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

Grade 1	**Length of lesson:** 42 minutes	**Placement of lesson in unit:** 1b 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 plants alike? What traits do they share?
Main learning goal: Plants or animals of the same group share similar features or characteristics that we can recognize. These shared characteristics are called *traits*. All plants share certain traits, such as flowers, stems, leaves, seeds, and roots.		
Science content storyline: Certain animals or plants can be grouped together because they have many similar traits or characteristics. We group them together because they're more alike than different. For example, we know that a plant is a plant because it has flowers, seeds, a stem, leaves, and roots.		
Ideal student response to the focus questions: Plants are alike because they share many of the same traits, like roots, stems, leaves, flowers, and seeds.		

Preparation

Materials Needed
- Student notebooks
- Chart paper and markers
- "Traits of Birds" class chart (from lesson 1a)

Student Handouts
- 1.5 Plants (1 set per table group; 2 different photos per pair)
- 1.6 A Trait That Plants Have (1 per student)

Ahead of Time
- Review the content background document and Common Student Ideas about Variations in Plants and Animals.
- Make copies of handout 1.5 (Plants). 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.
- **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 *features* and the parts of plants. Review the words *traits*, *characteristics*, *variations*, *produce young*, *investigate*, and *observations*. Prepare a labeled visual aid showing the parts of plants to help students write and talk about the science concepts.

Lesson 1b General Outline

Time	Phase of Lesson	How the Science Content Storyline Develops
5 min	**Link to previous lesson:** The teacher engages students in reviewing what they learned about traits in the previous lesson. Then the teacher reviews the 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)?*	• Animals of the same kind, such as people or birds, share many of the same traits.
2 min	**Lesson focus questions:** The teacher introduces the focus questions, *How are plants alike? What traits do they share?*	
8 min	**Setup for activity:** Students consider the traits of plants and create a class chart of characteristics that plants share. Then the teacher reviews the word *trait*.	• Animals of the same kind, such as people or birds, share many of the same traits. • Plants also share many of the same traits, such as roots, stems, leaves, flowers, and seeds. Another trait of plants is that they don't move.
10 min	**Activity:** Working in pairs, students examine photographs of two different plants and identify the traits they share. Then each pair shares their findings with another pair of students.	• All plants, from trees to dandelions, share features called *traits*. We can observe these traits when we compare the features of plants, such as flowers, stems, leaves, roots, and seeds.
8 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 any new traits to the class chart. Then students compare the class charts of plant traits and bird traits and consider whether birds and plants share the same traits.	• All plants, from trees to dandelions, share features called *traits*. We can observe these traits when we compare the features of plants, such as flowers, stems, leaves, roots, and seeds. • Plants and birds have different sets of traits they share with their own group.
8 min	**Synthesize/summarize today's lesson:** Students write about one of the traits that plants share and draw pictures to illustrate their descriptions.	• Plants are more alike than different, and like people or birds, they share many of the same characteristics or traits.
1 min	**Link to next lesson:** The teacher announces that in the next lesson, students will explore more similarities in bird traits and consider how birds 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 Lesson** **Synopsis:** The teacher engages students in reviewing what they learned about traits in the previous lesson. Then the teacher reviews the 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)?* **Main science idea(s):** • Animals of the same kind, such as people or birds, share many of the same traits.	Engage students in analyzing and interpreting data and observations.	**Show slides 1 and 2.** In our last lesson, we talked about some of the ways people are alike and some of the ways birds are alike. What new science word did we learn that describes the characteristics that animals of the same kind share? How are people alike? What are some of the traits we all share? We also looked at photos of different kinds of birds. How could we tell they were all birds? What traits did they share?	Traits! Eyes and ears. Heads. Legs and arms. Feet. Hands. They all had beaks. They all had wings. They all had feathers. They all had legs	*Questions to ask:* • Do we all have this trait? • Do you think all people everywhere have this trait? • Why do you think so?

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		Summarize key science ideas.	In this unit, we're exploring how animals or plants of the same kind are alike and different. So far we've learned that animals of the same kind, such as birds or people, share many of the same traits. **Show slide 3.** What we discover about animals and plants in each lesson will help us answer our unit central question, *How do differences (variations) in the traits of plants or animals of the same kind help them survive so they can produce young (babies or seeds)?*	and feet.	
2 min	**Lesson Focus Question** **Synopsis:** The teacher introduces the focus questions, *How are plants alike? What traits do they share?*	Set the purpose with a <u>focus question</u> or goal statement.	**Show slide 4.** Our focus questions for this lesson are *How are plants alike? What traits do they share?* Write these questions in your science notebooks and draw a box around them. **NOTE TO TEACHER:** *Write the focus questions on the board for students to refer to throughout the lesson.* Last time, we looked at how birds are alike. Today we'll look at how plants alike. I'm sure you already know a lot about many kinds of plants. What are some different kinds of plants		

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			you've seen in our community?	Flowers. Trees. Bushes. Grass.	
8 min	**Setup for Activity** **Synopsis:** Students consider the traits of plants and create a class chart of characteristics that plants share. Then the teacher reviews the word *trait*. **Main science idea(s):** • Animals of the same kind, such as people or birds, share many of the same traits. • Plants also share many of the same traits, such as roots, stems, leaves, flowers, and seeds. Another trait of plants is that they don't move.	Ask questions to elicit student ideas and predictions.	**Show slide 5.** What living thing is in this photograph? **ELL support:** Ask ELL students what they know about plants. Does anyone at home have plants, or does anyone they know take care of a garden? How do we know this is a plant and not a bird? What do you observe that makes you think it's a plant? **NOTE TO TEACHER:** *Create a class chart on chart paper and write the title "Traits of Plants" at the top. As students share their ideas, record them on the chart. Point out that this chart is like the one they made for birds.* **Traits of Plants** Flowers Leaves Stems Seeds	It's a plant. It's a flower. I see a flower. Birds don't have those. I see leaves. I see stems.	Do you think all plants have flowers? Why or why not? Do you think all plants have leaves? How do you know? Do all plants have stems? How do you know?

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			Accept all ideas at this point, even if students suggest traits that all plants 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. We've started a good list of characteristics that describe the plant on the slide. Who remembers what we call features or characteristics that living things share? Do you think all plants share the same traits? Next, you'll pair up with an elbow partner and look at pictures of other kinds of plants to see if you can find the same traits we listed on our chart. What are some of the traits you'll look for? When you share your ideas, use the sentence starter "One trait we'll look for is …." **NOTE TO TEACHER:** *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 plant photographs from handout*	Traits! Yes! No! I don't think all plants have stems. I don't know if all plants have seeds. *[Students should name traits listed on the chart.]*	
		Make explicit links between science ideas and activities **before** the activity.			

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			1.5 (Plants) to each table group. Each student should have a different plant photo so that all four plants are represented in the group. Students are likely to observe more trait similarities if they work in pairs, so have pairs compare two plant photos before they compare all four plant photos in their table group.		
10 min	**Activity** **Synopsis:** Working in pairs, students examine photographs of two different plants and identify the traits they share. Then each pair shares their findings with another pair of students. **Main science idea(s):** • All plants, from trees to dandelions, share features called *traits*. We can observe these traits when we compare the features of plants, such as flowers, stems, leaves, roots, and seeds.	Make explicit links between science ideas and activities **during** the activity. Engage students in analyzing and interpreting observations.	**Show slide 6.** **Turn and Talk:** Every group has four different photos of plants. First, I want you and your partner to look at two different plant photos and talk about how the plants are alike. What traits do both plants share? Write these traits in your science notebooks and be ready to share them with the other pair of students in your table group. **ELL support:** Consider pairing ELL students with a same-language partner. This will give them an opportunity to share their observations in their home languages before sharing them with another pair of students in English. **NOTE TO TEACHER:** *As pairs share the traits they observe in both birds, circulate around the room and remind students 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").* **Show slide 7.**		

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			Now that you and your partner have listed the traits your two plants 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 plants and how the plants are alike. Use the sentence starter on the slide: "Both our plants …." **NOTE TO TEACHER:** *As groups share their findings, circulate from group to group and listen carefully to see whether students use the word* trait *in their descriptions.*		
8 min	**Follow-Up to Activity** **Synopsis:** The teacher reviews the focus question. Then students share the traits they identified in the bird photographs, and the teacher adds any new traits to the class chart. Then students compare the class charts of plant traits and bird traits and consider whether birds and plants share the same traits. **Main science idea(s):** • All plants, from trees to dandelions, share features called *traits*.	Highlight key science ideas and focus question throughout. Make explicit links between science ideas and activities **after** the activity. Engage students in analyzing and interpreting data and observations.	**Show slide 8.** Let's revisit today's focus questions, *How are plants alike? What traits do they share?* Based on your observations of the cherry blossom tree, the cactus, the bird of paradise plant, and the dandelion, how would you answer these questions? How are these plants alike? What can you say about traits they share? Make sure to use the word *trait* in your answer. You can use the sentence starter on the slide to help you: *A trait that all of the plants have is _____.* **NOTE TO TEACHER**: *As students share their observations, encourage them to refer to the class chart ("Traits of Plants") and to use the word* trait	They all have flowers.	Can you use the word *trait* in your sentence?

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	We can observe these traits when we compare the features of plants, such as flowers, stems, leaves, roots, and seeds. • Plants and birds have different sets of traits that they share with their own group.	Ask questions to probe student ideas and thinking. Ask questions to challenge student thinking.	*in their descriptions. If new traits emerge, add them to the chart. It's unlikely that students will mention roots, since they aren't visible in the plant photos. They may not mention seeds either unless they're visible in the picture. Identify any traits on the chart that don't appear in all four plants and decide as a class whether to cross them off the list. Ask questions to clarify and challenge student thinking.* Did all of the plants in your photos have stems? Could you see any seeds in all of your photos? What about roots? Could you see whether all of the	A trait that all of the plants have is flowers. A trait that all of the plants have is leaves. Yes! I don't think cactuses or trees have stems. No. I disagree. I think I could see dandelion seeds.	What's your evidence? Can you show me the leaves in all four photos of the plants? Did anyone have a photo of a plant that didn't have leaves? Does anyone have a different idea? Why do you think they don't have stems? Does anyone disagree?

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			plants have roots?	No.	Do we have other ways of telling whether the plants have roots?
				We could pull the plants out of the ground and see if they have roots.	
			Look at all of the traits we found in these four plants that are similar! Even though they look very different, they share many of the same traits, don't they?		
			How many traits do all of these plants have in common?		
			Show slide 9.		
		Engage students in analyzing and interpreting data and observations. Engage students in constructing explanations and arguments. Ask questions to probe student ideas and	Now let's look at our class charts of bird traits and plant traits. Are the traits of birds the same as the traits of plants? Why or why not? **NOTE TO TEACHER:** *Display the "Traits of Birds" and "Traits of Plants" class charts side by side so students can compare them. As students share their ideas, ask questions to probe and challenge their thinking.*  Listen to students' ideas. What's visible about student thinking?	Birds have beaks, but plants don't. Plants have leaves, but birds don't. Birds have legs, and plants have stems to hold them up.	What do birds use their legs for? What do plants

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		predictions. Ask questions to challenge student thinking.			use their stems for? Can plants use their stems to move?
8 min	**Synthesize/Summarize Today's Lesson** **Synopsis:** Students write about one of the traits that plants share and draw pictures to illustrate their descriptions. **Main science idea(s):** • Plants are more alike than different, and like people or birds, they share many of the same characteristics or traits.	Engage students in making connections by synthesizing and summarizing key science ideas.	**Show slide 10.** Before we end today's lesson, I'd like you to think about the traits that the plants in our pictures had in common. Then look at our class chart of plant traits and choose one trait to write about. You can also draw pictures to illustrate your ideas. **Show slide 11.** Here's an example of a plant trait and a picture you could draw. **ELL support:** Draw a sample picture of a plant trait on chart paper for ELL students to refer to. Draw the whole plant and then highlight the trait. For example, if leaves are the trait, draw a tree with leaves and then highlight the leaves. As a visual reminder, you could also display images showing the traits. **NOTE TO TEACHER:** *Distribute handout 1.6 (A Trait That Plants 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.*		

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		Ask questions to probe student ideas and predictions.	**ELL support:** During the lesson preview, give ELL students time to practice writing about a plant trait so they'll understand how to complete the handout in the actual lesson. **Individual writing and drawing time.** **Whole-class share-out:** Who would like to share the plant trait you wrote about? **NOTE TO TEACHER:** *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.*		
1 min	**Link to Next Lesson** **Synopsis:** The teacher announces that in the next lesson, students will explore more similarities in bird traits and consider how birds are different even though they share similar traits.	Summarize key science ideas. Link science ideas to other science ideas.	Today we explored some of the traits that plants share. We also learned that bird traits and plant traits aren't the same. Traits help us tell the difference between birds and plants and other kinds of living things. **Show slide 12.** In our next lesson, we'll explore more traits that birds share, and we'll think about how birds 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 to share with the class.		

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			NOTE TO TEACHER: *These objects of investigation are at different levels of abstraction. Birds are a kind of animal, the equivalent of plants. It might be good to look at something like deciduous trees for a parallel object of investigation.*		