Variations in Plants and Animals Lesson 1c: Variations in Traits of Animals

Grade 1	Length of lesson: 43 minutes	Placement of lesson in unit: 1c of 5 lessons on variations in plants and animals					
Unit central question: Ho of the same kind help them seeds)?	w do differences (variations) in plants or animal a survive so they can produce young (babies or	Lesson focus questions: How are birds alike and different? What differences in a trait can they have?					
Main learning goal: Plant called <i>traits</i> . Living things	s or animals of the same group share similar fea of the same kind also have variations in traits th	tures or characteristics that we can recognize. These share characteristics are nat help them survive.					
Science content storyline: Certain animals or plants can be grouped together because they share many characteristics or traits. We group them together because they're more alike than different. For example, we know a bird is a bird because it has two legs, two feet, feathers, wings, a tail, and a beak. Even though birds have the same basic traits, they don't look exactly alike. Their traits can vary from individual to individual. Birds show differences (variations) in many traits that we can observe and describe. Some of these trait variations help individual birds survive in their environment.							
Ideal student response to have wings, a beak, two leg some have blue feathers, an we look carefully, we can so because they help a bird su	Ideal student response to the focus questions: Birds can be grouped together because they have similar characteristics or traits. For example, all birds have wings, a beak, two legs, two feet, and feathers. But not all birds are alike. Some have webbed feet, and some have claws. Some have black feathers, some have blue feathers, and some feathers with a bunch of different colors. Some birds have long, pointed beaks, and some have shorter, curved beaks. If we look carefully, we can see how birds are alike and different, and we can describe those differences or variations. Some of those variations are important because they help a bird survive.						
Preparation							
Preparation Materials Needed A • Student notebooks • • Chart paper and markers • • Laminated bird photos (from lesson 1a) (1 set per table group; 2 different photos per pair) • Student Handouts • • 1.7 Bird Traits (1 per student) •		 Ahead of Time Review the content background document and Common Student Ideas about Variations in Plants and Animals. Optional: Find videos of birds in action to share at the end of the lesson. ELL support: Meet with ELL students in advance and introduce them to the lesson content, structure, materials, and activities so they know what's expected of them and can participate more fully in the lesson. Orient students to the handout and let them practice selecting a trait and writing about two variations. Identify words in the lesson plan to review with students in advances in advance of the selection. 					

Lesson 1c General Outline

Time	Phase of Lesson	How the Science Content Storyline Develops
5 min	Link to previous lessons: The teacher engages students in reviewing key ideas from previous lessons. Then the teacher reviews the unit central question, <i>How do differences (variations)</i> <i>in plants or animals of the same kind help them survive so they can</i> <i>produce young (babies or seeds)?</i>	• People, birds, and plants share many traits within their own groups. For example, birds share traits like beaks, legs, eyes, wings, feathers, and feet. Plants also share many traits, such as leaves, stems, roots, seeds, and flowers.
1 min	Lesson focus questions: The teacher introduces the focus questions, <i>How are birds alike and different? What differences in a trait can they have?</i>	
10 min	Setup for activity: Students compare photographs of two birds and name the traits they share that identify them as birds. Students also consider whether the birds show any differences in these traits. Then the teacher introduces the term <i>variations</i> to describe differences in shared traits.	• Birds share many basic traits, such as feathers, wings, tails, beaks, and feet. Another trait that most birds share is the ability to fly. These traits help us know which animals are birds. Even though birds share many traits, they don't look exactly alike. They may have differences in the same trait. For example, different birds can have different feather colors. These differences in traits are called <i>variations</i> .
10 min	Activity: Working in pairs, students examine photographs of two birds and identify differences (variations) in their traits. Then each pair shares their observations with another pair of students. Afterward, the teacher records on a chart the trait variations students observed.	• Birds share many basic traits, but they aren't exactly the same. They also have differences in many traits, such as differences in size, shape, and color, the size and shape of beaks, and the type of feet. These differences are called <i>variations</i> . Even though birds have the same basic characteristics or traits, they may also have variations in traits that can be observed and described.
8 min	Follow-up to activity: The teacher review the words <i>traits</i> and <i>variations</i> . Then students consider how certain traits and variations help birds survive in their environment.	• Birds share many basic traits, but they also have differences in traits called <i>variations</i> . These variations can help individual birds survive in their environment.
8 min	Synthesize/summarize today's lesson: Students share their ideas for answering the focus questions. Then they write about one bird trait and two variations of the trait that they observed during their investigation.	• Animals of the same kind share many characteristics or traits that make them more alike than different. But they don't look exactly alike. Their traits can vary from individual to individual. These trait variations can help individual organisms survive in their environment.
1 min	Link to next lesson: The teacher announces that in the next lesson, students will explore more similarities in plant traits and consider how plants are different even though they share similar traits.	

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
5 min	 Link to Previous Lessons Synopsis: The teacher engages students in reviewing key ideas from previous lessons. Then the teacher reviews the unit central question, <i>How do</i> <i>differences (variations) in</i> <i>plants and animals of the</i> <i>same kind help them</i> <i>survive so they can</i> <i>produce young (babies or</i> <i>seeds)?</i> Main science idea(s): People, birds, and plants share many traits within their own groups. For example, birds share traits like beaks, legs, eyes, wings, feathers, and feet. Plants also share many traits, such as leaves, stems, roots, seeds, and flowers. 	Summarize key science ideas.	 Show slides 1 and 2. In our last two lessons, we explored how birds are alike and how plants are alike. We also learned a new word that scientists use to describe the characteristics that living things of the same kind share. Who can tell me what that word is? What did we discover in our first lesson about how birds are alike? What traits do they share? ELL support: Highlight the words <i>trait</i>, <i>characteristic</i>, and <i>alike</i> throughout this review. NOTE TO TEACHER: Encourage students to respond in complete sentences and to use the word trait. How are plants alike? What traits do they share? 	Traits! One trait they share is feathers. They all have beaks. Birds have wings. They have tails. They have tails. They have legs and feet. One trait they share is leaves. Plants have flowers. They all have stems. They have roots. Plants have seeds.	

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		Highlight key science ideas and focus question throughout.	 Show slide 3. Plants or animals of the same kind share many of the same traits. Traits help us know what something is, like a bird or a plant or a person. In the next two lessons, we'll look at some of the ways that living things of the same kind are different even though they share many of the same traits. We'll also think about whether these differences help them survive so they can have babies. Show slide 4. What we discover will help us answer our unit central question, <i>How do differences (variations) in plants or animals of the same kind help them survive so they can produce young (babies or seeds)?</i> 		
1 min	Lesson Focus Questions Synopsis: The teacher introduces the focus questions, <i>How are birds</i> <i>alike and different? What</i> <i>differences in a trait can</i> <i>they have?</i>	Set the purpose with a <u>focus</u> <u>question</u> or goal statement.	 Show slide 5. The focus questions we'll think about today are <i>How are birds alike and different? What differences in a trait can they have?</i> Write these questions in your science notebooks and draw a box around them. NOTE TO TEACHER: Write the focus questions 		

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			 on the board for students to refer to throughout the lesson. In an earlier lesson, we explored how birds are alike. Today we'll explore how they're alike and how they're different. ELL support: Ask ELL students to describe birds they've seen on their way to school or in their neighborhood. Drawing on their experiences can strengthen their confidence, their epistemic authority, and their engagement in classroom discussion. 		
10 min	Setup for Activity Synopsis: Students compare photographs of two birds and name the traits they share that identify them as birds. Students also consider whether the birds show any differences in these traits. Then the teacher introduces the term variations to describe differences in shared traits. Main science idea(s): • Birds share many basic traits, such as feathers, wings, tails, beaks, and	Ask questions to elicit student ideas and predictions.	 Show slide 6. Let's look at some pictures of our feathered friends again and think about what makes them alike. What do we call the features or characteristics that all birds share? NOTE TO TEACHER: Display two laminated bird photographs from lesson 1a. Make sure the birds have at least one obvious trait variation, such as different-colored feathers or different-shaped beaks. How do we know that the living things in these photos are birds? What traits do they share that make them alike or similar? NOTE TO TEACHER: Create a two-column table on chart paper based on the model below 	Traits. They both have wings.	Can you use the word <i>trait</i> in your

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Time Pha H Co	ase of Lesson and Iow the Science ontent Storyline Develops	STeLLA Strategy	Teacher Talk and Questions			Anticipated Student Responses	Possible Probe/Challenge Questions
feet mos abil trait whi Eve man	feet. Another trait that most birds share is the ability to fly. These traits help us know which animals are birds. Even though birds share many traits, they don't		Use the heading "Traits of Birds" for the first column and "How Birds are Different" for the second column. As students identify traits that birds have in common, such as wings, beaks, legs, feet, feathers, eyes, and tails, list them in the left- hand column.		One trait the birds have is wings. They both have beaks.	sentence?	
look may the exan can feat diffe calle	k exactly alike. They y have differences in same trait. For mple, different birds have different ther colors. These Ferences in traits are led <i>variations</i> .		Traits of BirdsWingsFeathersBeaksTailsHow do we kn chart are bird tchart are bird tSo even though the same traits	How Birds Are Different where the same? h both of these birds have many they aren't exactly alike, are the	ur birds of nev?	They both have feathers. They both have legs and feet. They both have eyes. Plants don't have beaks! The plants we saw in the photos last time didn't have any beaks. Plants don't have feathers or wings! No.	How do you know that?

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		Highlight key science ideas and focus question throughout.	 When you look closely at these birds, what differences do you notice? Show slide 7. Scientists use the word <i>variations</i> when they talk about differences in the traits of animals or plants of the same kind. So let's record on our class chart the differences or variations we observed between the birds in our photos. NOTE TO TEACHER: <i>Add the word</i> variations 	The woodpecker has a pointy beak, and the duck has a curved beak. The woodpecker has black feathers and a yellow spot on top of its head, and the duck has feathers with white, brown, and green colors.	If all birds have beaks, why don't they all have pointy or curved beaks? If all birds have feathers, why don't they all have the same colors?

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		Make explicit links between science ideas and activities before the activity.	to the word wall for students to refer to throughout the unit. On the class chart, add the heading "Variations in Bird Traits" in parentheses in the second column. Then record the variations in bird traits that students observed. Next, you'll pair up with a partner and explore other ways that birds with the same trait can be different from one another. Another way of saying this is that you'll explore variations in the traits of birds. NOTE TO TEACHER: Have students pair up with an elbow partner and form a table group with another pair of students. Then distribute the laminated bird photographs from lesson 1a to each table group. Each student should have a different bird photo so that all four birds are represented in the group. Students are likely to observe more trait differences if they work in pairs, so have pairs compare two bird photos before they compare all four bird photos in their table group.		
10 min	Activity Synopsis: Working in pairs, students examine photographs of two birds and identify differences (variations) in their traits. Then each pair shares their observations with another pair of students.	Make explicit links between science ideas and activities during the activity. Engage students	 Show slide 8. Turn and Talk: These bird photos should look familiar, since you used them in our first lesson to find the traits that birds share. But now you'll be looking for <i>differences</i> in their traits! First, I want you and your partner to look at your two bird photos and talk about how the birds are different from each other. What variations do they 		

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	Afterward, the teacher records on a chart the trait variations students observed.	in analyzing and interpreting data and observations.	have for the same traits? Write these variations in your science notebooks and be ready to share them with the other pair of students in your table group.		
	 Main science idea(s): Birds share many basic traits, but they aren't exactly the same. They also have differences in many traits, such as differences in size, shape, and color, the size and shape of beaks, and the type of feet. These differences are called <i>variations</i>. Even though birds have the same basic characteristics or traits, they may also have variations in traits that can be observed and described. 		For example, even though both birds have beaks, their beaks may look different. One bird may have a small, pointy beak, and the other bird may have a big, curved beak. NOTE TO TEACHER: As pairs share the trait variations they observe in both birds, circulate around the room and remind students to focus on the traits they've identified so far. Encourage them to refer to the traits and trait variations on the class chart. Show slide 9. Now that you and your partner have listed the differences in traits you noticed when you compared your birds, I'd like you to share your pictures and observations with the other pair of students in your group. Tell them about the differences or variations you noticed in the birds' traits. NOTE TO TEACHER: As groups share their findings, circulate from group to group and listen carefully to see whether students use the words trait and variation in their descriptions.		

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			 the differences in bird traits that you observed? First, tell us the trait you looked at and then tell us how that trait was different in your birds. Try to use the words <i>trait</i> and <i>variation</i> in your descriptions. NOTE TO TEACHER: <i>If students mention new bird traits (e.g., color, shape, or size of a body part) add them to the left-hand column on the class chart. As students share the trait variations they observed, record them on the right-hand side of the class chart. Many trait variations relate to the color, shape, or size of a specific body part.</i> ELL support: On the word wall, post adjectives that students use to describe different traits (e.g., pointy, smooth, small) so that ELL students can refer to them throughout the unit. You could also prepare visual aids or have students create a word or picture dictionary. 	We looked at the birds' legs. Yes. A trait. Most of the birds had short legs, but the heron had really long legs.	Do all four birds in the photos have legs? If all of the birds have legs, what do we call that? Did you notice any differences in the leg trait, or were their legs exactly the same? What new science word did we learn to describe the differences we
				Variations. We looked at beaks.	see in a trait? What other trait did you look at? Do all of the

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				Yes.	photos have beaks? Did you notice any differences or variations in the beak trait, or
				Yes. We noticed that three birds had straight, pointy beaks, and the duck had a curved beak.	were the beaks exactly the same?
		Ask questions to elicit student ideas and predictions. Engage students in analyzing and interpreting data and	What about the color of the birds' feathers? How many different colors did you see?	We saw different colors, like white, black, brown, gray, and even green and yellow.	Can you use the word <i>variations</i> in your answer?
		observations.	How about the birds' feet? Are they all the same size and shape?	We saw variations in the colors, like white, black, grown, gray, and even green and yellow. We couldn't really see the feet very well, but some had	

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						claws, and we think the duck has webbed feet because we've seen ducks before.	
			Did you disco variations in	over any other differences or a trait?			
			NOTE TO TEACHER: <i>Students will likely share</i> <i>a variety of bird traits and variations from the four</i> <i>photographs, such as the following:</i>				
			Traits of Birds	How Birds Are Different (Variations in Birds Traits)			
			Feet Shape	Webbed Claws or talons			
			Size	Big Small			
			Beaks Shape	Some are pointed. Some are curved. Some are flat.			
			Size	Some are long/big. Some are short/small.			
			Feathers Color	Black			
				Blue			

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			Brown Black and white RedSizeSome are long. Some are short.Look at all of the traits and variations we recorded on our class chart! Notice that I wrote the words shape, size, and color on the left-hand side of the chart. That's because these are traits or features of living things too.We found a lot of differences in the traits of our four birds, didn't we? Who can tell me the scientific word for differences in traits?So feathers and feather color are both traits that all birds share. But there are also differences or variations in the feather-color trait. What variations in feather color did we observe in our four birds?	Variations! Black. Brown. White. Gray. Green. Yellow.	

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		Highlight key science ideas and focus question throughout. Summarize key science ideas.	 All of these are <i>variations</i> in the feather-color trait. So feather color is different in different birds. Beaks and beak size are also traits birds share. But there are variations in beak sizes, aren't there? Some birds have big beaks, and some have small beaks. So beak size is different in different birds. Beak shape is another trait birds share, and this trait also has variations. Pointed beaks, curved beaks, sharp beaks, thick beaks, and thin beaks are all variations in the trait of beak shape in birds. So beak shape is different in different birds. Foot shape is another trait birds have in common, and webbed feet, claws, and talons are variations in this trait. So foot shape is different in different birds. 		
8 min	 Follow-Up to Activity Synopsis: The teacher review the words <i>traits</i> and <i>variations</i>. Then students consider how certain traits and variations help birds survive in their environment. Main science idea(s): Birds share many basic traits, but they also have differences in traits 	Make explicit links between science ideas and activities after the activity.	 Today we reviewed how birds are alike. What do we call the features or characteristics that birds share? We also explored differences in bird traits. What do we call these differences? NOTE TO TEACHER: <i>If students mix up the words</i> traits <i>and</i> variations, <i>ask them for examples of each from their bird investigation</i>. Show slide 10. 	Traits. Variations.	

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	called <i>variations</i> . These variations can help individual birds survive in their environment.		Let's review the traits and variations we identified during our bird investigation. As we do, think about how differences or variations in traits might help birds survive where they live.		
			This is the first part of our unit central question, How do differences (variations) in plants or animals of the same kind help them survive so they can produce young (babies or seeds)?		
			Look at this picture of the heron again.		
			NOTE TO TEACHER: <i>Hold up the picture of the heron.</i>		
			Listen to students' ideas. What's visible about student thinking?		
		Engage students in analyzing and interpreting data and observations.	How might a long beak help a heron survive where it lives?	A long beak might help the heron get fish and frogs in deeper water.	
		Engage students	Now look at the picture of the duck.		
		in using and applying new science ideas in	NOTE TO TEACHER: <i>Hold up the picture of the duck.</i>		
		a variety of ways and	How might webbed feet help a duck survive?	Webbed feet can	
		contexts.	NOTE TO TEACHER: Ask students to think	help a duck swim	

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		Ask questions to elicit student ideas and predictions.	 about using flippers when they swim if they have experience with this. Now look at the picture of the eagle. NOTE TO TEACHER: Hold up picture of eagle. How might a thick, curved beak and sharp talons on its feet help an eagle survive where it lives? NOTE TO TEACHER: If you have access to videos of various birds in their environments, you might show them here. This will give students a better idea of how certain traits can help birds live in their environments, such as traits that help them gather food. 	fast and get away from animals that might eat it. A thick, curved beak can help the eagle tear its food apart. Claws <i>[talons]</i> can help the eagle capture animals to eat and carry them away.	
8 min	 Synthesize/Summarize Today's Lesson Synopsis: Students share their ideas for answering the focus questions. Then they write about one bird trait and two variations of the trait that they observed during their investigation. Main science idea(s): Animals of the same kind share many characteristics or traits 	Highlight key science ideas and focus question throughout. Engage students in making connections by synthesizing and summarizing key science	 Show slide 11. Let's revisit today's focus questions, <i>How are birds alike and different? What differences in a trait can they have?</i> Think about what you learned from our bird investigation today. How would you answer the first question, <i>How are birds alike and different?</i> NOTE TO TEACHER: Encourage students to 		

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	that make them more alike than different. But they don't look exactly alike. Their traits can vary from individual to individual. These trait variations can help individual organisms survive in their environment.	ideas.	 refer to the class chart and use the words trait and variations in their responses. How would you answer the second question, What differences in a trait can they have? Show slide 12. Before we end our lesson, think of something you learned about bird traits and variations today. Look at our class chart and choose one bird trait. Write that trait on the handout I'll give you and then choose two variations of that trait to write about. You can also draw pictures to show your ideas. Show slide 13. Here's an example of one bird trait and two variations. NOTE TO TEACHER: Distribute handout 1.7 (Bird Traits) and have students paste it into their notebooks. Then orient students to the handout and make sure they understand how to complete it. Individual writing and drawing time. Whole-class share-out: Who would like to share the trait and variations you wrote about? NOTE TO TEACHER: During this share-out, reinforce the idea that traits are characteristics of 		

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		probe student ideas and predictions. Ask questions to challenge student thinking.	living things that are similar, and variations are differences in traits among individual organisms of the same kind of living thing. Ask probe and challenge questions to clarify student thinking, and encourage students to use the words trait and variations in their explanations.		
1 min	Link to Next Lesson Synopsis: The teacher announces that in the next lesson, students will explore more similarities in plant traits and consider how plants are different even though they share similar traits.	Summarize key science ideas. Link science ideas to other science ideas.	Today we explored how birds are alike and different, and we talked about how differences in a trait might help birds survive where they live. We also learned that differences in the same trait are called <i>variations</i> . Show slide 14. In our next lesson, we'll investigate more traits that plants share, and we'll think about how plants are different from one another even though they share many of the same traits. At home tonight, see if you can come up with some ideas about differences in plant traits to share with the class.		