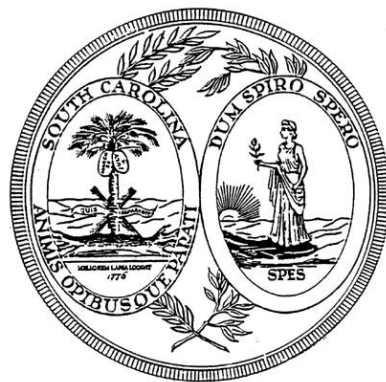


South Carolina Academic Standards and Performance Indicators for Science 2014



Instructional Unit Resource

6th Grade

South Carolina Academic Standards and Performance Indicators for Science 2014

Sixth Grade Science Instructional Unit Resource

As support for implementing the *South Carolina Academic Standards and Performance Indicators for Science 2014*, the standards for Sixth Grade have been grouped into possible units. In the Overview of Units below, the titles for those possible units are listed in columns. Refer to the Overview document to note these unit titles and how Standards, Conceptual Understandings, Performance Indicators, Science and Engineering Practices, and Crosscutting Concepts align. Following the Overview of Units, an Instructional Unit document is provided that delivers guidance and possible resources in teaching our new *South Carolina Academic Standards and Performance Indicators for Science 2014*. The purpose of this document is to provide guidance as to how all the standards in this grade may be grouped into units and how those units might look. Since this document is merely guidance, districts should implement the standards in a manner that addresses the district curriculum and the needs of students. This document is a living document and instructional leaders from around the state will continuously update and expand these resource documents. These documents will be released throughout the 2016-2017 school year with the intentionality of staying ahead of instruction. Teachers should also note that links to the Standards document, A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas, the SEP Support Document, and the Support Document 2.0 are embedded throughout the Instructional Unit format for reference.

Acknowledgments

Jean Baptiste Massieu, famous deaf educator, made a statement that is now considered a French proverb. “Gratitude is the memory of the heart. Indeed, appreciation comes when you feel grateful from the depths of your heart. The head keeps an account of all the benefits you received and gave. But the heart records the feelings of appreciation, humility, and generosity that one feels when someone showers you with kindness.” It is with sincere appreciation that we humbly acknowledge the dedication, hard work and generosity of time provided by teachers and instructional leaders across the state that have made and are continuing to make the Instructional Unit Resources possible.

Grade 6 Overview of Units

Unit 1		Unit 2		Unit 3		Unit 4	
EARTH SCIENCE: EARTH'S WEATHER AND CLIMATE		PHYSICAL SCIENCE: ENERGY TRANSFER AND CONSERVATION		LIFE SCIENCE DIVERSITY OF LIFE – CLASSIFICATION AND ANIMALS		LIFE SCIENCE: DIVERSITY OF LIFE- PROTISTS, FUNGI AND PLANTS	
Standard		Standard		Standard		Standard	
6.E.2		6.P.3		6.L.4		6.L.5	
Conceptual Understanding		Conceptual Understanding		Conceptual Understanding		Conceptual Understanding	
6.E.2A	6.E.2B	6.P.3A	6.P.3B	6.L.4A	6.L.4B	6.L.5A	6.L.5B
Performance Indicators		Performance Indicators		Performance Indicators		Performance Indicators	
6.E.2A.1	6.E.2B.1	6.P.3A.1	6.P.3B.1	6.L.4A.1	6.L.4B.1	6.L.5A.1	6.L.5B.1
6.E.2A.2	6.E.2B.2	6.P.3A.2	6.P.3B.2	6.L.4A.2	6.L.4B.2	6.L.5A.2	6.L.5B.2
6.E.2A.3	6.E.2B.3	6.P.3A.3			6.L.4B.3		6.L.5B.3
	6.E.2B.4	6.P.3A.4			6.L.4B.4		6.L.5B.4
		6.P.3A.5			6.L.4B.5		6.L.5B.5
		6.P.3A.6					
*Science and Engineering Practices		*Science and Engineering Practices		*Science and Engineering Practices		*Science and Engineering Practices	
6.S.1A.2		6.S.1A.1		6.S.1A.2		6.S.1A.2	
6.S.1A.4		6.S.1A.2		6.S.1A.4		6.S.1A.3	
6.S.1A.6		6.S.1A.3		6.S.1A.6		6.S.1A.4	
6.S.1A.7		6.S.1A.4		6.S.1A.8		6.S.1A.6	
		6.S.1A.6					
		6.S.1B.1					
*CrossCutting Concepts		*CrossCutting Concepts		*CrossCutting Concepts		*CrossCutting Concepts	
1, 2, 4, 5, 7		1, 2, 3, 4, 5, 7		1, 2, 5, 6, 7		1, 2, 3, 4, 5, 6, 7	

* Teachers have the discretion to enhance the selected SEPs and CCCs.

Unit Title
Life Science: Diversity of Life-Classification and Animals
Standard
http://ed.sc.gov/scdoe/assets/file/agency/ccr/Standards-Learning/documents/South_Carolina_Academic_Standards_and_Performance_Indicators_for_Science_2014.pdf
6.L.4 The student will demonstrate an understanding of how scientists classify organisms and how the structures, processes, behaviors, and adaptations of animals allow them to survive.

Conceptual Understanding

6.L.4A. Life is the quality that differentiates living things (organisms) from nonliving objects or those that were once living. All organisms are made up of cells, need food and water, a way to dispose of waste, and an environment in which they can live. Because of the diversity of life on Earth, scientists have developed a way to organize groups of organisms according to their characteristic traits, making it easier to identify and study them.

New Academic Vocabulary

Some students may need extra support with the following academic vocabulary in order to understand what they are being asked to understand and do. Teaching these terms in an instructional context is recommended rather than teaching the words in isolation. A great time to deliver explicit instruction for the terms would be during the modeling process. Ultimately, the student should be able to use the academic vocabulary in conversation with peers and teachers. These terms are pulled from the essential knowledge portion of the Support Doc 2.0 (<http://ed.sc.gov/instruction/standards-learning/science/support-documents-and-resources/>) and further inquiry into the terms can be found there.

Autotroph	Class	Characteristic	Development	Family	Genus
Growth	Kingdom	Levels of Organization	Order	Organism	Photosynthesis
Phylum (Phyla)	Protist	Respiration	Response	Species	Stimulus
Taxonomy	Asexual Reproduction	Sexual Reproduction			

Performance Indicators

Text highlighted below in *orange* and *italicized/underlined* shows connections to SEP's.

6.L.4A.1 *Obtain and communicate information to support claims* that living organisms (1) obtain and use resources for energy, (2) respond to stimuli, (3) reproduce, and (4) grow and develop.

6.L.4A.2 *Develop and use models* to classify organisms based on the current hierarchical taxonomic structure (including the kingdoms of protists, plants, fungi, and animals).

*Science and Engineering Practices

Support for the guidance, overviews of grade level progressions, and explicit details of each SEP can be found in the Science and Engineering Support Doc (http://ed.sc.gov/scdoe/assets/File/instruction/standards/Science/Support%20Documents/Complete_2014SEPsGuide_SupportDoc2_0.pdf). It is important that teachers realize that the nine science and engineering practices are not intended to be used in isolation. Even if a performance indicator for a given standard only lists one of the practices as a performance expectation, scientists and engineers do not use these practices in isolation, but rather as part of an overall sequence of practice. When educators design the learning for their students, it is important that they see how a given performance expectation fits into the broader context of the other science and engineering practices. This will allow teachers to provide comprehensive, authentic learning experiences through which students will develop and demonstrate a deep understanding of scientific concepts.

6.S.1A.2 Develop, use, and refine models to (1) understand or represent phenomena, processes, and relationships, (2) test devices or solutions, or (3) communicate ideas to others.

6.S.1A.4 Analyze and interpret data from informational texts, observations, measurements, or investigations using a range of methods (such as tabulation, graphing, or statistical analysis) to (1) reveal patterns and construct meaning or (2) support hypotheses, explanations, claims, or designs.

6.S.1A.8 Obtain and evaluate scientific information to (1) answer questions, (2) explain or describe phenomena, (3) develop models, (4) evaluate hypotheses, explanations, claims, or designs or (5) identify and/or fill gaps in knowledge. **Communicate** using the conventions and expectations of scientific writing or oral presentations by (1) evaluating grade-appropriate primary or secondary scientific literature, or (2) reporting the results of student experimental investigations.

*Cross Cutting Concepts (<http://www.nap.edu/read/13165/chapter/8>)

The link above provides support from the Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas (2012) The text in **blue** and *italicized/underlined* below provides a brief explanation of how the specific content ties to the CCC's.

1. **Patterns:** The National Research Council (2012) states that “Observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them” (p. 84). [*The system of scientific classification organizes living things based on patterns of structures and responses.*](#)

2. **Cause and effect: Mechanism and explanation:** The National Research Council states “Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts” (p. 84). [*Internal and external stimuli cause responses in organisms.*](#)

5. **Energy and matter: Flows, cycles, and conservation:** The National Research Council states “Tracking fluxes of energy and matter into, out of, and within systems helps one understand the systems’ possibilities and limitations” (p. 84). [*Energy is conserved as it is cycled into and out of living things as they grow, develop, respond to stimuli, and reproduce.*](#)

6. **Structure and function:** The National Research Council (2012) states “The way in which an object or living thing is shaped and its substructure determine many of its properties and functions” (p. 84). [The structures of living things and their functions affect an organism’s ability to survive and respond to its environment.](#)

7. **Stability and change:** The National Research Council states “For natural and built systems alike, conditions of stability and determinants of rates of change or evolution of a system are critical elements of study” (p. 84). [Living things must respond to internal and external stimuli to maintain internal regular conditions in order to survive.](#)

**Teachers have the discretion to enhance the selected SEP’s and CCC’s.*

Prior Knowledge

- 4.L.5B.3 Adaptations of animals (methods for defense, locomotion, obtaining resources, or camouflage)
- 5.L.4A.2 Ecosystems, organisms (population and communities)
- 4.L.5A.3 Life cycle of animals, metamorphosis

Subsequent Knowledge

- 7.L.3A.2 Cells (bacteria, protists, plant and animal)

Possible Instructional Strategies/Lessons

Strategies and lessons that will enable students to master the standard and/or indicator.

- 6.L.4.A.1
 - Characteristics of Living Things: This could be used as an introductory video. Prior to showing it, have students name what characteristics all living things share as an anchor chart or on the whiteboard. Students can use the video to obtain information to support their claims. After the video, students will communicate their findings. This resource can be found at <https://www.youtube.com/watch?v=juxLuo-sH6M>
 - Characteristics of Life: This PowerPoint is a resource students can use to obtain information to support their claims about characteristics of living things. To make it interactive, have students create foldables/and or graphic organizers. This resource can be found at <http://www.bgreen.kyschools.us/userfiles/1134/Classes/47607/Characteristics%20of%20Life%2010.ppt>

- Characteristics of Living Things Lab: This lab investigates the characteristics of living things. Students make observations and collect and analyze data in order to support their claim of, if an item is living or not. <http://www.stemmom.org/2012/06/living-non-living-vs-dead-lab.html>
- 6.L.4.A.2
 - Classification: This is a basic workbook that students can use to develop a model of scientific taxonomy. Students can use this workbook to obtain and evaluate scientific information to help the development of their model. This could be used as individual reinforcement for both concepts and vocabulary. This resource can be found at <http://www.warrencountyschools.org/userfiles/1576/Classes/19431/ClassificationWorkbook.pdf>
 - Taxonomy, Classification and Naming of Living Things: This video explains modern day taxonomy so that students can construct scientific models. There is also a self-checking quiz that can be incorporated. If students have no access to the internet, this can be done as a class activity. This resource can be found at <http://study.com/academy/lesson/taxonomy-classification-and-naming-of-living-things.html>
 - Classification of Living Things: Levels of classification (reading and interactive), which allows students to obtain scientific information to assist in the development of models. This resource can be used in several ways and found at http://www.kidsbiology.com/biology_basics/classification/classification1.php
 - Classification of Animals: This collection of classification activities contains models for students to use to further their understanding of taxonomy and classification of animals. This resource can be found at <http://www.mensaforkids.org/teach/lesson-plans/classifying-animals/>
 - How are living things classified in groups?: This classification of the kingdoms of life virtual lab, allows students to use a model to practice classifying organisms based on their characteristics, into kingdom groups. This resource can be found at http://www.glencoe.com/sites/common_assets/science/virtual_labs/E07/E07.html
 - Six Kingdoms Brochures: Kingdoms of life foldable: This interactive activity allows students to differentiate function and structure of each of the six kingdoms of life. Students can create a foldable with teacher guidance or it can be done as an individual project. The activity reinforces both informational text reading skills as well as note-taking skills. This resource can be found at

<http://www.lcboe.net/userfiles/103/Classes/6514/kingdoms%20notes%20and%20brochure%20activity.pdf?id=542744>

- Classifying Living Things: This lesson has many classification virtual labs, which allow students to use different models and gather information to add to their own models, if they are using interactive notebooks. This resource can be found at <http://www.stevensonj.net/classification-of-living-things.html>

Resources

- Concept review: This is a game format for review. This resource can be found at <http://www.math4childrenplus.com/living-things/>
- Interactive Sites for Education: An interactive series that has students use models that relate to the characteristics of living things. This resource can be found at <http://interactivesites.weebly.com/living-things.html>
- Jeopardy game: A website that reviews characteristics of living things. This resource can be found at <https://www.superteachertools.us/jeopardyx/jeopardy-review-game-live.php?gamefile=318399&playid=1124884>
- Characteristics of Living Things: Interactive review of the characteristics of living things. This resource can be found at <https://www.quia.com/rr/350728.html>
- Classification Station: A Rap that describes the levels of classification. This resource can be found at <https://www.youtube.com/watch?v=gj15UF08IUl>

Sample Formative Assessment Tasks/Questions

Additional sample formative assessment tasks/questions for grade bands are located at the end of each of the SEP Support Doc

(http://ed.sc.gov/scdoe/assets/File/Instruction/standards/Science/Support%20Documents/Complete_2014SEPsGuide_SupportDoc2_0.pdf)

- 6.L.4.A.1
 - Mealworm Lab: This is a formal lab about mealworms responding to stimuli which requires students to form hypotheses, collect, analyze data, and offer an explanation (mealworms can be purchased at most pet stores and are relatively inexpensive). There is a comprehensive rubric included. This resource can be found at <http://www2.guilford.k12.ct.us/sites/hayashk/documents/MealwormLabs13.pdf>
 - Characteristics of Living Things Match: For ELL or struggling learners... select pictures representing the characteristics that all living things share. Write the characteristic (terms) on cards. Have the students match the word card with the picture for understanding.

Another option would be to use picture cards of living and nonliving things and have student sort them, then describe what the living things have in common (these should be the characteristics of life).

- Living and Non-living Dialogue: In order for students to demonstrate mastery, have them create a cartoon and dialogue between a living and non-living thing (ex: frog sitting on a rock) arguing why one is living and one is not (using the claim, evidence, and reasoning format.)
- 6.L.4.A.2
 - The Six Kingdoms: This is a sample formative assessment. <http://www.cpalms.org/Public/PreviewResourceLesson/Preview/44324>
 - Six Kingdom Match: For ELL or struggling learners... Write labels of the six kingdoms on either paper or a table. Create picture cards with various organisms, including the scientific and common name. Students write the common name and then correctly write the scientific name for each organism. Have the seven levels printed as manipulatives and ask the students to put the cards in their correct order.
 - Field Guides: In order for students to show mastery of how patterns led to classification, have students select two similar animals from the same class, such as fish or birds. Then, have the students list the seven scientific names for each level of organization. Have the students identify the level that the two have in common. For a challenge, have students pick two very similar animals such as owls or sharks! These can be published as attractive posters for a classroom, titled, “field guide”. This site offers additional field guides on line. <http://www.enature.com/fieldguides/intermediate.asp?curGroupID=1>

Unit Title

Life Science: Diversity of Life-Classification and Animals

Standard

http://ed.sc.gov/scdoe/assets/file/agency/ccr/Standards-Learning/documents/South_Carolina_Academic_Standards_and_Performance_Indicators_for_Science_2014.pdf

6.L.4 The student will demonstrate an understanding of how scientists classify organisms and how the structures, processes, behaviors, and adaptations of animals allow them to survive.

Conceptual Understanding

6.L.4B. The Animal Kingdom includes a diversity of organisms that have many characteristics in common. Classification of animals is based on

structures that function in growth, reproduction, and survival. Animals have both structural and behavioral adaptations that increase the chances of reproduction and survival in changing environments.

New Academic Vocabulary

Some students may need extra support with the following academic vocabulary in order to understand what they are being asked to understand and do. Teaching these terms in an instructional context is recommended rather than teaching the words in isolation. A great time to deliver explicit instruction for the terms would be during the modeling process. Ultimately, the student should be able to use the academic vocabulary in conversation with peers and teachers. These terms are pulled from the essential knowledge portion of the Support Doc 2.0 (<http://ed.sc.gov/instruction/standards-learning/science/support-documents-and-resources/>) and further inquiry into the terms can be found there.

Vertebrate	Invertebrate	Ectotherm	Endotherm	Structures	Functions
Processes	Adaptations	Endoskeleton	Exoskeleton	Inherited Behavior	Learned Behavior
Instinct	Hibernation	Migration	Grouping	Courtship	Camouflage
Ejection	Mimicry	Conditioning	Echinoderm	Mollusk	Segmented Worm

Performance Indicators

Text highlighted below in *orange* and *italicized/underlined* shows connections to SEP’s.

- 6.L.4B.1 *Analyze and interpret data* related to the diversity of animals to support claims that all animals (vertebrates and invertebrates) share common characteristics.
- 6.L.4B.2 *Obtain and communicate information* to explain how the structural adaptations and processes of animals allow for defense, movement, or resource obtainment.
- 6.L.4B.3 *Construct explanations* of how animal responses (including hibernation, migration, grouping, and courtship) to environmental stimuli allow them to survive and reproduce.
- 6.L.4B.4 *Obtain and communicate information* to compare and classify innate and learned behaviors in animals.
- 6.L.4B.5 *Analyze and interpret data* to compare how endothermic and ectothermic animals respond to changes in environmental temperature.

***Science and Engineering Practices**

Support for the guidance, overviews of grade level progressions, and explicit details of each SEP can found in the Science and Engineering Support Doc (http://ed.sc.gov/scdoe/assets/File/instruction/standards/Science/Support%20Documents/Complete_2014SEPsGuide_SupportDoc2_0.pdf). It is important that teachers realize that the nine science and engineering practices are not intended to be used in isolation. Even if a performance indicator for a given standard only lists one of the practices as a performance

expectation, scientists and engineers do not use these practices in isolation, but rather as part of an overall sequence of practice. When educators design the learning for their students, it is important that they see how a given performance expectation fits into the broader context of the other science and engineering practices. This will allow teachers to provide comprehensive, authentic learning experiences through which students will develop and demonstrate a deep understanding of scientific concepts.

6.S.1A.4 Analyze and interpret data from informational texts, observations, measurements, or investigations using a range of methods (such as tabulation, graphing, or statistical analysis) to (1) reveal patterns and construct meaning or (2) support hypotheses, explanations, claims, or designs.

6.S.1A.6 Construct explanations of phenomena using (1) primary or secondary scientific evidence and models, (2) conclusions from scientific investigations, (3) predictions based on observations and measurements, or (4) data communicated in graphs, tables, or diagrams.

6.S.1A.8 Obtain and evaluate scientific information to (1) answer questions, (2) explain or describe phenomena, (3) develop models, (4) evaluate hypotheses, explanations, claims, or designs or (5) identify and/or fill gaps in knowledge. **Communicate** using the conventions and expectations of scientific writing or oral presentations by (1) evaluating grade-appropriate primary or secondary scientific literature, or (2) reporting the results of student experimental investigations.

***Cross Cutting Concepts** (<http://www.nap.edu/read/13165/chapter/8>)

The link above provides support from the Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas (2012) The text in blue and *italicized/underlined* below provides a brief explanation of how the specific content ties to the CCC's.

1. **Patterns:** The National Research Council (2012) states that “Observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them” (p. 84). *All animals, vertebrate and invertebrate, share common characteristics that classify them as animals.*

2. **Cause and effect: Mechanism and explanation:** The National Research Council states “Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts” (p. 84). *Endothermic and ectothermic animals respond to changes in environmental temperature that allow them to survive. The behavioral responses of animals, including hibernation, migration, grouping and courtship, to internal and external stimuli result in their survival and ability to reproduce.*

6. **Structure and function:** The National Research Council (2012) states “The way in which an object or living thing is shaped and its substructure determine many of its properties and functions” (p. 84). *Living things have unique structures which allow for defense, the obtainment of resources and movement.*

7. **Stability and change:** The National Research Council states “For natural and built systems alike, conditions of stability and determinants of rates of change or evolution of a system are critical elements of study”(p. 84). *Organisms must respond appropriately to changing external conditions in*

[order to survive and reproduce.](#)

**Teachers have the discretion to enhance the selected SEP's and CCC's.*

Prior Knowledge

- 4.L.5A.3 Life cycle of animals, metamorphosis
- 4.L.5B.1 Sensory organs, senses
- 4.L.5B.3 Adaptations of animals (methods for defense, locomotion, obtaining resources, or camouflage)
- 4.L.5A.4 Inheritance and environmental factors, traits
- 4.L.5B.1 Sensory organs, senses
- 4.L.5B.3 Adaptations of animals (methods for defense, locomotion, obtaining resources, or camouflage)

Subsequent Knowledge

- 7.E.5 How organisms interact with and respond to the biotic and abiotic components of their environments.

Possible Instructional Strategies/Lessons

Strategies and lessons that will enable students to master the standard and/or indicator.

- 6.L.4B1
 - Invertebrate vs. Vertebrate. This website allows students to look for common characteristics between invertebrates and vertebrates to analyze information to support claims about these 2 groups. This resource can be found at http://www.diffen.com/difference/Invertebrate_vs_Vertebrate
 - Common Characteristics of Vertebrates and Invertebrates: Students will research multiple examples of animals (vertebrate and invertebrate) and identify common characteristics. (Teachers may provide a graphic organizer.)
 - Life Cycle Organism: Invertebrates and Vertebrates: This site contains a beginning activity where students can classify vertebrates and invertebrates to start discussions about these two groups. This resource can be found at https://www.msnuclus.org/membership/html/k-6/lc/organ/1/lco1_3a.html
 - Vertebrates and Invertebrates: Students can use this article to gather data to interpret characteristics of vertebrates and invertebrates. This resource can be found at <http://www.ducksters.com/animals/vertebrates.php>

- 6.L.4B.2

- Hands-On Science and Literacy Lessons About Birds: This website offers multiple lesson plans about birds that incorporate informational texts. Students can use these texts to obtain information about the specific adaptations of birds. Migration information is also included. This resource can be found at <http://beyondpenguins.ehe.osu.edu/issue/arctic-and-anarctic-birds/hands-on-science-and-literacy-lessons-about-birds>
- Movement of Animals: Students can use these materials as informational texts for animal movement as well as complete the included experiments. Questions and ideas for activities are included to help students obtain information about animal structural adaptations. Students can communicate information by recording findings in their interactive notebooks. This resource can be found at https://www.hyria.fi/files/3864/MOVEMENT_OF_ANIMALS_1_.pdf
- Watershed investigation on identifying macroinvertebrates: This interactive lesson allows students to practice identifying specific structures to accurately classify microorganisms. This resource can be found at <http://fergusonfoundation.org/bridging-the-watershed/interactive-lessons/>

- 6.L.4.B.3

- Migration: Using provided resources; students will research the migratory patterns of various species. The research can help students construct explanations about animal responses. In this interactive lesson, students track and record the migration patterns. This resource can be found at <https://www.learner.org/inorth/>
- Grouping: Students will observe the images presented in the slideshows. Students will hypothesize the reasons for these behaviors and construct explanations on the survival benefits to this grouping behavior. Resource titles are: Animals and Insects: Safety in Numbers slideshow: <http://www.express.co.uk/pictures/galleries/2163/Animals-and-Insects-Safety-in-numbers/Great-Frigatebirds-gather-North-America-133245> Room for One More: <http://www.telegraph.co.uk/news/picturegalleries/earth/10974204/Room-for-one-more-Safety-in-numbers-behind-huge-animal-colonies.html?frame=2978237>
- Courtship: Students will observe and analyze the courtship behaviors of multiple animals. Students will construct explanations on the benefits of the courtship behaviors. This resource can be found at BBC Wildlife Nature: http://www.bbc.co.uk/nature/adaptations/Courtship_display (Note: Please preview and select videos as appropriate)

- Hibernation, Migration Fascination: Students compare the winter behaviors of two animals, a marmot and a grizzly bear. Students will compare and contrast causes and effects of the cyclical behaviors in order construct explanations. There are also several related activities. This resource can be found at <https://www.nps.gov/glac/learn/education/7-12-unit-three-activity-4.htm>
- Hibernation: Students will observe firsthand why some animals hibernate when food is difficult to access through this “frozen food” activity. This resource can be found at <http://www.teachhub.com/classroom-activities-about-hibernation>
- 6.L.4B4
 - Mealworm Behavior: Students will obtain information about animal behavior with this simulation. Students will predict and then observe the responses of mealworms to various stimuli in this virtual observation lab. This resource can be found at http://www.mhhe.com/biosci/genbio/virtual_labs/BL_19/BL_19.html
 - Simple Stimuli Animation and quiz with the results of introducing a stimulus (bird puppet) that elicits a response from a baby chick. Students can use the animation to obtain information. Students can use their interactive notebooks to communicate their findings. This resource can be found at <http://www.sumanasinc.com/webcontent/animations/content/behaviors.htm>
 - Pavlov’s Dog: Students will use stimuli to train the dog to drool, when presented with stimuli. Students can use their results to obtain data on this site. This resource can be found at <http://www.nobelprize.org/educational/medicine/pavlov/pavlov.html>
- 6.L.4B.5
 - Cool Cosmos Infrared Zoo Lesson Plans C: This website uses infrared imaging to demonstrate endothermic and ectothermic animal activity. Students can analyze the images to determine how the internal temperature of different animals changes as external temperature changes. http://coolcosmos.ipac.caltech.edu/image_galleries/ir_zoo/lessons/
 - Mammals, Endotherms and Warm Blood: Using real data, students can draw conclusions about the classification of animals as endothermic or ectothermic based upon changes in their internal temperatures. An example graph can be found here (Mammals, Endotherms and Warm Blood): <http://www.newtonsapple.org.uk/mammals-endotherms-and-warm-blood/>

Resources

- The Fish Game: Students will explore the importance of reproduction for the survival of fish in a lake. This resource can be found at <https://www.youtube.com/watch?v=WfCwFu8yaQc>

- BBC: behaviors: This site provides multiple video examples of animal behavioral responses. <http://www.bbc.co.uk/nature/adaptations>
- Robin Migration Interactive: <https://www.learner.org/jnorth/robin/index.html>

Sample Formative Assessment Tasks/Questions

Additional sample formative assessment tasks/questions for grade bands are located at the end of each of the SEP Support Doc (http://ed.sc.gov/scdoe/assets/File/Instruction/standards/Science/Support%20Documents/Complete_2014SEPsGuide_SupportDoc2_0.pdf)

- 6.L.4B.1
 - Scientific Argument: Write a scientific argument (Claim, Evidence, Reasoning) using informational texts on multiple animals to support the claim that all animals share common characteristics. Students will research (or be provided with materials) on three animals. Students will use information and data from their resources as evidence to support the claim that all animals share common characteristics.
- 6.L.4B.2
 - Structural Adaptations: Students will analyze a given animal to identify and explain, using the claim, evidence and reasoning format how its structural adaptations allow it to survive, move and obtain resources (Ex: cat claws for defense).
- 6.L.4B.3
 - Why do Animals Migrate?: Students will construct explanations about migration as a survival strategy based evidence from this article: <http://www.livescience.com/10235-animals-migrate.html>
- 6.L.4B.4
 - Goldfish Behavior: Students will obtain information collected from this goldfish experiment and then communicate their findings about learned behaviors. Students can communicate their findings as a group science fair project, in interactive notebooks, or on a presentation format. This experiment will allow them to compare learned and innate behaviors. This resource can be found at <http://www.education.com/science-fair/article/pavlovs-goldfish/>
- 6.L.4B.5
 - Analyze Graphical Data: When presented with graphical data, showing the activity level of two animals, draw conclusions (using the data as supporting evidence) to classify each organism as endothermic or ectothermic. Alternative: Using provided information about the

fossil evidence that implies the behaviors of dinosaurs; classify dinosaurs as endothermic or ectothermic. Use the claim, evidence, reasoning format for scientific writing.

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