

Unit 2: Animal and Plant Adaptation

4th Grade Science

40 Class Meetings

Written September 2024

Essential Questions

- Why are adaptations important for the survival of plants and animals?
- How do instincts and memories influence animal behavior?
- What happens to species that are unable to adapt to their environment over time?

Enduring Understandings with Unit Goals

EU 1: Animal and Plant Structures

- Identify and describe the function of basic plant structures
- Explain how each part of a plant supports the plant's survival.
- Identify and describe key animal structures
- Explain an animal structures' role in movement, protection, and survival.
- Explain how plant and animal structures are adapted to specific habitats.

EU 2: Animal Adaptations

- Explain what adaptations are and why they are essential for an animal's survival in its environment.
- Distinguish between structural adaptations (physical features) and behavioral adaptations (actions animals take) and give examples of each.
- Analyze how specific adaptations help animals survive in different habitats

EU 3: Plant Adaptations

- Identify and describe various plant adaptations.
- Determine plant what adaptations are and how they help plants survive in different environments.
- Compare how plants in different ecosystems adapt to their surroundings to meet their needs for water, sunlight, and nutrients

EU 4: Human Impact on Animal and Plant Adaptations

- Explore how human activities, such as deforestation or pollution, can affect animal adaptations and ecosystems.
- Explore examples of species that have struggled to adapt to environmental changes caused by humans

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Standards

Common Core State and NGSS Standards:

- **4-LS1-1:** Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction
- **4-PS4-2:** Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.
- **4-LS1-2:** Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.
- **CCSS.ELA-Literacy.RI.4.1:** Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.
- **CCSS.ELA-Literacy.RI.4.2:** Determine the main idea of a text and explain how it is supported by key details; summarize the text.
- **CCSS.ELA-Literacy.RI.4.4:** Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a *grade 4 topic or subject area*.
- **CCSS.ELA-Literacy.RI.4.9:** Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.
- **CCSS.ELA-Literacy.W.4.2:** Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
- **CCSS.ELA-Literacy.W.4.2.a:** Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.
- **CCSS.ELA-Literacy.W.4.2.b:** Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.
- **CCSS.ELA-Literacy.W.4.2.c:** Link ideas within categories of information using words and phrases (e.g., *another, for example, also, because*).
- **CCSS.ELA-Literacy.W.4.2.d:** Use precise language and domain-specific vocabulary to inform about or explain the topic.
- **CCSS.ELA-Literacy.W.4.2.e:** Provide a concluding statement or section related to the information or explanation presented.
- **CCSS.ELA-Literacy.W.4.4:** Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience
- **CCSS.ELA-Literacy.W.4.5:** With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.
- **CCSS.ELA-Literacy.W.4.6:** With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of one page in a single sitting.
- **CCSS.ELA-Literacy.W.4.7:** Conduct short research projects that build knowledge through investigation of different aspects of a topic.
- **CCSS.ELA-Literacy.W.4.8:** Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information and provide a list of sources.

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- **CCSS.ELA-Literacy.W.4.9:** Draw evidence from literary or informational texts to support analysis, reflection, and research.
- **CCSS.ELA-Literacy.SL.4.1:** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 4 topics and texts*, building on others' ideas and expressing their own clearly.
- **CCSS.ELA-Literacy.SL.4.1.a:** Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.
- **CCSS.ELA-Literacy.SL.4.1.b:** Follow agreed-upon rules for discussions and carry out assigned roles.
- **CCSS.ELA-Literacy.SL.4.1.c:** Pose and respond to specific questions to clarify or follow up on information and make comments that contribute to the discussion and link to the remarks of others.
- **CCSS.ELA-Literacy.SL.4.1.d:** Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.
- **CCSS.ELA-Literacy.SL.4.2:** Paraphrase portions of a text read aloud, or information presented in diverse media and formats, including visually, quantitatively, and orally.
- **CCSS.ELA-Literacy.SL.4.3:** Identify the reasons and evidence a speaker provides to support particular points.
- **CCSS.ELA-Literacy.SL.4.4:** Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

ISAAC Vision of the Graduate Competencies

Competency 1: Write effectively for a variety of purposes.

Competency 2: Speak to diverse audiences in an accountable manner.

Competency 3: Develop the behaviors needed to interact and contribute with others on a team.

Competency 4: Analyze and solve problems independently and collaboratively.

Competency 5: Be responsible, creative, and empathetic members of the community.

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Unit Content Overview

1. Animal and Plant Structures

- Identify basic plant structures, such as roots, stems, leaves, flowers, and seeds.
- Describe the function of each plant structure
- Explain how each part of a plant structure supports the plant's survival.
- Identify key animal structures, such as bones, muscles, skin, and specialized organs (e.g., lungs, gills, and wings)
- Describe each animal structure
- Explain the animal structures' role in movement, protection, and survival.
- Explore how the shape and design of specific structures in both plants and animals relate to their function.
- Explore how plant and animal structures are adapted to specific habitats.

2. Animal Adaptations

- Explore what an adaptation for an animal may be
- Distinguish various structural adaptations (physical features) of animals including but not limited to the shape of a bird's beak, the color of a mammal's fur, the shape of a mammal's ears
- Determine behavioral adaptations (actions animals take) of animals including but not limited to how an animal may find food, how it defends itself, and how it evades predators
- Explore why adaptations are essential for an animal's survival in its environment.
- Analyze how specific adaptations help animals survive in different habitats, such as deserts, forests, oceans, and polar regions.

3. Plant Adaptations

- Discover what plants require to survive.
- Investigate what structural adaptations plants have.
- Determine various behavioral adaptations that plants have.
- Compare plants in their different environments and how their adaptations help keep them alive

4. Human Impact on Animal and Plant Adaptations

- Investigate how urbanization, deforestation, and agriculture reduce natural habitats
- Discover how pollution of air, water, and soil can harm ecosystems forcing adaptations
- Determine the effects of climate change on the availability of resources for animals and plants

Vocabulary and Key Terms: adaptation, camouflage, mimicry, habitat, survival, predator, prey, instinct, migration, hibernation, nocturnal, photosynthesis, environment, carnivore, herbivore, omnivore, behavioral adaptation, physical adaptation, ecosystem, climate, desert, forest, ocean, polar region, urbanization, deforestation, agriculture, pollution

Interdisciplinary Connection:

- ELA

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Daily Learning Objectives with TWPS

Students will be able to...

- Define what an adaptation is.
 - *How do animals change to help them survive in their environment?*
- Explore structural adaptations of animals: body shape, coloration, and specialized body parts. ***
 - *How would camouflage help an animal survive?*
 - *Compare how a polar bear uses its body to survive versus an armadillo.*
 - *What are some ways that animals adapt to hunt their food?*
- Investigate behavioral adaptations of animals: migration, hibernation, and hunting techniques. ***
 - *Why do some animals migrate?*
 - *How do nocturnal behaviors help animals survive?*
 - *Can you think of an example of mimicry and how it helps an animal?*
- Explore how animals have adaptations to heat and lack of water.
 - *What is an adaptation that could help an animal in the desert?*
- Investigate how animals adapt to dense forests and heavy rainfall.
 - *How would slow movements of a sloth help it?*
- Determine how animals adapt to extreme cold.
 - *What do polar animals have in common?*
- Evaluate how adaptations help animals in predator-prey relationships. **
 - *Are adaptations to protect offspring necessary?*
 - *Do you believe it is more important for an animal to have an adaptation to hunt or to hide?*
- Investigate what plants require to survive.
 - *How do desert plants survive in places with very little water?*
- Determine how the roots, stem, leaves, thorns, and color are adaptations of a plant.
 - *Why do some plants have thorns or spines?*
- Explore how phototropism and dormancy help plants survive.
 - *How do plants protect themselves from being eaten?*
- Investigate plants in different environments such as deserts, rainforests, and aquatic.
 - *How can an environment impact a plant?*
- Determine how plants reproduce.
 - *What are the ways that seeds can spread?*
- Determine how habitat destruction puts plants and animals' survival at risk. **
 - *Break down the work deforestation, what do you think it means?*
 - *What would happen if we no longer had diverse plants?*
- Explore the various ways pollution can impact plant and animal survival. ***
 - *How do rising temperatures impact animal survival?*
 - *Can animals and plants adapt to changes in their environment?*
 - *What can we do to help protect plants and animals from harmful activities?*

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Instructional Strategies/Differentiated Instruction

- Whole group instruction
- Paragraph frames and sentence starters
- Teacher modeling
- Think-write-pair-share and small-group discussions
- Graphic organizers
- Accountable talk
- Homework
- Word walls with visuals (Venn Diagrams)
- Small group instruction
- Visual exemplars with teacher and student critiques
- Text and video chunking
- Spiraling back to guiding questions
- Close reading with text-dependent questions
- Interactive notebooks

EL Differentiation Strategies

- Key vocabulary, Word Banks and Word Walls with visuals
- TWPS (Think, write, pair, share)
- Pre-reading strategies
- Culturally responsive teaching
- Explicit teacher modeling
- Graphic organizers
- Strategic Grouping
- Non-verbal assessments

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Assessments

FORMATIVE ASSESSMENTS:

- Do Now
- Academic Discourse
- Exit Slips
- Accountable Talk Discussions
- Completed notes
- Completed graphic organizers
- Homework

Performance Task – New Species, Who Dis?

- Teacher’s rubric/scoring guide

SUMMATIVE ASSESSMENTS:

- Quiz: Animal Adaptations, Plant Adaptations, Human Impact (EU1, EU2, and EU3)
- Unit Task: Body Systems in Action: A Day in the Life of Your Body (EU1, EU2 and EU3)

Unit Task

Unit Task Name: New Species, Who Dis?

Description: Upon completing the unit, students will work individually to create an informational brochure on a new plant or animal species. (EU1, EU2, EU3, and EU4). Students will choose an environment and design a fictional plant or animal that could survive in that environment. They will then create a brochure that outlines and describes their new species. The guide will include: a drawing of their new species with labeled adaptations, a description of the environment, including harmful human impacts, and an explanation of the adaptations of their species. Finally, students will present their new species.

Evaluation: Teacher’s Scoring Guide

Unit Resources

- NewsEla
- Google Slides (Teacher’s)
- Interactive Notebooks
- Chromebooks
- ReadWorks
- Virtual Fieldtrips
- Google Classroom
- Mystery Science