

Variations in Plants and Animals

Lesson 1a: Traits of Animals

Grade 1	Length of lesson: 42 minutes	Placement of lesson in unit: 1a of 5 lessons on variations in plants and animals
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)?		Lesson focus questions: How are birds alike? What traits do they share?
Main learning goal: Animals of the same kind are similar in many ways. These similar features or characteristics are called <i>traits</i> .		
Science content storyline: Animals of the same kind are alike in many ways. For example, people share similar characteristics, such as a head, two arms, two legs, 10 fingers, and 10 toes. We call these similar characteristics <i>traits</i> . Birds have different traits than people. For example, we know that a bird is a bird because it has two legs, two feet, feathers, wings, a tail, and a beak. These are the traits birds share. Birds can also have different traits, such as different beak sizes and feather colors.		
Ideal student response to the focus questions: Animals of the same kind are alike in many ways. People are alike because they have a head with or without hair on top, two arms, two legs, 10 fingers, and 10 toes. We call these similar characteristics <i>traits</i> . Birds have different traits than people. Birds are alike because they have two legs, two feet, feathers, wings, a tail, and a beak. These are traits birds share. Birds can also have different traits. For example, they may have different beak sizes and feather colors.		

Preparation

<p>Materials Needed</p> <ul style="list-style-type: none"> • Student notebooks • Chart paper and markers <p>Student Handouts and Teacher Masters</p> <ul style="list-style-type: none"> • 1.1 Traits of People Song (Teacher Master) • 1.2 Birds (1 set per table group; 2 different photos per pair) • 1.3 Bird Traits Song (Teacher Master) • 1.4 A Trait That Birds Have (1 per student) 	<p>Ahead of Time</p> <ul style="list-style-type: none"> • Read the content background document and Common Student Ideas about Variations in Plants and Animals. • Make copies of handout 1.2 (Birds). Then cut apart and laminate the photos. Each table group of four students will get a set of four pictures so that each pair of students will have different photos to compare. • Practice singing the “Traits of People Song” and the “Bird Traits Song” to the tune of “Head, Shoulders, Knees, and Toes” (see handouts 1.1 and 1.3). Please refer to this YouTube link for the tune: https://www.youtube.com/watch?v=ZanHgPprl-0. • 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. Identify words in the lesson plan to review with students in advance, including <i>traits</i>, <i>characteristics</i>, <i>variations</i>, <i>produce young</i>, <i>investigate</i>, and <i>observations</i>. Prepare visual cues for display, such as large-print words and images (including different parts of the body), to help students learn new words. Find pictures of two or three birds that are common in your community (e.g., crow, pigeon, and sparrow) and look distinctly different from one another. Use these pictures to introduce the focus question in the lesson, as well as anywhere else you think it might be helpful.
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Lesson 1a General Outline

Time	Phase of Lesson	How the Science Content Storyline Develops
1 min	Introduction and unit central question: The teacher introduces the 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>	
5 min	Lesson focus questions: The teacher introduces the focus questions, <i>How are birds alike? What traits do they share?</i> Then the teacher asks students to describe different birds they've seen in their community.	
10 min	Setup for activity: The teacher introduces the word <i>traits</i> and elicits student ideas about ways people are alike. To help students remember the traits people share, the teacher leads them in a song. Then students consider the traits of birds and create a class chart of characteristic that birds share.	<ul style="list-style-type: none"> • People share many of the same characteristics. We call these characteristics <i>traits</i>.
10 min	Activity: Working in pairs, students compare photographs of two birds and identify the traits they have in common. Then each pair shares their findings with another pair of students.	<ul style="list-style-type: none"> • All birds are alike in some ways and share some of the same traits.
5 min	Follow-up to activity: The teacher reviews the focus question. Then students share the traits they identified in the bird photographs, and the teacher adds new traits to the class chart.	<ul style="list-style-type: none"> • Birds share common traits such as beaks, wings, tails, feathers, legs, and feet.
10 min	Synthesize/summarize today's lesson: Students sing a song about common bird traits. Then they write about one of the traits that birds share and draw pictures to illustrate their descriptions.	<ul style="list-style-type: none"> • Birds share many common traits, even though individual birds may look different from one another. People also share common traits.
1 min	Link to next lesson: The teacher announces that in the next lesson, students will observe plants and explore the traits they share.	

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
1 min	<p>Introduction and Unit Central Question</p> <p>Synopsis: The teacher introduces the 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></p>		<p>Show slides 1 and 2.</p> <p>Today we'll begin a unit about the ways animals and plants are alike and different.</p> <p>The big question we'll think about in each lesson is <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></p> <p>Write this unit central question in your science notebooks and draw a double-lined box around it.</p> <p>NOTE TO TEACHER: <i>Write the unit central question on the board for students to refer to throughout the unit. Demonstrate for students how to draw a double-lined box around the question.</i></p> <p>By the end of the unit, we'll use everything we've learned about the differences in plants and animals to answer this question.</p> <p>Throughout this series of lessons, we're going to explore the ways certain kinds of plants and animals—like sunflowers and birds—are alike and different.</p> <p>As we learn about the differences among plants or animals of the same kind, we'll think about whether these differences have anything to do with the chances of individual plants and animals surviving and producing seeds or babies.</p>		

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			<p>Think about big trees that produce a lot of seeds. Do all of these seeds have an equal chance of surviving and growing into new trees?</p> <p>What about baby birds? Do they all have an equal chance of surviving and growing into adult birds that have babies of their own?</p> <p>These are the questions we'll explore in this unit.</p>		
5 min	<p>Lesson Focus Questions</p> <p>Synopsis: The teacher introduces the focus questions, <i>How are birds alike? What traits do they share?</i> Then the teacher asks students to describe different birds they've seen in their community.</p>	Set the purpose with a <u>focus question</u> or goal statement.	<p>NOTE TO TEACHER: <i>The focus questions for this lesson are unusual because they contain a word that will be new to students: traits. We assume that most students can already name ways that birds are alike. What will be new for them is calling these similarities traits. The focus of this lesson is helping students understand the meaning of this new word that describes how animals of the same kind (species) share common characteristics.</i></p> <p>Show slide 3.</p> <p>The questions we'll focus on in this lesson are <i>How are birds alike? What traits do they share?</i></p> <p>ELL Support: ELL students benefit from visual resources that reinforce science content. When you introduce the focus questions, show students pictures of two or three birds that are common in your community and that look distinctly different from one another.</p> <p>These are our <i>lesson focus questions</i>. Write these questions in your science notebooks and draw a box</p>		

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			<p>around them.</p> <p>NOTE TO TEACHER: <i>Write the focus questions on the board for students to refer to throughout the lesson. Model how to draw a box around the questions.</i></p> <p>I'm sure you already know a lot about the birds in our community. What are some different kinds of birds you've seen?</p> <p>ELL support: Tap into ELL students' knowledge of birds by asking them about their firsthand experiences. What have they observed about birds in their community?</p> <p>So crows and pigeons [<i>or whatever birds students describe</i>] are different in some ways, aren't they?</p> <p>But today we'll think about how birds are <i>alike</i>, and you'll learn the meaning of a new science word: <i>traits</i>.</p>	<p>Crows.</p> <p>They're pretty big and black, and they make loud sounds.</p> <p>Pigeons.</p> <p>They're pretty big too. They're gray, and they eat food people leave on the ground.</p>	<p>Tell us about crows.</p> <p>What other kinds of birds have you seen?</p> <p>What are pigeons like?</p>

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			NOTE TO TEACHER: <i>Point to the word traits in the focus question.</i>		
10 min	<p>Setup for Activity</p> <p>Synopsis: The teacher introduces the word <i>traits</i> and elicits student ideas about ways people are alike. To help students remember the traits people share, the teacher leads them in a song. Then students consider the traits of birds and create a class chart of characteristics that birds share.</p> <p>Main science idea(s):</p> <ul style="list-style-type: none"> • People share many of the same characteristics. We call these characteristics <i>traits</i>. 	Ask questions to elicit student ideas and predictions.	<p>Show slide 4.</p> <p>First, let’s think about people. How are all of us alike?</p> <p>NOTE TO TEACHER: <i>As students share their ideas, record them on chart paper.</i></p> <p>Show slide 5.</p> <p>So we’re alike in many ways, and we share many of</p>	<p>We can walk and talk.</p> <p>We have heads.</p> <p>We have a head and a brain and two eyes and a nose and two ears.</p> <p>We have two arms, two elbows, two hands, and 10 fingers.</p> <p>We have two legs, two knees, two feet, and 10 toes.</p>	<p>Does everybody here have a head? Can you say more about peoples’ heads?</p> <p>Who can think of other ways we’re alike?</p>

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		<p>Highlight key science ideas and focus question throughout.</p> <p>Engage students in using and applying new science ideas in a variety of ways and</p>	<p>the same characteristics. We call these shared characteristics <i>traits</i>.</p> <p>NOTE TO TEACHER: Write “<i>Traits of People</i>” at the top of the chart.</p> <p>Show slide 6.</p> <p>Now take a minute and think of one way that people are alike. What is one trait people share? Be ready to share your ideas with the class.</p> <p>Individual think time.</p> <p>Whole-class share-out: So who would like to share one way that people are alike? When you share, use the words “One trait people share is”</p> <p>Let’s sing a song together that will help us remember all of the people traits we thought of. As you sing, point to the traits we all have in common.</p> <p>NOTE TO TEACHER: Display <i>handout 1.1 (Traits of People Song)</i> on a document reader. Using the tune “<i>Head, Shoulders, Knees, and Toes,</i>” sing through the song a couple of times so that students who aren’t familiar with it can learn the words. Then sing it again one or two more times, pointing to each body</p>	<p>One trait people share is a head, with or without hair on top.</p> <p>One trait people share is that we can walk on two legs.</p>	

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		and predictions.	<p>Yes, the bird in this picture is a woodpecker. How do you know this woodpecker is a bird? What traits does it have?</p> <p>NOTE TO TEACHER: <i>Create a new class chart and write the title “Traits of Birds” at the top. Then record and/or draw students’ ideas on the chart.</i></p> <table border="1" data-bbox="890 581 1348 906"> <thead> <tr> <th data-bbox="890 581 1348 623">Traits of Birds</th> </tr> </thead> <tbody> <tr> <td data-bbox="890 623 1348 662">A beak</td> </tr> <tr> <td data-bbox="890 662 1348 701">Wings</td> </tr> <tr> <td data-bbox="890 701 1348 740">Two legs</td> </tr> <tr> <td data-bbox="890 740 1348 779">Feathers</td> </tr> <tr> <td data-bbox="890 779 1348 818">Two feet</td> </tr> <tr> <td data-bbox="890 818 1348 857">A tail</td> </tr> <tr> <td data-bbox="890 857 1348 906">Two eyes</td> </tr> </tbody> </table> <p><i>Accept all ideas at this point, even if students suggest traits that all birds don’t share. You can review the list of traits after the activity and decide as a class whether any traits should be removed or added to the list.</i></p> <p>So we have a good list of characteristics that describe our woodpecker.</p> <p>What’s the new word we can use to describe these characteristics?</p> <p>Do you think all birds have the same traits?</p>	Traits of Birds	A beak	Wings	Two legs	Feathers	Two feet	A tail	Two eyes	<p>woodpecker!</p> <p>It has a beak.</p> <p>It has wings for flying.</p> <p>It has feet.</p> <p>It has feathers and a tail.</p> <p>It has eyes.</p> <p>Traits!</p> <p>Yes!</p> <p>No. I think I heard</p>	<p>Does it have ears?</p>
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		<p>Make explicit links between science ideas and activities before the activity.</p>	<p>Next, you'll pair up with a partner and look at pictures of other kinds of birds to see if they have the same characteristics or traits we listed on our chart.</p> <p>What are some of the traits you'll look for? Use the sentence starter "One trait we'll look for is ..." when you share your ideas.</p> <p>NOTE TO TEACHER: <i>After students share their ideas, have them pair up with an elbow partner and form a table group with another pair of students. Then distribute the bird photographs from handout 1.2 (Birds) 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 similarities if they work in pairs, so have pairs compare two bird photos before they compare all four bird photos in their table group.</i></p>	<p>of a bird that can't fly.</p> <p>I don't know if all birds have feathers.</p> <p><i>[Students should name traits listed on the class chart.]</i></p>	
10 min	<p>Activity</p> <p>Synopsis: Working in pairs, students compare photographs of two birds and identify the traits they have in common. Then each pair shares their findings with</p>	<p>Make explicit links between science ideas and activities during the activity.</p>	<p>Show slide 8.</p> <p>Turn and Talk: Every table group has four different photos of birds. First, I want you and your partner to look at two different bird photos and talk about how the birds are alike. What traits do both of them have in common? Write these traits in your science notebooks and be ready to share them with the other pair of students in your table group.</p>		<p><i>Questions to ask as students work:</i></p> <ul style="list-style-type: none"> • What traits do

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	<p>another pair of students.</p> <p>Main science idea(s):</p> <ul style="list-style-type: none"> All birds are alike in some ways and share some of the same traits. 	<p>Engage students in analyzing and interpreting data and observations.</p>	<p>NOTE TO TEACHER: <i>As pairs share the traits they observe in both birds, circulate around the room and remind them to focus on the bird traits they've identified so far. Encourage them to refer to the traits listed on the class chart ("Traits of Birds").</i></p> <p>Show slide 9.</p> <p>Now that you and your partner have listed the traits your two birds have in common, I'd like you to share your pictures and observations with the other pair of students in your group. Tell them about the traits you found in both birds and how the birds are alike. Use the sentence starter on the slide: "Both our birds"</p> <p>NOTE TO TEACHER: <i>As groups share their findings, circulate from group to group and listen carefully to see whether students use the word trait in their descriptions.</i></p>		<p>both of your birds have?</p> <ul style="list-style-type: none"> Show me a trait that both birds have.
5 min	<p>Follow-Up to Activity</p> <p>Synopsis: The teacher reviews the focus question. Then students share the traits they identified in the bird photographs, and the teacher adds new traits to the class chart.</p> <p>Main science idea(s):</p> <ul style="list-style-type: none"> Birds share common traits such as beaks, 	<p>Highlight key science ideas and focus question throughout.</p> <p>Make explicit links between science ideas and activity after the</p>	<p>Show slide 10.</p> <p>Let's revisit our focus questions for today: <i>How are birds alike? What traits do they share?</i></p> <p>Based on your observations of the woodpecker, the heron, the eagle, and the duck, how would you answer these questions?</p> <p>How are all of these birds alike? What can you say about traits they share?</p> <p>Make sure to use the word <i>trait</i> in your answer. You</p>		

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	wings, tails, feathers, legs, and feet.	<p>activity.</p> <p>Engage students in analyzing and interpreting data and observations.</p> <p>Ask questions to probe student ideas and thinking.</p> <p>Ask questions to challenge student thinking.</p>	<p>can use the sentence starter on the slide to help you:</p> <p><i>A trait that all of the birds have is _____.</i></p> <p>NOTE TO TEACHER: <i>As students share their observations, encourage them to refer to the class chart (“Traits of Birds”) and use the word trait in their descriptions. If new traits emerge, add them to the chart. Identify any traits on the chart that don’t appear in all four birds and decide as a class whether to cross them off the list. Ask questions to clarify and challenge student thinking.</i></p> <p>Look at all of the traits we found in these four birds that are similar! Even though these birds look very different, they share many of the same traits, don’t they?</p> <p>How many traits do all of these birds have in</p>	<p>They all have beaks.</p> <p>A trait that all of the birds have is beaks.</p> <p>A trait that all of the birds have is wings.</p> <p>They all have feet.</p> <p>A trait that all of the birds have is feet.</p> <p>Two traits that all the birds have are heads and eyes.</p>	<p>Can you use the word <i>trait</i> in your sentence?</p> <p>What’s your evidence? Can you show me the beaks in all four of these birds?</p> <p>Can you show us the wings on all four birds?</p> <p>Please use the word <i>trait</i>.</p>

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			common?		
10 min	<p>Synthesize/Summarize Today's Lesson</p> <p>Synopsis: Students sing a song about common bird traits. Then they write about one of the traits that birds share and draw pictures to illustrate their descriptions.</p> <p>Main science idea(s):</p> <ul style="list-style-type: none"> Birds share many common traits, even though individual birds may look different from one another. People also share common traits. 	Engage students in using and applying new science ideas in a variety of ways and contexts.	<p>Today we talked about the traits people have in common. Then we looked at different kinds of birds and found out that they share many of the same traits.</p> <p>Let's sing a song to review the bird traits we discovered today. This song is like the one we sang earlier about the traits of people.</p> <p>NOTE TO TEACHER: <i>Display handout 1.3 (Bird Traits Song) on a document reader. Using the tune "Head, Shoulders, Knees, and Toes," sing through the song a couple of times so that students can learn the new words. Feel free to replace the words in the song with other traits from the chart.</i></p> <p>Here's how it goes:</p> <p>"Beaks and wings, these are traits, these are traits. <i>[Hugging around waist]</i> Beaks and wings, these are traits, these are traits. <i>[Hugging around waist]</i> And eyes and feathers and legs and feet. All of these are traits that birds have."</p> <p>Optional: <i>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.</i></p> <p>Show slide 11.</p>		

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		<p>Engage students in synthesizing and summarizing key science ideas.</p> <p>Ask questions to probe student ideas and predictions.</p>	<p>Before we end today’s lesson, I’d like you to think about the birds in our pictures and traits they had in common. Then look at our class chart of bird traits and choose one trait to write about. You can also draw pictures on your handout to illustrate your ideas.</p> <p>NOTE TO TEACHER: <i>Distribute handout 1.4 (A Trait That Birds Have) and have students paste the handout into their notebooks. Then orient students to the handout and make sure they understand how to complete it.</i></p> <p>ELL support: During the lesson preview, give ELL students time to practice writing about a bird trait so they’ll understand how to complete the handout in the actual lesson.</p> <p>Individual writing and drawing time.</p> <p>Whole-class share-out: Who would like to share the bird trait you wrote about?</p> <p>NOTE TO TEACHER: <i>During this share-out, reinforce the idea that traits are characteristics of living things that are similar. Encourage students to use the word trait in their explanations, and ask probe questions to clarify student thinking.</i></p>		
1 min	<p>Link to Next Lesson</p> <p>Synopsis: The teacher</p>	Summarize key science	Today we learned about characteristics called <i>traits</i> and how animals of the same kind share many		

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	announces that in the next lesson, students will observe plants and explore the traits they share.	<p>ideas.</p> <p>Link science ideas to other science ideas.</p>	<p>common traits. First, we learned about the traits people share, and then we explored the traits of birds. Traits help us identify animals of the same kind.</p> <p>Show slide 12.</p> <p>In our next lesson, we'll think about how plants are alike and see what traits they have in common.</p>		