Shelby County Schools Science Vision

Shelby County Schools' vision of science education is to ensure that from early childhood to the end of the 12th grade, all students have heightened curiosity and an increased wonder of science; possess sufficient knowledge of science and engineering to engage in discussions; are able to learn and apply scientific and technological information in their everyday lives; and have the skills such as critical thinking, problem solving, and communication to enter careers of their choice, while having access to connections to science, engineering, and technology.

To achieve this, Shelby County Schools has employed The Tennessee Academic Standards for Science to craft meaningful curricula that is innovative and provide a myriad of learning opportunities that extend beyond mastery of basic scientific principles.

Introduction

In 2014, the Shelby County Schools Board of Education adopted a set of ambitious, yet attainable goals for school and student performance. The District is committed to these goals, as further described in our strategic plan, Destination 2025. In order to achieve these ambitious goals, we must collectively work to provide our students with high quality standards aligned instruction. The Tennessee Academic Standards for Science provide a common set of expectations for what students will know and be able to do at the end of each grade, can be located in the Tennessee Science Standards Reference. Tennessee Academic Standards for Science are rooted in the knowledge and skills that students need to succeed in post-secondary study or careers. While the academic standards establish desired learning outcomes, the curricula provide instructional planning designed to help students reach these outcomes. The curriculum maps contain components to ensure that instruction focuses students toward college and career readiness. Educators will use this guide and the standards as a roadmap for curriculum and instruction. The sequence of learning is strategically positioned so that necessary foundational skills are spiraled in order to facilitate student mastery of the standards.

Our collective goal is to ensure our students graduate ready for college and career. Being College and Career Ready entails, many aspects of teaching and learning. We want our students to apply their scientific learning in the classroom and beyond. These valuable experiences include students being facilitators of their own learning through problem solving and thinking critically. The Science and Engineering Practices are valuable tools used by students to engage in understanding how scientific knowledge develops. These practices rest on important "processes and proficiencies" with longstanding importance in science education. The science maps contain components to ensure that instruction focuses students toward understanding how science and engineering can contribute to meeting many of the major challenges that confront society today. The maps are centered around five basic components: the Tennessee Academic Standards for Science, Science and Engineering Practices, Disciplinary Core Ideas, Crosscutting Concepts, and Phenomena.

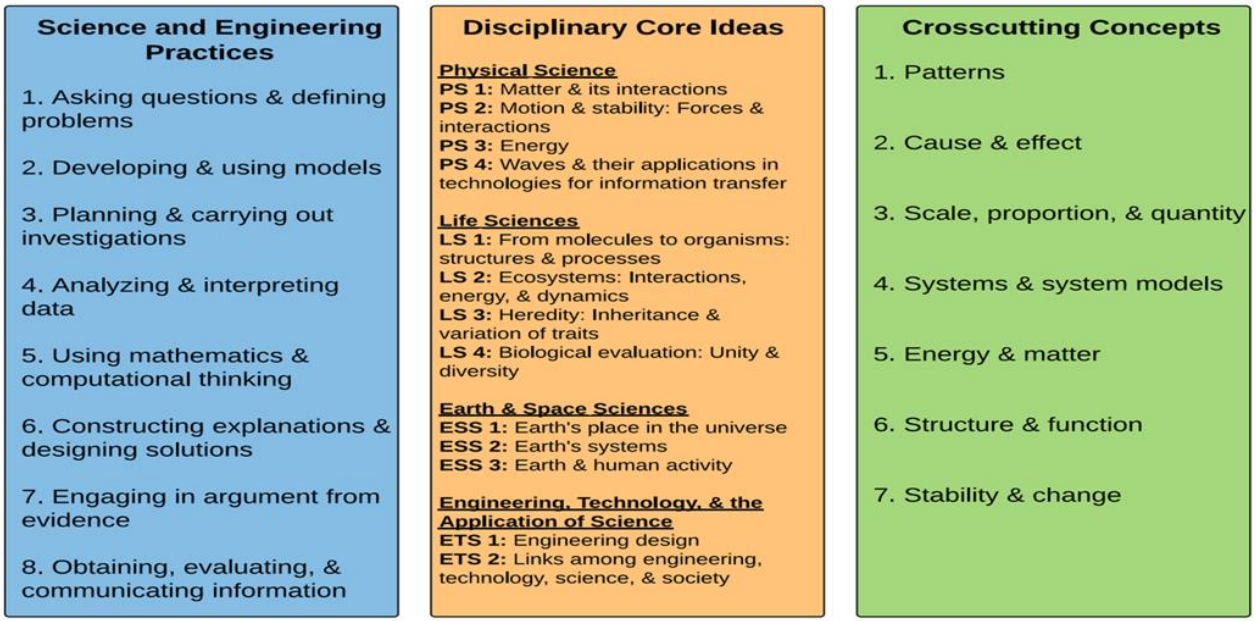
The Tennessee Academic Standards for Science were developed using the National Research Council's 2012 publication, A Framework for K-12 Science Education as their foundation. The framework presents a new model for science instruction that is a stark contrast to what has come to be the norm in science classrooms. Thinking about science had become memorizing concepts and solving mathematical formulae. Practicing science had become prescribed lab situations with predetermined outcomes. The framework proposes a three-dimensional approach to science education that capitalizes on a child's natural curiosity. The Science Framework for K-12 Science Education provides the blueprint for developing the effective science practices. The *Framework* expresses a vision in science education that requires students to operate at the nexus of three dimensions of learning: Science and Engineering Practices, Crosscutting Concepts, and Disciplinary Core Ideas. The *Framework* identified a small number of disciplinary core ideas that all students should learn with increasing depth and sophistication, from Kindergarten through grade twelve. Key to the vision expressed in the *Framework* is for students to learn these disciplinary core ideas in the context of science and engineering practices. The importance of combining Science and Engineering Practices, Crosscutting Concepts and Disciplinary Core Ideas is stated in the *Framework* as follows:

Standards and performance expectations that are aligned to the framework must take into account that students cannot fully understand scientific and engineering ideas without engaging in the practices of inquiry and the discourses by which such ideas are developed and refined. At the same time, they cannot learn or show competence in practices except in the context of specific content. (NRC Framework, 2012, p. 218)

To develop the skills and dispositions to use scientific and engineering practices needed to further their learning and to solve problems, students need to experience instruction in which they use multiple practices in developing a particular core idea and apply each practice in the context of multiple core ideas. We use the term "practices" instead of a term such as "skills" to emphasize that engaging in scientific investigation requires not only skill but also knowledge that is specific to each practice. Students in grades K-12 should engage in all eight practices over each grade band**.** Crosscutting concepts have application across all domains of science. As such, they are a way of linking the different domains of science. Crosscutting concepts have value because they provide students with connections and intellectual tools that are related across the differing areas of disciplinary content and can enrich their application of practices and their understanding of core ideas. There are seven crosscutting concepts that bridge disciplinary boundaries, uniting core ideas throughout the fields of science and engineering. Their purpose is to help students deepen their understanding of the disciplinary core ideas and develop a coherent and scientifically based view of the world.

The map is meant to support effective planning and instruction to rigorous standards. It is *not* meant to replace teacher planning, prescribe pacing or instructional practice. In fact, our goal is not to merely "cover the curriculum," but rather to "uncover" it by developing students' deep understanding of the content and mastery of the standards. Teachers who are knowledgeable about and intentionally align the learning target (standards and objectives), topic, text(s), task, and needs (and assessment) of the learners are best-positioned to make decisions about how to support student learning toward such mastery. Teachers are therefore expected--with the support of their colleagues, coaches, leaders, and other

support providers--to exercise their professional judgment aligned to our shared vision of effective instruction, the Teacher Effectiveness Measure (TEM) and related best practices. However, while the framework allows for flexibility and encourages each teacher/teacher team to make it their own, our expectations for student learning are non-negotiable. We must ensure all of our children have access to rigor—high-quality teaching and learning to grade level specific standards, including purposeful support of literacy and language learning across the content areas.



Learning Progression

At the end of the elementary science experience, students can observe and measure phenomena using appropriate tools. They are able to organize objects and ideas into broad concepts first by single properties and later by multiple properties. They can create and interpret graphs and models that explain phenomena. Students can keep notebooks to

record sequential observations and identify simple patterns. They are able to design and conduct investigations, analyze results, and communicate the results to others. Students will carry their curiosity, interest and enjoyment of the scientific world view, scientific inquiry, and the scientific enterprise into middle school.

At the end of the middle school science experience, students can discover relationships by making observations and by the systematic gathering of data. They can identify relevant evidence and valid arguments. Their focus has shifted from the general to the specific and from the simple to the complex. They use scientific information to make wise decision related to conservation of the natural world. They recognize that there are both negative and positive implications to new technologies.

As an SCS graduate, former students should be literate in science, understand key science ideas, aware that science and technology are interdependent human enterprises with strengths and limitations, familiar with the natural world and recognizes both its diversity and unity, and able to apply scientific knowledge and ways of thinking for individual and social purposes.

Structure of the Standards

- Grade Level/Course Overview: An overview that describes that specific content and themes for each grade level or high school course.
- Disciplinary Core Idea: Scientific and foundational ideas that permeate all grades and connect common themes that bridge scientific disciplines.
- Standard: Statements of what students can do to demonstrate knowledge of the conceptual understanding. Each performance indicator includes a specific science and engineering practice paired with the content knowledge and skills that students should demonstrate to meet the grade level or high school course standards.

Purpose of Science Curriculum Maps

This map is a guide to help teachers and their support providers (e.g., coaches, leaders) on their path to effective, college and career ready (CCR) aligned instruction and our pursuit of Destination 2025. It is a resource for organizing instruction around the Tennessee Academic Standards for Science, which define what to teach and what students need to learn at each grade level. The map is designed to reinforce the grade/course-specific standards and content (scope) and provides *suggested* sequencing, pacing, time frames, and aligned resources. Our hope is that by curating and organizing a variety of standards-aligned resources, teachers will be able to spend less time wondering what to teach and searching for quality materials (though they may both select from and/or supplement those included here) and have more time to plan, teach, assess, and reflect with colleagues to continuously improve practice and best meet the needs of their students.

The map is meant to support effective planning and instruction to rigorous standards. It is *not* meant to replace teacher planning, prescribe pacing or instructional practice. In fact, our goal is not to merely "cover the curriculum," but rather to "uncover" it by developing students' deep understanding of the content and mastery of the standards. Teachers who are knowledgeable about and intentionally align the learning target (standards and objectives), topic, text(s), task, and needs (and assessment) of the learners are best-positioned to make decisions about how to support student learning toward such mastery. Teachers are therefore expected--with the support of their colleagues, coaches, leaders, and other support providers--to exercise their professional judgment aligned to our shared vision of effective instruction, the Teacher Effectiveness Measure (TEM) and related best practices. However, while the framework allows for flexibility and encourages each teacher/teacher team to make it their own, our expectations for student learning are non-negotiable. We must ensure all of our children have access to rigor—high-quality teaching and learning to grade level specific standards, including purposeful support of literacy and language learning across the content areas.

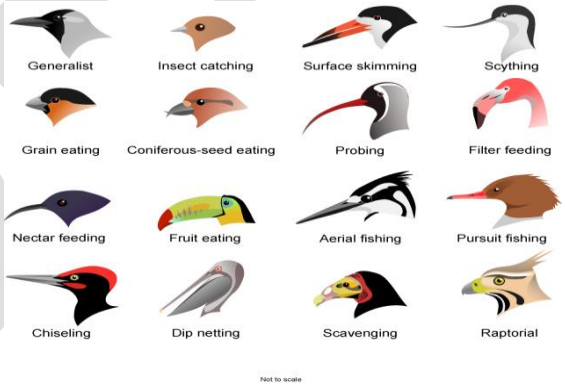
2nd Grade Quarter 1 Curriculum Map Quarter 1 Curriculum Map Feedback						
Quarter 1			Quarter 2		Quarter 3	Quarter 4
Structure and Routine	**Unit 1 Living Things**	Unit 2 Habitats	Unit 3 Earth's Surface	Unit 4 Earth's Changes	Unit 5 Forces and Motion	Unit 6 Sound and Light
1 week	**5 weeks**	3 weeks	4.5 weeks	4.5 weeks	9 weeks	9 weeks

UNIT 1: Living Things (5 weeks)

Overarching Question(s)

How do organisms live, grow, respond to their environment, and reproduce?

Unit 1: Lesson 1	Lesson Length	Essential Question	Vocabulary
Parts of Animals	1 week	How do body parts help animals?	gills, lungs, survive

Standards and Related Background Information	Instructional Focus	Instructional Resources
DCI(s) 2.LS1 From Molecules to Organisms: Structures and Processes **Standard(s)** 2.LS1.1: Use evidence and observations to explain that many animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air. **Explanation and Support of Standard** 2.LS1.1 In kindergarten (K.LS1.1), students learn that plants and animals have different needs for food and energy. The first-grade-standard 1.LS1.1 addresses the external structures of plants to see	**Learning Outcomes** Students will be able to explain how animals use their body parts and senses to meet their needs. **Suggested Phenomenon** *Click on the phenomenon picture to view the video.*  	**Curricular Resources** Engage Inspire Science TE, p. 5-6 TE, p.5, Phenomenon TE, p. 6, Essential Question TE, p.6, Science and Engineering Practices Explore TE, pp. 6-8 *(LAB)* Be a Scientist Notebook, p. 108, Inquiry Activity: Hands and Fingers eBook: Fun in the Rain Forest Explain TE, pp. 8-12

how they help a plant to survive, grow, and reproduce. This completes the understanding by looking at the external structures of animals and how those structures help animals survive. Some examples may include grizzly bears using their long claws to dig winter dens and break apart logs to find insects to eat; the eyes and nose of crocodiles stick up above its head so it can hide under water and still keep a lookout for prey; and rhinos use their ears like radar because they have poor eyesight. *As in earlier standards, the features used as examples for this standard should be limited to external structures that are visible to the naked eye.* **Suggested Science and Engineering Practice(s)** Engaging in Argument from Evidence **Suggested Crosscutting Concept(s)** Structure and Function **Teacher Overview** Humans, animals, and plants all must meet daily needs for survival. Animals and plants have plants have different parts that can function to help them meet those needs. Many animal functions occur by way of structure, such as a long, thin	Phenomenon Explanation: Bird adaptations include the structure of their beaks. Beaks have evolved to help birds most efficiently capture and process food. The video shows how birds that eat nuts, sip nectar, spear fish, and hunt prey have different kinds of beaks that help them get food most efficiently.	Be A Scientist Notebook, p. 8: Vocabulary eBook: Animals Are Living Things Video: Animal Structures Science Paired Read Aloud/Science File: Animals use Their Senses Digital Interactive: Animal Parts <u>Elaborate</u> TE, pp. 13-14 *(LAB)* Be a Scientist Notebook, p. 13, Inquiry Activity: Floating Fish <u>Evaluate</u> TE, pp. 15-17 *(LAB)* Be A Scientist Notebook, p.15 Performance Task: Animal Parts eAssessment **Additional Resources** Lesson: Grouping Animal Lesson Plan Videos: Learn Animal Body Parts-2:47 video Even More Parts 4:38 video **ESL Supports and Scaffolds** WIDA Standard 4: The Language of Science

bird's beak used to pluck fish from the water. Similarly, many plant functions occur by way of structure, such as a seed coat with "wings" that can carry the see to another location to germinate. When humans design objects to help solve their problems, they might draw on or mimic solutions in the natural world. For example, we make cooking tongs that are long and thin like a bird's beak in order to gather pieces of food from a deep pot of boiling water. Solving human problems by mimicking designs seen in nature is known as biomimicry. **Misconceptions** Students may think that human-made objects are purely a product of imagination. But all shapes and many tools we design and use can be found in the natural world. To help students understand and visualize this, pair images that show a human-designed product with images that show the corresponding natural structure and/or function. Some possible pairs include hood-and-loop clothing fasteners and plant burrs, gecko feet and supper-adhesives, high-speed train design and kingfisher beaks, and desert water-collection systems and the Namibian beetle.		To support students in speaking, refer to this resource: WIDA Doing and Talking Science Model sentence stems: "A_____uses its_____to_____" "The purpose of a _____is to_____." "The function of a _____is to_____." Use visuals to model animal body parts Get Epic text for visuals: Body Parts Animal flashcards (with bilingual supports)

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1 week	**5 weeks**	3 weeks	4.5 weeks	4.5 weeks	9 weeks	9 weeks

UNIT 1: Living Things (5 weeks)

Overarching Question(s)

How do organisms live, grow, respond to their environment, and reproduce?

Unit 1: Lesson 2	Lesson Length	Essential Question	Vocabulary
Classify Animals	1 week	How can we classify animals?	mammal, bird, reptile, amphibian, fish, insect

Standards and Related Background Information	Instructional Focus	Instructional Resources
DCI(s) 2.LS1 From Molecules to organisms: Structures and Processes **Standard(s)** 2.LS1.2: Obtain and communicate information to classify animals (vertebrates-mammals, birds, amphibians, reptiles, fish, invertebrates-insects) based on their physical characteristics. **Explanation and Support of Standard** 2.LS1.2 This standard compliments 2.LS1.1 where students are examining a wide variety of external features of organisms. Students can use the presence of the externally visible exoskeleton on insects to initially classify invertebrates from of a larger, unsorted collection of organisms. Further sorting of the organisms can be	**Learning Outcomes** Students will be able to describe classify, and compare animals. **Suggested Phenomenon** *Click on the phenomenon picture to view the video.* 	**Curricular Resources** Engage TE, pp. 19-20 Science in My World, p. 19, Phenomenon TE, Essential Questions, p. 20 TE, Science and Engineering Practices, p. 20 Explore TE, pp. 20-21 *(LAB)* Be a Scientist Notebook, p. 124, Inquiry Activity: Animal Groups Explain TE, pp. 22-26 Be a Scientist Notebook, p. 22: Vocabulary eBook: Animals Are Living Things

accomplished from observable difference in anatomy or life cycle. **Suggested Science and Engineering Practice(s)** Obtaining, Evaluating, and Communicating information **Suggested Crosscutting Concept(s)** Structure and Function **Teacher Overview** Animals are different from one another, but they have traits in common. Dogs, for example, all have four legs and fur, most of them bark, and they all eat meat. But all dogs do not look or behave alike. Different breeds can be grouped by size, color, intelligence, and temperament. When students begin comparing animals from different groups-mammals, reptiles, insects, birds, and amphibians-they will discover even greater differences. Groups of animals live in different settings. Some animals (lion, eagles, etc.) are considered to be wild animals that generally live far from human beings. Farmers raise other animals, such as sheep, cows, and chickens. Still others-cats, dogs, and some typed of birds-are kept in homes and treated as pets. **Misconceptions** Students may only consider differences in physical appearance of animals when placing animals into classification groups. Thus some students may be surprised to learn, for example, that bats are not birds	Phenomenon Explanation: Animals are classified into different groups based on their characteristics. Invertebrates are animals that do not have a spine, or backbone. Vertebrates are animals that do! Vertebrates are further classified into fish, amphibians, reptiles, birds, and mammals.	Science Paired Read Aloud/Science File: Animal Groups Digital Interactive: Animal Characteristics Elaborate TE, pp. 27-28 *(LAB)* Be a Scientist Notebook, p. 27, Inquiry Activity: Model of a Backbone Evaluate TE, pp. 29-31 *(LAB)* Be a Scientist Notebook, p. 29, Performance Task: Classifying Animals eAssessment **Additional Resources** Lesson: Classifying Animals Lesson Plan PowerPoint: Grouping animals PPT **ESL Supports and Scaffolds** WIDA Standard 4: The Language of Science To support students in speaking, refer to this resource: WIDA Doing and Talking Science Pre-teach: (**Consider teaching this vocabulary in addition to vocabulary addressed in the standard to support Entering Level ELs**) classification, characteristics; observing

and that dolphins are not fish. Introduce students to the idea that unseen behavioral characteristics (such as how an animal nourishes its young, for example) are very important in grouping similar animals together. This lesson introduces students to the process of observing animal characteristics and sorting animals into various different and/or overlapping groups.		Provide student with a graphic organizer to classify animals Animal classifications **Consider using sentence stems to support students in writing and speaking about classification:** This is the same as _____because . This is different_____than because . All these are_____because . , , and all have/are .

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1 week	**5 weeks**	3 weeks	4.5 weeks	4.5 weeks	9 weeks	9 weeks

UNIT 1: Living Things (5 weeks)

Overarching Question(s)

How do organisms live, grow, respond to their environment, and reproduce?

Unit 1: Lesson 3	Lesson Length	Essential Question	Vocabulary
Life Cycles of Animals	1.5 week	How do animals grow and change?	life cycle, metamorphosis, larva, pupa

Standards and Related Background Information	Instructional Focus	Instructional Resources
DCI(s) 2.LS1 From Molecules to Organisms: Structures and Processes **Standard(s)** 2.LS1.3: Use simple graphical representations to show that species have unique and diverse life cycles. **Explanation and Support of Standard** 2.LS1.3 In general terms, a life cycle includes being born, growing, developing into adults, reproducing, and eventually dying. Though this general life cycle is seen across animal species, there are many variations on the theme. Examples may include different ways animals are born (live birth, from an egg), grow (increase in size and weight,	**Learning Outcomes** Students will be able to identify the different stages that animals go through in a life cycle. **Suggested Phenomenon** *Click on the phenomenon picture to view the video.* 	**Curricular Resources** Engage TE, pp. 33-34 TE, Phenomenon, p. 33 TE, Essential Questions, p. 34 Explore TE, pp. 34-35 *(LAB)* Be a Scientist Notebook, p. 34 Inquiry Activity: Animal Babies and Adults Explain TE, pp. 36-41 Be a Scientist notebook, p. 36: Vocabulary Video: Life Cycles Science File: Animal Life Cycles

produce new parts through metamorphosis), reproduce (mate and lay eggs that hatch) and die (e.g., length of life). Animals are different from plants in the unique behaviors of many animals where parents help offspring survive. These nurturing behaviors should be addressed as part of the life cycle. Standard 1.LS1.2 explores the life cycle of plants. This standard gives a student an opportunity to investigate different life cycles in animals. There is no need to revisit plant life cycles in second grade. **Suggested Science and Engineering Practice(s)** Developing and Using Models **Suggested Crosscutting Concept(s)** Structure and Function **Teacher Overview** All plants and animals go through stages of growth, or life cycles. Many animals, such as reptiles, birds, and mammals, resemble the adults they will grow into as young animals. Other animals, such as amphibians and insects, go through growth stages in which the young animal completely changes and looks very different from one stage to the next. This type of development is called metamorphosis. **Misconceptions**	Phenomenon Explanation: Life of Mammals looks at the development of different ways of giving birth.	Digital Interactive: Elephant and Horse Life Cycles *(LAB)* Be a Scientist Notebook, p. 38: Mealworms Digital Interactive: Butterfly and Salamander Life Cycles Elaborate TE, pp. 42-43 *(LAB)* Be a Scientist Notebook, p. 41: Mealworm Story Evaluate TE, pp, 43-45 *(LAB)* Be a Scientist Notebook, p. 149, Performance Task: Picture Cards eAssessment **Additional Resources** Lesson: A butterflies life cycle lesson plan Lesson: Silkworm worksheet Video: How do animals grow and change? Video: Living and Nonliving Video: The very Hungry Caterpillar Read aloud **ESL Supports and Scaffolds** WIDA Standard 4: The Language of Science To support students in speaking, refer to this resource: WIDA Doing and Talking Science

Students may think that all mammals are like humans and will usually give birth to one or two babies at a time. Animals such as dogs, cats, and wolves can give birth to large litters of babies, while bats, elephants, and whales usually give birth to one baby at a time. Show the students photos of different mammal parents and offspring. Provide examples of familiar animals that usually have many offspring at a time so that students can better understand the differences between these mammals and humans.		Pre-teach: (**Consider teaching this vocabulary in addition to vocabulary addressed in the standard to support Entering Level ELs**) growth, develop; development; give birth; Use visuals to demonstrate how animals grow and change Model the use of sentence frames: " The _____changes during the life cycle by_____." Animals change by….

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1 week	**5 weeks**	3 weeks	4.5 weeks	4.5 weeks	9 weeks	9 weeks

UNIT 1: Living Things (5 weeks)

Overarching Question(s)

How do organisms live, grow, respond to their environment, and reproduce?

Unit 1: Lesson 4	Lesson Length	Essential Question	Vocabulary
Living Things and Their Parents	1.5 weeks	How are living things like their parents?	trait, vary, inherit, offspring

Standards and Related Background Information	Instructional Focus	Instructional Resources
DCI(s) 2.LS3 Heredity: Inheritance and Variation of Traits **Standard(s)** 2.LS3.1: Use evidence to explain that living things have physical traits inherited from parents and that variations of these traits exist in groups of similar organisms. **Explanation and Support of Standard** 2.LS3.1 **Suggested Science and Engineering Practice(s)** Engaging in Argument from Evidence **Suggested Crosscutting Concept(s)** Cause and Effect	**Learning Outcomes** Students will be able to gather information about how living things inherit traits from their parents. **Suggested Phenomenon** *Click on the phenomenon picture to view the video.* 	**Curricular Resources** Engage TE, pp. 47-48 Science in My World, p. 47 (Phenomenon) Essential Questions, p. 48 Science and Engineering Practices, p. 48 Explore TE, pp. 48-50 *(LAB)* Be a Scientist Notebook, p. 48 Inquiry Activity: Common Features Explain TE, pp. 51-55 Science File: How Are Offspring Like Their Parents?

Teacher Overview Many external characteristics are a result of inherited traits, such as eye color and hair color. Environmental factors also cause characteristic similarities because parents and offspring often share similar environments and encounter similar conditions that determine certain characteristics. Trees, such as aspen, are shorter when growing at a higher elevation in the mountains than the same species growing at a lower elevation. This difference is due to the environmental conditions rather than being inherited. In this lesson, students will learn about inherited traits passed to offspring. **Misconceptions** Students might think that animals can choose their traits. In reality, organisms inherit many traits from their parents. Students might not understand that the environment can impact some traits and that other traits can be inherited from their parents. Students might confuse inherited traits and learned traits, because there are some traits that organisms can learn from their parents at a young age.	Phenomenon Explanation: Parents and offspring have similar features.	Be a Scientist Notebook, p. 50: Vocabulary Video: Similarities between Offspring and Parents eBook: Every Plant Is Different Digital Interactive: Variety f Inherited Traits *(LAB)* Be a Scientist Notebook, p. 54, Inquiry Activity: Tulips <u>Elaborate</u> TE, pp. 56 Science Paired Read Aloud/Science File: More Inherited Traits *(LAB)* Be a Scientist Notebook, p. 55, Inquiry Activity: More Inherited Traits <u>Evaluate</u> TE, pp. 57-59 *(LAB)* Be a Scientist Notebook, p. 56, Performance Task: Mouse Fur Color Inheritance eAssessment **Additional Resources** **Lesson:** Inheritance and Traits Lesson Plan Videos**:** **Animals with Unique Traits** 10:28 Are You My Mother Read aloud 30:18 Fantastic Fur of Sea Otters: Deep Look 3:23 Fish that walk National Geographic 2:05 Article Biracial Twins

		ESL Supports and Scaffolds ESL and Alternatives: WIDA Standard 4: The Language of Science To support students in speaking, refer to this resource: WIDA Doing and Talking Science Preteach: (**Consider teaching this vocabulary in addition to vocabulary addressed in the standard to support Entering Level ELs**) similiar; appearance; trait; similarities; differences Model the use of sentence frames: " A _____ is similar to its parents because_____" "The difference/similarities between a _____and_____are_____" The_____and the _____have the same traits because….."

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1 week	5 weeks	**3 weeks**	4.5 weeks	4.5 weeks	9 weeks	9 weeks

UNIT 2: Habitats (3 weeks)

Overarching Question(s)

How and why do organisms interact with their environment and what are the effects of these interactions?

Unit 2: Lesson 1	Lesson Length	Essential Question	Vocabulary
Living Things in Habitats	1.5 weeks	What is a habitat?	habitat, predator, prey, shelter, food chain

Standards and Related Background Information	Instructional Focus	Instructional Resources
DCI(s) 2.LS2 Ecosystems: Interactions, Energy, and Dynamics **Standard(s)** 2.LS2.1: Develop and use models to compare how animals depend on their surroundings and other living things to meet their needs in the places they live. **Explanation and Support of Standard** 2.LS2.1 Animals are connected to plants because the food eaten by almost any animal can be traced back to plants. To survive, animals must find sources of food, as well as protection from other animals or the environment. In first grade, students learned that plants need sunlight,	**Learning Outcomes** Students will be able to develop a habitat in which they could live. **Suggested Phenomena** *Click on the phenomenon picture to view the video.* 	**Curricular Resources** Engage TE, pp. 65-66 Science in My World, p. 65 (Phenomenon) Essential Question, p. 66 Science and Engineering Practice, p. 66 Explore TE, pp. 66-68 *(LAB)* Be a Scientist Notebook, pp. 64 Inquiry Activity: Desert Habitats Explain TE, pp. 68-75 Be a Scientist Notebook, p. 66: Vocabulary eBook: Plant and Animal Habitats

water and air to grow. Animals must eat plants or other animals to fulfill their needs. Some examples showing connections between organism and environment may include: a picture of a bear with a stream near its home with arrows pointing to the cave, stream, and bushes (eating and dispersing seeds) labeling shelter and food, a group of fish schooling together to avoid being eaten; and bees using nectar from flowers and flowers being pollinated by bees. **Suggested Science and Engineering Practice(s)** Developing and Using Models **Suggested Crosscutting Concept(s)** Systems and System Models **Teacher Overview** An ecosystem, whether small or large, is a complex system of living and nonliving things that interact. Habitats, or places where specific plants or animals live, exist within an ecosystem. **Misconceptions** Students may thing that habitats are only for animals many students may not recognize trees or other plants as living things. Plants, like animals, also have habitats. Students may also not understand that plants and animals share some basic needs-air, water, and space-to live.	Phenomenon Explanation: Animals depend on their surrounds to survive. Video: This is a collection of footages of different habitats from around the world that shows varying characteristics of each. *Click on the phenomenon picture to view the video.*  	*(LAB)* Be a Scientist Notebook, p. 68, Inquiry Activity: Pill Bug Habitat Digital Interactive: Habitats Video: Habitats and Living Things Science Paired Read Aloud/Science File: Plants and Animals Depend on Each Other Elaborate TE, p. 76-77 *(LAB)* Be a Scientist Notebook, p. 72, Inquiry Activity: Food Chains Evaluate TE, pp. 78-79 *(LAB)* Be a Scientist Notebook, p. 74, Performance Task: Design a Habitat for Yourself **Additional Resources** Lesson: Diorama Habitats by: Dr. Melissa Collins Video: Habitats: What is a Habitat? Project: Turtle Habitat **ESL Supports and Scaffolds** WIDA Standard 4: The Language of Science Preteach: (**Consider teaching this vocabulary in addition to vocabulary addressed in the**

		standard to support Entering Level ELs) select; fulfill, needs; support, needs (n.) Engage NY habitats unit: within the unit teachers will find free visuals(image cards) to support ELs within this unit. Model the sentence stem: " This habitat would support_____because_____." "The _____is able to live in the _____because_____.:

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1 week	5 weeks	**3 weeks**	4.5 weeks	4.5 weeks	9 weeks	9 weeks

UNIT 2: Habitats (3 weeks)

Overarching Question(s)

How and why do organisms interact with their environment and what are the effects of these interactions?

Unit 2: Lesson 2	Lesson Length	Essential Question	Vocabulary
Changing Habitats	1.5 weeks	What happens to animals in a changing habitat?	wildfire, drought, pollution, endangered, extinct

Standards and Related Background Information	Instructional Focus	Instructional Resources
DCI(s) 2.LS2 Ecosystems: Interactions, Energy, and Dynamics **Standard(s)** 2.LS2.2: Predict what happens to animals when the environment changes (temperature, cutting down trees, wildfires, pollution, salinity, drought, land preservation) 2.ETS1.3: Recognize that to solve a problem, one may need to break the problem into parts, address each part, and then bring the parts back together. **Explanation and Support of Standard** 2.LS2.2 Though a wide range of changes to environment are mentioned in the standard, a focus should be placed on	**Learning Outcomes** Students will be able to predict what happens to animals when their habitats change. **Suggested Phenomenon** *Click on the phenomenon picture to view the video.* 	**Curricular Resources** Engage TE, pp. 81-82 Science in My World, p. 81 (Phenomenon) Essential Question, p. 82 Science and Engineering Practice, p. 82 Explore TE, pp. 83-84 *(LAB)* Be a Scientist Notebook, pp. 78 Inquiry Activity: Habitats Change Explain TE, pp. 84-88 Be a Scientist Notebook, p. 80: Vocabulary Science File: How Do Habitats Change?

more simplified relationships addressing grade appropriate needs. These basic needs include having a suitable temperature for survival and access to food water or air. When the environment changes, it may no longer meet these basic needs and this could cause some animals to die. Students should consider changes to the environment that happen quickly and those that occur more slowly. 2.ETS1.3 Though a wide range of changes to environment are mentioned in the standard, a focus should be placed on more simplified relationships addressing grade appropriate needs. These basic needs include having a suitable temperature for survival and access to food water or air. When the environment changes, it may no longer meet these basic needs and this could cause some animals to die. Students should consider changes to the environment that happen quickly and those that occur more slowly. **Suggested Science and Engineering Practice(s)** Engaging in Arguments from Evidence **Suggested Crosscutting Concept(s)** Systems and System Models Cause and Effect **Teacher Overview** Ecosystems are dynamic. Some changes are gradual, but other changes are sudden. One change can impact many	Phenomenon Explanation: Animals depend on their environment for survival. Changes in their environment could alter their ability to survival.	Video: Environmental Changes Science Paired Read Aloud/Science File: Pollution Digital Interactive: Habitats Change Science Paired Read Aloud/Science File: How Habitat Changes Affect Animals Elaborate TE, p. 88-89 Evaluate TE, pp. 89-91 *(LAB)* Be a Scientist Notebook, p. 87, Performance Task: When Habitats Change eAssessment **Additional Resources** Lesson: Habitats Changing Video: Habitat Loss **ESL Supports and Scaffolds** WIDA Standard 4: The Language of Science Preteach: (**Consider teaching this vocabulary in addition to vocabulary addressed in the standard to support Entering Level ELs**) select; fulfill, needs; support; damage

living things. When a habitat changes in ways that affect the availability of resources, some organisms in a population might have variations on their traits that help them to survive and reproduce. Other organisms might migrate to find new food sources or a more hospitable environment. Some organisms might not have traits that would help them to survive and reproduce. Those organisms might also face physical barriers that prevent migration, such as highways or buildings that isolate organisms in a limited location. These could hurt the organisms' chance for survival. **Misconceptions** Students may assume that when an animal's habitat is changed or destroyed, they can simply move somewhere else, whereas animals' survival is often threatened by severe changes in their habitat. Or, students may assume that animals are not adapted to predictable changes in their environment. Students may also think of animals' preference for certain environments. Animals are adapted to the environments in which they typically live, which means it would be difficult for them to survive in a significantly different environment.		Engage NY habitats unit: within the unit teachers will find free visuals (image cards) to support ELs within this unit. Model the sentence stem: " This habitat no longer supports_____because_____." "The _____is now/no longer able to live in the _____because_____."