Big Idea:
All living things have different traits that are either passed down or changed by environmental factors.
How can environmental factors change a natural trait that is inherited?
Guiding Questions:
What kinds of traits are passed on from parent to offspring?
What environmental factors might influence the traits of a specific organism?

21st Century Themes/Skills:

DCI (Disciplinary Core Ideas)	*Science and Engineering Practices*	*Crosscutting Concepts*	*Student Learning Objectives*	*Differentiated Activities (Consider the 5 Es)*	*Resources/Technology*	*Formative Assessments*	*Benchmark Assessment*
LS3.A: Inheritance of Traits: Many characteristics of organisms are inherited from their parents. **LS3.B: Variation of Traits:** Different organisms vary in how they look and function because they have different inherited information.	Analyzing and Interpreting Data: Analyze and interpret data to make sense of phenomena using logical reasoning.	Patterns: Similarities and differences in patterns can be used to sort and classify natural phenomena.	Students will be able to their prior knowledge about the similarities of parents and offspring.	**Engage (Session 1)**: Display images of two sets of animal parents and offspring and have students match to each other to judge prior knowledge through discussion of reproduction and heredity	Engage: Video- "Offspring"	-Activity Student Sheets of Responses (see links in Resources/Technology for each lesson) -Class discussion -Science journal entries -Predictions -Questions -Observations -Group collaboration -Exit Slips (paper-based, Google Forms, Google Classroom post, etc.)	
			Students will be able to describe the similarities of parents and offspring by collecting and analyzing data.	**Explore (Session 2):** Simulation of similarities of parents and offspring in Discovery Eduction with students filling in the scientific explanation student sheet	Simulation Student Exploration Sheet		
			Students will be able to define and describe scientific terms of inheritance and traits.	**Explore (Session 3):** Jigsaw Frayer Model of vocabulary terms: feature, female, gene, generation, heredity, inherit, life cycle, reproduce, trait	Discovery Education		
LS3.A: Inheritance of Traits: Many characteristics of organisms are inherited from their parents. LS3.B: Variation of Traits: Different organisms vary in how they look and function because they have different inherited information.	Analyzing and Interpreting Data: Analyze and interpret data to make sense of phenomena using logical reasoning.	Patterns: Similarities and differences in patterns can be used to sort and classify natural phenomena.	Students will be able to explore how plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms by completing a close reading.	**Explore (Session 4):** Close reading of "Getting to Know: Similarities of Parents and Offsprings"	Getting to Know: Similarities of Parents and Offsprings		
			Students will be able to investigate the concept of variation by measuring heights of students and recording data by making a line plot. Students will analyze and interpret the data.	**Explore (Session 5):** Explore concept of variation by measuring height of students (a trait) and make a line plot of these heights; measure hand span using ruler in inches; discuss the nature of distribution of the heights and lengths; have students go home and get the height of their parents	Discovering Math: Primary: Statistics and Data Analysis Video		
			Students will be able to observe five organisms in their local communities and describe their traits to state which are inherited and which are not.	**Explore (Session 6):** Have students observe five organisms in their local communities and describe their traits in a science log. Students should try to identify which traits are inherited and which are not.			
			Students will be able to discuss scientific explanation and explain the inheritance of traits from parents to offspring and variation.	**Explain (Session 7):** Discuss scientific explanation (claim, evidence, reasoning); have students explain the inheritance of traits from parents to offspring and variation in these traits through the use of a scientific explanation	Scientific Explanation		
			Students will create an explanation of artifical selection by investigating how both plants and animals have been altered to meet human needs.	**Elaborate (Session 8):** Artificial selection video and discussion (humans control the reproduction of organisms so that the organisms produce offspring with certain traits.) Instruct students to research how artificial selection has been used in food production. They may investigate how both plants and animals have been altered to meet human needs. Students should then write an essay, make a presentation, etc. describing their own opinions of these artificial selection processes.			
			Students will complete a performance task to demonstrate their knowledge of inheritance.	**Evaluate (Session 9):** Performance task (board builder of knowledge) or paper-based assessment constructed response	Constructed Response		
LS3.A: Inheritance of Traits Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. LS3.B: Variation of Traits The environment also affects the traits that an organism develops. LS3.B: Variation of Traits: Different organisms vary in how they look and function because they have different inherited information.	Analyzing and Interpreting Data: Analyze and interpret data to make sense of phenomena using logical reasoning. Constructing Explanations and Designing Solutions: Use evidence (e.g., observations, patterns) to support an explanation.	Patterns: Similarities and differences in patterns can be used to sort and classify natural phenomena. Cause and Effect: Cause-and-effect relationships are routinely identified and used to explain change.	Students will discuss the basic needs of living things.	**Engage (Session 1):** Class discussion of basic needs of living things; Study Jams Plant and Animal Adaptations	Study Jams		
			Students will explore adaptations through a virutal simulation of individuals' interactions with the environment.	**Explore (Session 2):** Adaptation simulation; student exploration sheet for scientific exploration	Adaptation Simulation Adaptation Simulation Exploration Sheet		
			Students will be able to describe the scientific vocabulary terms assoicated with the variation of traits.	**Explore (Session 3):** Jigsaw Google Slides of glossary terms or Frayer Model (adaptation, camouflage, environment, hibernate, migration, response, survive, trait, behavior)	Glossary Terms		
LS3.A: Inheritance of Traits Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve	Analyzing and Interpreting Data: Analyze and interpret data to make sense of phenomena using logical reasoning.	Patterns: Similarities and differences in patterns can be used to sort and classify natural phenomena. Cause and Effect: Cause-and-effect	Students will observe and investigate various different plants and describe the connection between habitiat and traits (adaptations).	**Explore (Session 4):** Students observe and investigate various different plants (cactus, water lilly, etc.) and describe their habitat; discussion connection between habitat and traits (adaptations)	Hands-on Activities		

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both inheritance and environment. LS3.B: Variation of Traits The environment also affects the traits that an organism develops. LS3.B: Variation of Traits: Different organisms vary in how they look and function because they have different inherited information.	Constructing Explanations and Designing Solutions: Use evidence (e.g., observations, patterns) to support an explanation.	relationships are routinely identified and used to explain change.	Students will investigate how living things respond to changes and other stimuli in their surrounds by completing the virutal simulation lab to describe the cause and effect relationship.	**Explore (Session 5):** Virtual simulation of how living things respond to changes and other stimuli in the surroundings. The response to stimuli is called behavior.	Student Exploration Sheet Virtual Simulation of Behavior		
			Students will create a Google Slides presentation to construct an explanation of an animal's adaptations and behaviors to show patterns and cause and effect relationships.	**Explain (Session 6 & 7):** Working in partners, students will create a Google Slides presentation on an assigned rainforest animal's adaptations and behaviors. Students will create a model of the animal to show and explain the adaptations.			
			Students will investigate adaptations through completing the virutal lab.	**Elaborate (Session 8 & 9):** Virtual Lab: Featuring Frogs	Virtual Lab		
			Students will choose 3-4 organisms in their community and describe how the organisms' traits help them survive in their environment.	**Evaluate (Session 10 & 11):** Instruct students to choose 3–4 organisms in their community and describe how the organisms' traits help them survive in their environments.			