A: Structure and Function</p> <p>LS1.B: Growth and Development of Organisms</p> <p>LS4.C: Adaptation</p>	