Grade 1 Science

Unit 2: Life Science: How are parents and offspring the same and different?

Timeframe: 6 weeks

Stage 1 – Outcomes

Performance Expectation(s):

1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. [Clarification Statement: Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is not exactly the same.] [Assessment Boundary: Assessment does not include inheritance or animals that undergo metamorphosis or hybrids.]

Essential Learning Outcomes: What essential Illinois Learning Standards will be ASSESSED in this unit?

SEP	DCI	CCC
SEP 1-LS3-1: Constructing Explanations and Designing Solutions: Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.	LS3.A: Inheritance of Traits: Young animals are very much, but not exactly, like their parents. Plants also are very much, but not exactly, like their parents. LS3.B: Variation of Traits Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways.	1-LS1-2/1-LS3-1: Patterns: Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

English Language Development Standards (ELD)

- *Standard 4: English language learners communicate information, ideas and concepts necessary for academic success in the content area of Science

Content Specific Standards –Language Arts	21st Century Learner Standards (AASL)
• RI.1.1: *Ask and answer questions about key details in a text. • RI.1.10: *With prompting and support, read informational texts appropriately complex for grade 1. • RI.1.4: *Ask and answer questions to help determine or clarify the meaning of words and phrases in a text.	• 1.1.1: *Follow an inquiry- based process in seeking knowledge in curricular subjects, and make the real- world connection for using this process in own life. • 1.1.9: *Collaborate with others to broaden and deepen understanding. • 2.1.5: *Collaborate with others to exchange ideas, develop new understandings, make decisions, and solve problems. • 3.2.3: *Demonstrate teamwork by working productively with others
Essential Understandings: Students will understand that…	**Driving Question:**

Young plants and animals are alike, but also different. Las plantas y animales jóvenes son iguales, pero también diferentes.	How are parents and offspring the same and different? ¿Cómo son los padres y la prole igual y diferente?
Students will know… (vocabulary) • Heredity / Herencia • Offspring / Descendencia • Parents / Padres • Traits / Rasgos • Inherited traits / Rasgosheredados • Acquired traits / Rasgosadquiridos • Inherit / Heredar • Compare / Comparar • Contrast / Contraste • Similar / Similar • Different / Diferente • Variation / Variación	**Students will be able to… (standards in "I Can…" language** I can make observations that young animals and plants are very much alike, but not exactly, like their parents. (1-LS3-1, Bands 1-3) Puedo hacer observaciones de que los animales y plantas jóvenes son muy parecidos, pero no exactamente, al igual que sus padres. (1 - LS3 - 1, secciones 1 - 3)

Stage 2 – Assessment and Evidence

Assessments:

Who Do I Belong To? (Band 1) Are You My Mother (Band 2) Who's Your Plant Parent (Band 3)

Create an Animal! (Conclusion): Based on two pictures of adult dogs, students will create a picture of their offspring incorporating the parents traits.

Assessment Criteria:

I can make observations that young animals and plants are very much alike, but not exactly, like their parents. (1-LS3-1, Bands 1-3)

Puedo hacer observaciones de que los animales y plantas jóvenes son muy parecidos, pero no exactamente, al igual que sus padres. (1 - LS3 - 1, secciones 1 - 3)

Stage 3 – Suggested Learning Plan

Band	Vocabulary	Checklist of Activities	Materials	Assessment	Timeframe
Anchoring Event: Who Do I Belong To? Driving Question: How are adults and offspring the same and different? Translate	Driving question	Anchoring Event: How do I belong to	• Unit 1 PowerPoint: Who Do I Belong To? (slides 2-3) • My Life Science Journal: Heredity p. 1	Who Do I Belong To? Observation	Lesson 1 20-30 minutes per lesson

Band 1: How do parents look the same but also different than their children? Translate
I can make observations that young animals and plants are very much alike, but not exactly, like their parents. (1-LS3-1)
	Heredity
	Offspring
	Parents Traits
	Inherited traits
	Acquired traits
		• Shared Reading: Heredity
		• Investigating Heredity (Discovery Education)
		• Acquired vs. Inherited Traits Sort
		• This is Our Class - Inventory of Traits
			• My Life Science Journal: Heredity pp. 2-6
			• Acquired vs. Inherited Traits Sort
			  ○ Trait cards
			  ○ Glue/scissors
			• Investigating Heredity
			  ○ projector
			• This is Our Class
			  ○ My Own Traits Survey
			  ○ Chart paper
					Lessons 2 - 5 20-30 minutes per lesson

Band 2: How do adult animals look the same and different from their offspring? Translate
I can make observations that young animals and plants are very
	Inherit
	Compare
	Contrast
	Similar
	Different
	Variation
		• Shared Reading: Inheritance
		• Compare / Contrast
		• Are You My Mother?
		• Bugs!
			• My Life Science Journal: Heredity pp. 7-11
			• Compare / Contrast
			  ○ Unit 1 PowerPoint: Compare / Contrast (slides 4-5)
			• Are You My Mother?
			  ○ Animal pictures
				Are You My Mother?
				Bugs!
					Lessons 6 - 10 20-30 minutes per lesson

much alike, but not exactly, like their parents. (1-LS3-1)			• Bugs!
			  ○ chart paper
			  ○ crayons/markers		

Band 3: How do adult plants look the same but different from their offspring? Translate I can make observations that young animals and plants are very much alike, but not exactly, like their parents. (1-LS3-1)	Diagram	• Parts of a Plant (Discovery Education)
		• Parts of a Plant Diagram
		• Who's Your Plant Parent?
		• From Seedling to Adult
			• My Life Science Journal: Heredity pp. 12-14
			• Parts of a Plant
			  ○ projector
			• Seedling to Adult
			  ○ soil
			  ○ plastic cup
			  ○ seeds
				Who's Your Plant Parent?	Lessons 11 - 13 20-30 minutes per lesson

Conclusion How are parents and offspring the same and different? Translate	Heredity Traits Similar Different	Create An Animal!	• My Life Science Journal: Heredity pp. 15
			• Create An Animal!
			  ○ Crayons
			  ○ Dog pictures
				Create An Animal!	Lesson 14 20-30 minutes per lesson

Storyline Objective: If our students understood that young plants and animals are very much, but not exactly, like their parents they would be able to reason that the same kind of plant and animal are recognizable as similar and different because of natural patterns in the world.

Connection: This unit is the introduction to first grade science. This unit will introduce the concept of heredity and inheritance which is an extension of the kindergarten standards that covers living and nonliving things. Students will continue their learning of living things by investigating why parents and offspring look similar but also different.

STEM Challenge: There is not a specific STEM Challenge for this quarter. Students will be introduced to the Engineering Design Process during this unit.

Teacher Guide Information: The following teacher guide should be used to facilitate discussion throughout the implementation process in order to support study discovery and guide their line of inquiry. However this guide is intended as a support to teacher planning and implementation (not as a script) and may be used only as a reference as teachers grow more comfortable leading their students in asking questions to guide the storyline.

Band	Teacher Dialogue Box

Anchoring Event: Who Do I Belong To?
Driving Question: How are adults and offspring the same and different?
Translate
	During the introduction, students will be exposed to the Anchoring Event: Who Do I Belong To? Lesson 1:
	
	• Unit 1 PowerPoint: Who Do I Belong To? (slides 2-3)
	• Slide 1: What do you notice about these two pictures? What's the same? What's different?
	  ○ Give students time to think.
	  ○ Partner Talk. Encourage students to actively listen to their partner. Students need to listen to others and try to understand them in order to contribute to the discussion. Your ultimate goal involves helping students to share ideas and reasoning. It is not enough to hear a series of students giving their own unconnected thoughts one by one. Students need to hear and understand the ideas of others.
	  ○ Helpful prompts for students: "Say more" and "So, are you saying…"
	• Students share things they noticed.
	  ○ To create a rich discussion, ask students to agree or disagree with each other. "Do you agree or disagree? Why?"
	  ○ Ask students to add on to what other students have shared. "Who can add to _____'s idea?"
	• Make a list of all the things students noticed.
	• Guide students to talk about how these two people look to be mother and daughter.
	• Repeat steps for slide 2: What do you notice about the people in these two pictures? Do you think they know each other?
	• Teacher-guided whole group discussion: driving question (teacher gives driving question): How are adults and offspring (interchange with "their children") the same and different?
	  ○ Define driving question (focus for the entire unit)
	  ○ Introduce science board
	• Who Do I Belong To: My Life Science Journal: Heredity, p.1. Students match the children to their parent.
	• Guide students to ask Band 1 question: Why do parents look the same but different from their children?

Band 1: How do parents look the same but different from their children? Translate I can make observations that young	Purpose: Students will understand that human parents and offspring have traits that are the same but different. Students will also understand the difference between traits that are inherited and traits that are acquired. This unit focuses mainly on acquired traits. Introduction: Students will further investigate what traits human parents give to their children. Vocabulary: Heredity, Offspring, Parents, Trait, Inherited traits, Acquired traits Investigation: This is Our Class: Inventory of Traits Lesson 2: • Shared Reading: My Life Science Journal: Heredity p.2. Teacher reads while student follow along. ○ Heredity is when certain traits are passed from the parents to the children. Traits are characteristics such as eye color, height, and hair color in humans. All living things like plants and animals pass on traits to their offspring. Offspring is the name for an adult's child. • Discuss and clarify vocabulary terms. Create a list of vocabulary words for the unit. • Students complete Glossary with new vocabulary terms. My Life Science Journal: Heredity - Glossary, p.16.

animals and plants are very much alike, but not exactly, like their parents. (1-LS3-1)	• Complete Traits Chart in My Life Science Journal: Heredity, p.3.
	
	Lesson 3:
	
	• Video: Investigating Heredity (Discovery Education). Watch three segments. After each segment stop the video for Partner Talk and answer the question. Partner Talk should last no more than a minute or two.
	  ○ Heredity and Traits: What new information did you learn about heredity?
	  ○ Acquired Traits: What are acquired traits? What acquired trait do you have from your parents?
	  ○ Inherited Traits: What are inherited traits? What inherited traits do you have from your parents?
	
	• Teacher-guided whole group discussion: Why do parents look the same as their parents? Do you children look exactly like their parents? Why?
	• Complete Acquired vs. Inherited Traits Sort in My Life Science Journal: Heredity, p.4.
	  ○ Teacher will need to print out cards for students to sort.
	
	Lesson 4-5:
	
	• This is Our Class - Inventory of Traits
	• My Own Traits Survey in My Life Science Journal: Heredity, p.5. Student complete the inventory of their own traits.
	• Teacher creates This is Our Class: Data Table (example shown below). Students will in their own This is Our Class: Data Table in My Life Science Journal: Heredity, p.6. Example:
	List of traits Yes No
	Curly hair 5 10
	Freckles 2 13
	Blue eyes 11 4
	
	• Teacher creates a class bar graph to show how many students have each trait in their class.
	• Teacher-guided whole group discussion: Why do we look different from each other? How does our classroom bar graph help us understand traits?
	• Review Band 1 question: Why do parents look the same but different from their children?
	  ○ Review Band 1 activities that helped to answer this question.
	• Teacher guides students to ask more questions about traits.
	  ○ Humans are one category of living things. What are other types of living things?
	• Band 2 question: How do adult animals look the same but different from their offspring?

Band 2: How do adult animals look the same but different from their offspring? Translate I can make observations that young animals and plants are very much alike, but not exactly, like their parents. (1-LS3-1)	Purpose: Students will understand that animal parents and offspring have traits that are the same but different. Introduction: Students will further investigate what traits animal parents give to their children. Vocabulary: Inherit, Compare, Contrast, Similar, Different, Variation Investigation: Are You My Mother?, Bugs! Lessons 6-7: • Shared Reading: Inheritance in My Life Science Journal: Heredity, p.7. Teacher reads while students follow along. o Animals inherit traits from their parents. Many traits of baby animals are similar to their adult parents such as skin, fur color, face shape, and eye size. You can see this in all animals, from mammals to reptiles to amphibians to birds to fish. Offspring can also have different traits. These are not the same of the parent. • Discuss and clarify vocabulary terms. Create a list of vocabulary words for the unit. • Students complete Glossary with new vocabulary terms. My Life Science Journal: Heredity - Glossary, p.16. • Compare / Contrast: My Life Science Journal: Heredity, p.8 o Introduce terms compare and contrast o Show Unit 2 PowerPoint: Compare / Contrast (slides 4-5) o Slide 3: Teacher-guided whole group discussion: Teacher leads discussion on how the animals on slide 3 are similar and different. Teacher completes a compare and contrast chart. o Slide 4: Partner Talk: What traits are similar and different from this adult to offspring. Encourage students to listen and respond to partner. o Complete Compare / Contrast in My Life Science Journal: Heredity, p.8. Lesson 8: • Are You My Mother: My Life Science Journal: Heredity p. 9 o Small Group Work (2-3): Give each group and envelope of animal pictures. o Explain directions. Each group will work together to match the correct adult with offspring. Encourage students to listen and collaborate with each other. o Teacher may give students sentence stems such as: “Why do you think that?” or “I agree/disagree because…”. o Teacher circulates and occasionally interacting with students who need support or guidance. o Set a time limit for this work. o Each student picks one set of animals to glue into their journal. o Teacher-guided whole group discussion: Were you able to match the adults to their offspring? What traits helped? • Complete Are You My Mother: My Life Science Journal: Heredity p. 9 Lesson 9-10

	• Teachers discuss with the students that parents, whether it be human parents, animal parents pass traits to their offspring. The baby animal looks similar to its parents, but not exactly the same. • Partner Talk: o In what ways can offspring look like their parents? (Same color hair or color skin, same number of legs, eyes, etc.) o When parents have more than one offspring, do they look similar or exactly the same? (They'll probably look similar but not exactly the same. They might look alike with the hair color and eye color, number of arms and legs. They might look different because they have different hair color, length of hair. o If you have a brother or sister, do you look exactly like them? (2 eyes and 10 fingers, but we look different because of [answers will vary based on students features].) • Small Group Work: Bugs! My Life Science Journal: Heredity p. 10-11. o Explain to students that they will create a bug at their table that looks similar to the bug parents. o Teacher model an example before going into Small Group Work. o Every table group creates their own bug. The bug may not look exactly like its mom or dad. It gets traits from both. o As a class, students observe the different traits of the parent bug. The teacher creates an anchor chart or table of all the trait possibilities and make it visible to the students while they create their own bug. o Observe the features on the mom and dad bugs and discuss their traits with your group. o As a group, decide which traits your bug will get from its parents. o Create your bug and complete Bugs! My Life Science Journal: Heredity p. 10-11. (optional: teacher may also give each group chart paper to draw their bug. o Go on a gallery walk and see all the different bugs that were created from the same parents. o Discuss: Which traits did your bug get from the mom? Which traits did your bug get from the dad? o When you observe all the bugs in the class, what do you notice? Some of the bugs look almost exactly alike. Some of the bugs look different from each other and only have a few traits in common. o Explain to students that they were all choosing from the same traits, but that each group created a different bug. This is a great time to show students how different variations of the traits can be seen with the same set of parents. o We chose the different traits for our bugs, but do you think that parents get to choose the traits of their children? Why or why not? • Review Band 2 question: How do adult animals look the same but different from their offspring? o Review Band 2 activities that helped to answer this question. • Teacher guides students to ask more questions about traits. o Humans and animals are two categories of living things. What else is considered a living thing? • Band 3 question: How do adult plants look the same but different from their offspring?
Band 3: How do adult plants	Purpose: Students will understand that plant parents and offspring have traits that are the same but different. Introduction: Students will further investigate what traits plant parents give to their children. Students will also review what traits a plant has

look the same but different from their offspring? Translate I can make observations that young animals and plants are very much alike, but not exactly, like their parents. (1-LS3-1)	(parts of a plant). Vocabulary: Diagram Investigation: Who's Your Plant Parent, Seedling to Adult Lesson 11: • Video: Parts of a Plant (Video Segment - Discovery Education). Watch segment Part of a Plant. o Teacher-guided group discussion: How does knowing the parts of the plant help us with our investigation about traits? o Teacher helps makes connection between parts of a plant and possible variation of traits. • Complete Part of a Plant Diagram in My Life Science Journal: Heredity p. 12. Lesson 12: • After learning the parts of the plants, students will begin Seedling to Adult investigation to help with the remaining lessons in the unit. • Seedling to Adult o Materials: soil, marigold seeds, radish seeds, plastic cups o Students will plant either the marigold or radish seed. Be sure to keep these in a different location or labeled. o Students will keep track each day the progress of their plant in Seedling to Adult: My Life Science Journal: Heredity p. 13 Lesson 13: • Review Band 3 question: How do adult plants look the same but different from their offspring? Discuss previous lesson learning regarding parts of a plant. • Small Group Work (2-3): Give each group and envelope of adult marigold and radish plant pictures. o They will be given a photograph and asked to find that baby plant by looking at the leaves, vines, and other characteristics. o Once the plant is found each student will compare those seedlings to photographs of the adult plants and record how the two plants are similar on their Who's Your Plant Parent: My Life Science Journal: Heredity p. 14 o They can repeat this for the other plants if time allows. o Teacher may give students sentence stems such as: "Why do you think that?" or "I agree/disagree because…". o Teacher circulates and occasionally interacting with students who need support or guidance. o Set a time limit for this work. o Each student picks one set of plants to glue into their journal. o Teacher-guided whole group discussion: Were you able to match the adults to their offspring? What traits helped? o Was it harder to match plants than animals? Why do you think that?

	• Review Band 3 question: How do adult plants look the same but different from their offspring? ○ Review Band 3 activities that helped to answer this question. • Teacher guides students to ask about what they have noticed about how humans, animals, and plants changed from offspring to adults.

Conclusion
How are parents and offspring the same and different?
Translate
	At the conclusion of this unit students have investigated and learned about how adult living things look similar but also different than their offspring. This is called heredity. Traits are characteristics that are passed on from parents to children which causes children to look similar, however, different in many ways.
	Lesson 14:
	
	• Performance Assessment: Create an Animal: My Life Science Journal: Heredity p. 15
	  ○ Give each student two pictures of adult dogs (mom and dad dog).
	  ○ Students will then draw picture of what their offspring will look like.
	  ○ Students will list the traits they have used in their drawing.