Storyline Unit Design

Understanding by Design (UbD) Template*

Unit	**Storyline 4 : Evolution: Change in Lifeform**	Course(s)	**Grade 8 Waipahu**
Designed by		Time Frame	**One quarter**

Anchor Model

*UbD Unit Planner is from Wiggins, Grant and McTighe, Jay. Understanding by Design Guide to Creating High-Quality Units. Alexandria, VA: Association for Supervision and Curriculum Development. 2011.

Stage 1: Desired Results

Performance Expectations

MS-LS3-1: Mutations - Harmful, Beneficial or Neutral

Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.

MS-LS4-2: Anatomical Evidence of Evolutionary Relationships

Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships. (Patterns)

MS-LS4-3: Embryological Evidence of Common Ancestry

Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.

MS-LS4-4: Natural Selection

Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment. (Cause and Effect)

MS-LS4-5: Artificial Selection

Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms. (Cause and Effect)

MS-LS4-6: Adaptation of Populations over Time

Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time. (Cause and Effect)

Anchoring Phenomenon

Anchoring Phenomenon Worksheet

Honeycreepers -

How did they evolve? Extinction? A solution by genetically changing mosquito

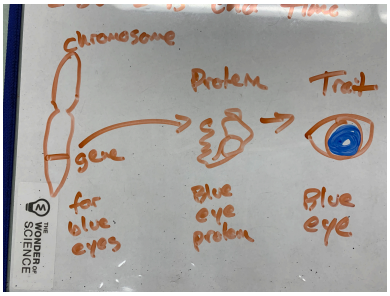
Enduring Understandings	Essential Questions
Natural Selection *There is a diversity of living things.* *Survival of the fittest (species adapt to their environment or go extinct)* *Genes determine traits - environmental pressure select specific traits*	*How do species evolve over time?* *How do genes work? How can humans use genetic engineering to solve problems?*

Stage 2: Assessments

MS-LS3-1	Hairless Xolos	Assessment	Key	Evidence Statement
MS-LS4-2	Fossilized Mammal X	Assessment	Key	Evidence Statement
MS-LS4-3	Three Similar Species	Assessment	Key	Evidence Statement
MS-LS4-4	Old Gecko Toes	Assessment	Key	Evidence Statement
MS-LS4-5	The Story of the Rainbow Papaya	Assessment	Key	Evidence Statement
MS-LS4-6	Nebraska Deer Mouse	Assessment	Key	Evidence Statement

Assessment Screening Tools

Backward Design Elements

What new skills (practices) will students need to learn?	What thinking concepts will students need to learn?	What science concepts will students need to learn?
MS-LS4-2 Analyzing data from fossils (anatomy - structures) Make a claim with evidence and reasoning (similarities in structure infer evolutionary relationships) MS-LS3-1 Model Central dogma model gene➔protein➔trait➔organism  *Use simple punnett squares to model inheritance.* MS-LS4-5	MS-LS4-2 Patterns of evolutionary change MS-LS3-1 Structure (gene) and Function (trait) MS-LS4-5 Cause (inserted) and Effect (trait) MS-LS4-6 Cause-Mechanism-Effect MS-LS4-3 Patterns of linear (whale getting bigger over development) and nonlinear (whale losing legs) relationships. MS-LS4-4 Analyze patterns	MS-LS3-1 Chromosomes Genes Proteins Traits of organisms Mutations - Harmful - Beneficial - Neutral MS-LS4-2 Organisms Fossils Anatomical structures - Similarities - Differences MS-LS4-5 Artificial selection (e.g. genetic modification, animal husbandry, gene therapy) Organisms (plants and animals) Inheritance

Obtain and evaluate sources of information for validity, accuracy and bias. MS-LS4-6 Analyze both qualitative and quantitative data. Describe or model a mechanism of evolution. MS-LS4-3 Analyze pictorial data Find patterns MS-LS4-4 Analyze data of evolving species.	Cause (trait) Effect (survival)	Desired traits Technology (Jennifer Doudna) MS-LS4-6 Natural selection Traits Adaptation Populations Environmental conditions (e.g. climate, resource availability) MS-LS4-3 Embryos Development Anatomical structures - Similarities - Differences Species MS-LS4-4 Natural selection Traits Organism Population Genetic variation Survival Reproduction Environment

Stage 3: Learning Plan

Phenomenon or Problem	Learning Performance - What will they do?	Why is this important?	Learning Experience - How will they do it?
	The three dimensions woven together into a single learning performance.	How does this activity help build understanding of the anchoring phenomenon.	Graphic organizers, protocols, scaffolds, labs, mini-lesson, student discourse, etc.

Honeycreepers Day 1 **MS-LS4-2: Anatomical Evidence of Evolutionary Relationships** Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships. (Patterns)	Students will investigate structural traits in a locally evolved species. Students will analyze patterns to sort species based on structures traits.	Anchor phenomenon	Mini-lesson on structures (function and structure) Mini-Lesson on Structure Formative assessment Give students pictorial data of species. Mini-lesson on patterns of similarity and difference (video) mini lesson level # 4 patterns Or mini lesson level #2 Students group species according to structural traits. - Categorize HoneyCreeper Jamboard Activity (Tina)
Formative Assessment - What information are you collecting to know that they met the target? Structure and Function Google Form		Students identify the evidence they are using to classify the bird and what patterns they use to order the birds. .	

<table>
<tr>
<td>Telephones through time

Day 1

MS-LS4-2: Anatomical Evidence of Evolutionary Relationships
Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships. (Patterns)</td>
<td>Students will analyze structural patterns to order subjects in an evolutionary line.</td>
<td>Students learn that objects evolve over time by creating a data table.</td>
<td>Give students pictorial data of objects evolving over time.

Mini-Lesson on Analyzing Patterns in Data.

(Use the colored cubes as a concrete) - Sample

Give the students the phone image.

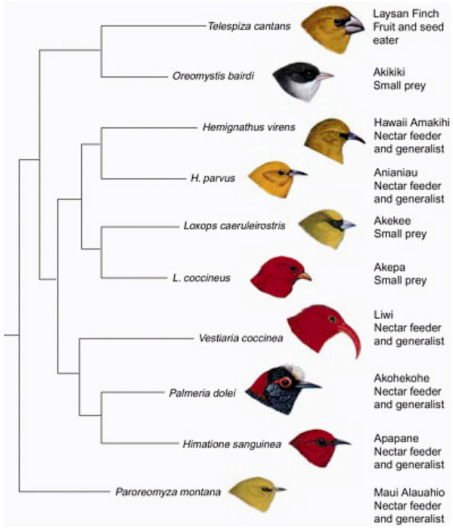
The Evolution of Mobile Phones - Prague Post

Students create data table showing how phone structures have changed over time (e.g. antenna, screen size, buttons, overall size)

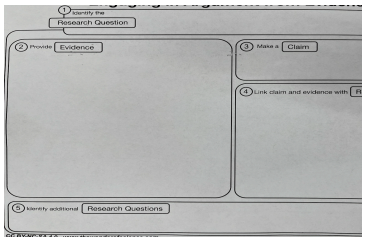
<table>
<tr><td colspan="2">What qualitative patterns do you observe in the evolution of phone structure over time?</td></tr>
<tr><td>Structure</td><td>Qualitative Patterns</td></tr>
<tr><td>Antenna</td><td></td></tr>
<tr><td>Screen</td><td></td></tr>
<tr><td>Buttons</td><td></td></tr>
<tr><td>Phone Size</td><td></td></tr>
<tr><td colspan="2"></td></tr>
<tr><td colspan="2">Use evidence to make a claim as to the year th
 
his phone was most popular.</td></tr>
</table>

Answer is 1988.</td>
</tr>
</table>

Formative Assessment - What information are you collecting to know that they met the target?		Students identify patterns in structures over time.	
Threatened Honeycreepers Family tree Version 2 Day 1 **MS-LS4-2: Anatomical Evidence of Evolutionary Relationships** Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships. (Patterns)	Students will ask questions about the patterns of evolution in a local species.	Asking questions about the anchoring phenomenon.	Video on the honeycreeper and the history on Hawaii 50 species and 17 remain The song of the last kauai o'o  Information on honeycreepers: A Climate Change Canary in the Coal Mine - The Endangered Hawaiian Honeycreepers | U.S. Geological Survey

Formative Assessment - What information are you collecting to know that they met the target?			
Honeycreeper family tree			

Formative Assessment - What information are you collecting to know that they met the target?			
Hands on simulation of natural selection (different beak shapes to pick up food) New beak evolution lab **MS-LS4-4**: **Natural Selection** Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment. (Cause and Effect)	Students will investigate the cause of changes in the environment on evolution of the species. Students will construct explanations for the cause of changes in the environment on evolution of the species.	This will connect back to the honeycreepers.	Battle of the Beaks (Marissa) Bird Beak Lab (Tina) Beak Lab #2 (Russ) Bird Beak Lab (tweezer lab)

Formative Assessment - What information are you collecting to know that they met the target?			
Galapagos Finches Day 2 and/or Honeycreepers with food sources. Adaptive Radiation Sample data **MS-LS4-6: Adaptation of Populations over Time** Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time. (Cause and Effect)	Students will use mathematical representations to construct explanations for the cause of evolution of traits in a population.	This will introduce environmental causes of change in a species. **C**laim **E**vidence **R**easoning	Adaptive Radiation Battle of Beaks before Sample Data Sample data Organize your evidence in a **C**laim **E**vidence **R**easoning poster on the whiteboard.  Christina has the worksheet if anyone needs a copy. Moth Simulation https://dlnr.hawaii.gov/wildlife/birds/

Summative Assessment What information are you collecting to know that they met the target?		Deer Mice Assessment Assessment	

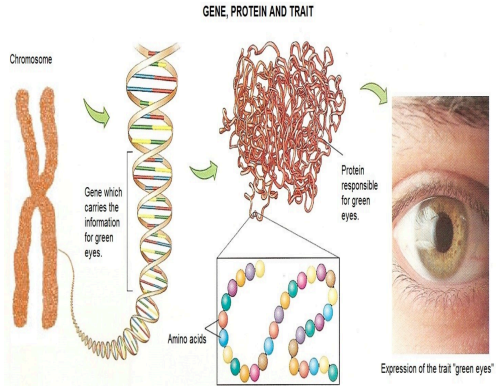
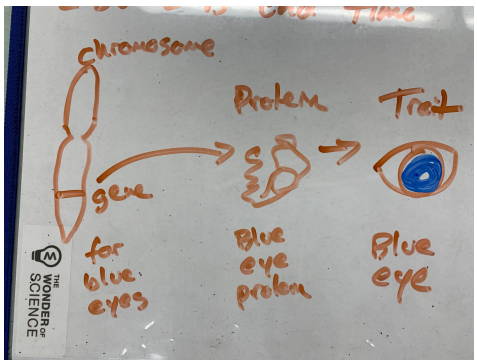
Bat Fossil Day 3 **MS-LS4-2: Anatomical Evidence of Evolutionary Relationships** Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships. (Patterns)	Students will analyze patterns in modern and extinct species to determine relatedness. Students will engage in argumentation to determine patterns of relatedness.	Students learn that you can use anatomical similarities to identify evolution patterns.	Bozeman Bat activity (students will compare bat fossils to the mystery) Asencios The Fossil Record Version 2- 2023
Summative Assessment What information are you collecting to know that they met the target?	Mammal X Summative Assessment		

Dogs, fish, humans, chicken whales etc. Day 4 **MS-LS4-3: Embryological Evidence of Common Ancestry** Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.	Students will analyze similarities and differences (patterns) in distantly related species.	This shows students that embryos can be used as additional evidence.	Gill slits, yolk-sac vocabulary ‘ Can you tell which one is the fish, human, and chicken during early embryonic development? (Tina) Answer Key for Embryonic Development (Tina) Evidence of Evolution Christina
Summative Assessment What information are you collecting to know that they met the target?		Gar Lungfish Lamprey Summative Assessment	

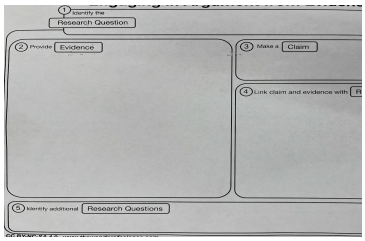
Kauai Honeycreeper extinctions Day 5 **MS-LS4-4**: **Natural Selection** Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment. (Cause and Effect)	Students will construct explanations for the cause of extinction of a local species.	We learn how the environment shapes the species. Students will read the article and make a cause and effect.	Theory of Evolution: How did Darwin co... Wave of Hawaiian Bird Extinctions Stresses the Islands' Conservation Crisis | Audubon - article Cause and Effect activity Biologists search for endangered Hawaiian Honeycreepers on Kauai A Climate Change Canary in the Coal Mine - The Endangered Hawaiian Honeycreepers | U.S. Geological Survey.
Formative Assessment - What information are you collecting to know that they met the target?			

How did the giraffe get its long neck? Day 6 **MS-LS4-4**: **Natural Selection** Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment. (Cause and Effect)	Students evaluate different explanations for the cause of the evolution of a species. (i.e. Larmarckian stretching, Darwinian selection,)		Russ Worksheet-will locate attach later. Video - Natural Selection Phet lab - Christina Natural Selection Worksheet 1 Where Should I Live? Objective: Students will be able to analysis and explain the benefits of environmental adaptations by obs
Formative Assessment - What information are you collecting to know that they met the target?			

Natural selection PhET Day 7 **MS-LS4-4**: **Natural Selection** Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment. (Cause and Effect)	Students will investigate the cause of changes in the environment on evolution of the species. Students will construct explanations for the cause of changes in the environment on evolution of the species.		Mini lesson Lesson 5 - Cause, Mechanisms and Effect — The Wonder of Science Natural selection PhET (rabbit lab -adaptation & selection) Worksheets Possible Worksheet 1 Possible Worksheet 2 (ask marissa for copy of worksheet 2, if you want it)
Summative Assessment What information are you collecting to know that they met the target?	Old Gecko Toes (this should be modified. Simplify/replace the data)		

Human traits (e.g. widow's peak, dimples, straight curly hair) Day 8 **MS-LS3-1: Mutations - Harmful, Beneficial or Neutral** Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.	Students will analyze and interpret patterns in classroom traits. Students will obtain and communicate information on the genes that cause those traits.	Students will look at traits. Why do we look the way we do? Think about why we have dominant and recessive genes to make the traits.	Activity/ class survey on dominant and recessive traits found in the Cells and Heredity Textbook.  
Formative Assessment - What information are you collecting to know that they met the target?			

Human traits (e.g. widow's peak, dimples, straight curly hair) Day 9 **MS-LS3-1: Mutations - Harmful, Beneficial or Neutral** Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.	Students will develop models (Punnett squares) to show inheritance of different traits. Students will develop chromosome models with genes (structures) to show inheritance of different traits. (function)* *include information on proteins	Students will practice punnett squares using dominant and recessive genes.	(Punnett squares) to show inheritance of different traits. Students will practice and complete an Oompa Lompa punnett square practice worksheet. (Russ' worksheet)
Summative Assessment What information are you collecting to know that they met the target?	Xolo Dogs Summative		

Mosquito genetic engineering Day 10 **MS-LS4-5: Artificial Selection** Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms. (Cause and Effect)	Students will gather and synthesize information about how humans have influenced (cause) the inheritance of genetic traits.	Back to the Honeycreeper ● Students realize the importance (benefits) of genetic engineering. Specifically the mosquito population on Kauai and how it will help with the endangered Honeycreeper species.	Mosquitos Genetics Hawaii More Mosquitos Organize your evidence in a **C**laim **E**vidence **R**easoning poster on the whiteboard. 
Formative Assessment - What information are you collecting to know that they met the target?			

Rainbow papaya Assessment Day 11 **MS-LS4-5: Artificial Selection** Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms. (Cause and Effect)	Students will gather and synthesize information about how humans have influenced (cause) the inheritance of genetic traits.	Connect them to	Assessment Artificial Selection Artificial selection and domestication | Na... Christina
Summative Assessment What information are you collecting to know that they met the target?		Rainbow Papaya Assessment	

Materials / Resources

Vocabulary

MS-LS3-1
Chromosomes
Genes
Proteins
Traits of organisms
Mutations
- Harmful
- Beneficial
- Neutral

Structure and Function

MS-LS4-2
Organisms
Fossils
Anatomical structures
- Similarities
- Differences

Modern organisms (e.g. skulls of modern crocodiles, skeletons of birds)
Fossil organisms (e.g. skulls of fossilized crocodiles, fossilized dinosaurs)
Evolutionary relationship
Patterns

MS-LS4-3
Embryos
Development
Anatomical structures
- Similarities
- Differences

Species
Patterns

MS-LS4-4
Natural selection
Traits
Organism
Population
Genetic variation
Survival
Reproduction
Environment
Cause and Effect

MS-LS4-5
Artificial selection (e.g. genetic modification, animal husbandry, gene therapy)
Organisms (plants and animals)
Inheritance
Desired traits
Technology
Cause and Effect

MS-LS4-6
Natural selection
Traits
Adaptation
Populations
Environmental conditions (e.g. climate, resource availability)
Cause and Effect

Mini Lessons

Causation Level 5 - Probability and Prediction Mini-Lesson
Causation Level 5 - Probability and Prediction Thinking Slides
Patterns Level 4 - Patterns in Data Mini-Lesson
Patterns Level 4 - Patterns in Data Thinking Slides
Patterns Level 6 - Causal Patterns
Patterns Level 6 - Causal Patterns Thinking Slides
Structure & Function Level 4 - Structures at Varying Scale
Structure & Function Level 4 - Structures at Varying Scale Thinking Slides

Graphic Organizers

Phenomena Observation Graphic Organizer
Questioning Graphic Organizer
Modeling Graphic Organizer
Planning an Investigation Organizer - Experimental
Planning an Investigation Organizer - Observational
Investigation Evidence Organizer
Engaging in Argumentation Organizer

Differentiation / Modifications

Phenomenon Worksheet

Back to Stage 1

◁ **MS-LS3-1 - Mutations - Harmful, Beneficial or Neutral**
◁ **MS-LS4-2 - Anatomical Evidence of Evolutionary Relationships**
◁ **MS-LS4-3 - Embryological Evidence of Common Ancestry**
◁ **MS-LS4-4 - Natural Selection**
◁ **MS-LS4-5 - Artificial Selection**
◁ **MS-LS4-6 - Adaptation of Populations over Time**
◁ **Local and Relevant**
◁ **Favorite**

Rainbow papaya - GMOs◁◁◁
Horse evolution ◁◁◁◁
Hawaiian hoary bat ◁◁◁◁
Ancient bat fossil◁◁
*Honeycreeper evolution ◁◁◁◁
Comparative anatomy (same number of bones in hand) ◁◁◁
Darwin and the finches ◁◁◁
Antibiotic megaplate◁◁
Whale Evolution ◁◁◁◁
Fossilized dinosaurs◁◁
Dinosaur evolution ◁◁◁
Lamarckian vs. Darwinian evolution (giraffe stretching their neck)◁◁◁
Climate change and the evolution of plants◁◁◁
Vestigial traits (e.g. wisdom teeth, appendix) ◁◁◁◁
Pea Plant - Mendel◁
Crispr and Jennifer Doudna - Hawaiian native◁
Genetic diseases ◁◁
- Colorblindness◁
- Tay-Sachs ◁
- Allergies◁

- Cystic fibrosis◁
- Trisomy 21 - Down Syndrome◁
- Sickle Cell Anemia◁

AIDS - genetic mutation◁◁
Cut out and organize embryos (whale vs human vs fish vs chicken) ◁◁
DNA family genetics (23 and me, ancestry.com, etc.)
Human evolution over time◁◁
Evolution of antibiotic resistance ◁◁
PTC tasting
Apple varieties to determine parentage
Kauai bird data ◁◁
*Genetically modified mosquitoes◁◁
Extinction of birds on Hawaiian islands◁◁

Screening Tools

Back to Stage 2

MS-LS3-1: Mutations - Harmful, Beneficial or Neutral

Evidence Statement

Assessment: Hairless Xolo (Google Template) (Key Template)

Reflections: *Maria, Tina, Marissa*

- The model section could be more clear of what the model should be and look like? (Punnet square?) ex: Give an example of breeding a Xolo and coated Xolo
- Include the term trait in prompt
- Reorganize to be Claim, Evidence, Reasoning for question #2
- Would be a great introduction lesson because kids love dogs or homework

	No	Partial	Yes
1. The assessment contains a **phenomenon** (science) or a **problem** (engineering)			**X**
2. The **prompts** match the Science and Engineering Practice (SEP) and engage students in sense making.		**X**	
3. The **stimuli** have multiple and sufficient information needed to utilize the SEP. (e.g. multiple data sets to analyze)			**X**
4. The **prompts** elicit observable understanding of the Disciplinary Core Idea (DCI).			**X**
5. The **prompts** explicitly mention the Crosscutting Concept (CCC).			**X**
6. The **prompts** include language (i.e. bullets) from grade appropriate progressions. (SEP)(DCI)(CCC)			**X**
7. The **graphic organizers** provide space for the observable features (e.g. 1, 2, 3...) in the evidence statement. (e.g. claim, evidence and reasoning)			**X**
8. The **entire assessment** contains information that is scientifically accurate and properly attributed. (e.g. don't make up data and include the source)			**X**
9. The **prompts** point in the direction of explaining a phenomenon (science) or designing a solution (engineering).			**X**
10. The **phenomenon** or **problem** is authentic, interesting, and requires students to figure something out.			**X**
11. The **phenomenon** or **problem** is novel to show the transfer of knowledge. (i.e. not in the unit)			**X**

Screening Tools

Back to Stage 2

MS-LS4-2 - Anatomical Evidence of Evolutionary Relationships

Evidence Statement

Assessment: A Fossilized Mammal X (Google Template) (Key Template)

Reflections: *Images and it was a real fossil. It gives students exposure to being a paleontologist. Looking at specific patterns of evidence is good. Different students would see different things. The discussion would be good, comparing to solve the mystery of the fossil. Giving students the idea that it is not about the right answer, it's the evidence that use to support your claim. Circle the order that is most like the mammal. You could limit the choices. Questions 3 and 4 are outside the scope of the standard but would probably be enjoyable for students.*

	No	Partial	Yes
1. The assessment contains a **phenomenon** (science) or a **problem** (engineering)			**X**
2. The **prompts** match the Science and Engineering Practice (SEP) and engage students in sense making.			**X**
3. The **stimuli** have multiple and sufficient information needed to utilize the SEP. (e.g. multiple data sets to analyze)			**X**
4. The **prompts** elicit observable understanding of the Disciplinary Core Idea (DCI).			**X**
5. The **prompts** explicitly mention the Crosscutting Concept (CCC).			**X**
6. The **prompts** include language (i.e. bullets) from grade appropriate progressions. (SEP)(DCI)(CCC)			**X**
7. The **graphic organizers** provide space for the observable features (e.g. 1, 2, 3...) in the evidence statement. (e.g. claim, evidence and reasoning)			**X**
8. The **entire assessment** contains information that is scientifically accurate and properly attributed. (e.g. don't make up data and include the source)			**X**
9. The **prompts** point in the direction of explaining a phenomenon (science) or designing a solution (engineering).			**X**
10. The **phenomenon** or **problem** is authentic, interesting, and requires students to figure something out.			**X**
11. The **phenomenon** or **problem** is novel to show the transfer of knowledge. (i.e. not in the unit)			**X**

Screening Tools

Back to Stage 2

MS-LS4-3 - Embryological Evidence of Common Ancestry

Evidence Statement

Assessment: Three Similar Species (Google Template) (Key Template)

Reflections: *Students may be confused reading the table. Perhaps you could add time. Fun to compare the embryos. Simple developmental images are nice. You can update your initial claim with more evidence. A Venn diagram might be a good way to compare embryological traits. Labeled embryos would be better for kids. Include more background information on the organisms/traits. (e.g. gill slits, tail, yolk sac. Include mammals losing characteristics (i.e. whale loses limbs but snakes have limbs). Include species that they are more familiar with. (e.g. chicken, dog, human, whale, fish)*

	No	Partial	Yes
1. The assessment contains a **phenomenon** (science) or a **problem** (engineering)			**X**
2. The **prompts** match the Science and Engineering Practice (SEP) and engage students in sense making.			**X**
3. The **stimuli** have multiple and sufficient information needed to utilize the SEP. (e.g. multiple data sets to analyze)			**X**
4. The **prompts** elicit observable understanding of the Disciplinary Core Idea (DCI).			**X**
5. The **prompts** explicitly mention the Crosscutting Concept (CCC).			**X**
6. The **prompts** include language (i.e. bullets) from grade appropriate progressions. (SEP)(DCI)(CCC)			**X**
7. The **graphic organizers** provide space for the observable features (e.g. 1, 2, 3...) in the evidence statement. (e.g. claim, evidence and reasoning)		**X**	
8. The **entire assessment** contains information that is scientifically accurate and properly attributed. (e.g. don't make up data and include the source)			**X**
9. The **prompts** point in the direction of explaining a phenomenon (science) or designing a solution (engineering).			**X**
10. The **phenomenon** or **problem** is authentic, interesting, and requires students to figure something out.		**X**	
11. The **phenomenon** or **problem** is novel to show the transfer of knowledge. (i.e. not in the unit)			

Screening Tools

Back to Stage 2

MS-LS4-4: Natural Selection

Evidence Statement

Assessment: Old Gecko Toes (Google Template) (Key Template)

Reflections: *Type Here*

	No	Partial	Yes
1. The assessment contains a **phenomenon** (science) or a **problem** (engineering)			**X**
2. The **prompts** match the Science and Engineering Practice (SEP) and engage students in sense making.			**X**
3. The **stimuli** have multiple and sufficient information needed to utilize the SEP. (e.g. multiple data sets to analyze)			**X**
4. The **prompts** elicit observable understanding of the Disciplinary Core Idea (DCI).			**X**
5. The **prompts** explicitly mention the Crosscutting Concept (CCC).			**X**
6. The **prompts** include language (i.e. bullets) from grade appropriate progressions. (SEP)(DCI)(CCC)			**X**
7. The **graphic organizers** provide space for the observable features (e.g. 1, 2, 3...) in the evidence statement. (e.g. claim, evidence and reasoning)			**X**
8. The **entire assessment** contains information that is scientifically accurate and properly attributed. (e.g. don't make up data and include the source)			**X**
9. The **prompts** point in the direction of explaining a phenomenon (science) or designing a solution (engineering).			**X**
10. The **phenomenon** or **problem** is authentic, interesting, and requires students to figure something out.			**X**
11. The **phenomenon** or **problem** is novel to show the transfer of knowledge. (i.e. not in the unit)			**X**

Screening Tools

Back to Stage 2

MS-LS4-5: Artificial Selection

Evidence Statement

Assessment: The Story of the Rainbow Papaya (Google Template) (Key Template)

Reflections: Maria, Marissa, Tina

- *Partial - did not have Anti-Rainbow Papaya Source*
- *IDK what crosscutting concept*
-

	No	Partial	Yes
1. The assessment contains a **phenomenon** (science) or a **problem** (engineering)			x
2. The **prompts** match the Science and Engineering Practice (SEP) and engage students in sense making.		x	
3. The **stimuli** have multiple and sufficient information needed to utilize the SEP. (e.g. multiple data sets to analyze)		x	
4. The **prompts** elicit observable understanding of the Disciplinary Core Idea (DCI).			x
5. The **prompts** explicitly mention the Crosscutting Concept (CCC).			x
6. The **prompts** include language (i.e. bullets) from grade appropriate progressions. (SEP)(DCI)(CCC)			x
7. The **graphic organizers** provide space for the observable features (e.g. 1, 2, 3...) in the evidence statement. (e.g. claim, evidence and reasoning)			x
8. The **entire assessment** contains information that is scientifically accurate and properly attributed. (e.g. don't make up data and include the source)			x
9. The **prompts** point in the direction of explaining a phenomenon (science) or designing a solution (engineering).			x
10. The **phenomenon** or **problem** is authentic, interesting, and requires students to figure something out.			x
11. The **phenomenon** or **problem** is novel to show the transfer of knowledge. (i.e. not in the unit)			x

Screening Tools

Back to Stage 2

MS-LS4-6: Adaptation of Populations over Time

Evidence Statement

Assessment: Nebraska Deer Mouse (Google Template) (Key Template)

Reflections: *Good evidence. The investigation with controls was good. Good visuals. Lose Figure 3. Try to find local phenomena with a data set. Mini-lesson on Mechanism. Probability. Extinction.*

	No	Partial	Yes
1. The assessment contains a **phenomenon** (science) or a **problem** (engineering)			**X**
2. The **prompts** match the Science and Engineering Practice (SEP) and engage students in sense making.			**X**
3. The **stimuli** have multiple and sufficient information needed to utilize the SEP. (e.g. multiple data sets to analyze)			**X**
4. The **prompts** elicit observable understanding of the Disciplinary Core Idea (DCI).			**X**
5. The **prompts** explicitly mention the Crosscutting Concept (CCC).			**X**
6. The **prompts** include language (i.e. bullets) from grade appropriate progressions. (SEP)(DCI)(CCC)		**X**	
7. The **graphic organizers** provide space for the observable features (e.g. 1, 2, 3...) in the evidence statement. (e.g. claim, evidence and reasoning)		**X**	
8. The **entire assessment** contains information that is scientifically accurate and properly attributed. (e.g. don't make up data and include the source)			**X**
9. The **prompts** point in the direction of explaining a phenomenon (science) or designing a solution (engineering).			**X**
10. The **phenomenon** or **problem** is authentic, interesting, and requires students to figure something out.			**X**
11. The **phenomenon** or **problem** is novel to show the transfer of knowledge. (i.e. not in the unit)			**X**

https://sciencelessonsthatrock.com/teaching-natural-selection-and-evolution-html/