

Plants and Animals

Lesson 5b: Food for Plants

Grade: Kindergarten	Length of lesson: 40 minutes	Placement of lesson: 5b of 6 lessons on plants and animals
Unit central question: Do plants and animals need the same things to live and grow? Explain your thinking.		Lesson focus question: How do plants get their food?
Main learning goal: Plants make their own food with sunlight, water, and air from their environment, and they use this food to live and grow. Animals can't do this.		
Science content storyline: We know that plants need sunlight, water, and air to live and grow. But just like animals, plants also need food to. Plants get their food in a very different way from animals. Animals catch food and take it into their bodies by eating it, but plants make their own food inside their leaves by using the sunlight, water, and air they get from their environment. This explains why plants need these things to live and grow.		
Ideal student response to the focus question: Plants need food to live and grow just like animals. But they get their food in a different way. Instead of eating the food they catch like animals do, plants make their own food inside their leaves. Plants use sunlight, water, and air that they get from the environment to make their food.		

Preparation

Materials Needed

- Science notebooks
- Chart paper and markers
- Double bubble thinking map from lesson 5a
- Circle maps of lion, praying mantis, earthworm, and ladybug or tree map of what animals need (from lessons 2a/b).
- Circle map from lesson 3a (“Our Beginning Ideas: What Do Plants Need to Live and Grow?”)

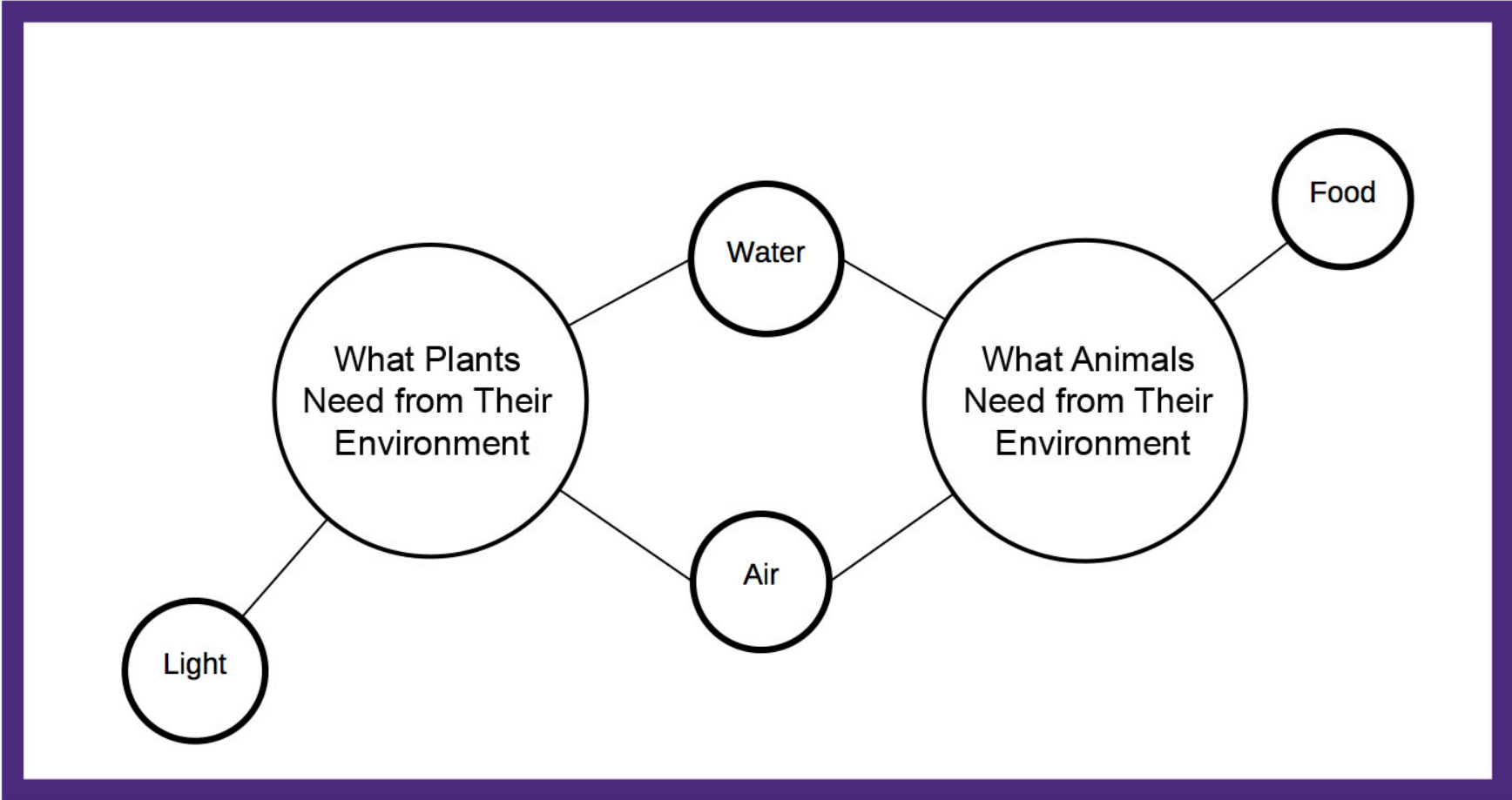
Student Handouts and Teacher Masters

- 5.2 *How Do Plants Get Food?* (book by Meish Goldish) (Teacher Master) (PowerPoint slides)

Ahead of Time

- Review section 5 in the content background document.
- Review the book *How Do Plants Get Food?* (PowerPoint presentation).
- In lessons 5b–5d, you’ll add to the double bubble thinking map from lesson 5a. (See Double Bubble Answer Key on the following page.)
- **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. Read the book *How Do Plants Get Food?* to students and discuss the pictures with them. In particular, explain the meaning of blow-up or magnification representations like the one on slide 12 of the PowerPoint presentation and use a hand lens to model what they’re intended to show. You may also want to explain the arrows on slides 12, 14, 16, and 20 of the PowerPoint presentation, as well as how they’re used. Identify vocabulary terms in the lesson plan and the book to review with students in advance, including *thinking map/bubble map, energy, mixed together* (not mixing ingredients to make food), *sugar, stems, leaves, roots, make the food, and takes in*. Post any new vocabulary terms and definitions on a word wall for easy reference. Also have students record these terms in their science notebooks and in their picture dictionary if they’ve made one.

**Double Bubble Answer Key:
End of Lessons 5a–5d**



Lesson 5b General Outline

Time	Phase of Lesson	How the Science Content Storyline Develops
7 min	Link to previous lesson: The teacher reviews the unit central question and engages students in summarizing key ideas from the previous lesson about what plants need to live and grow. Then students share how their ideas have changed about whether plants need food.	<ul style="list-style-type: none"> Both plants and animals need water and air to live and grow, but only plants need light. Like animals, plants also need food, but instead of catching and eating it, they take in sunlight, air and water from their environment and use these things to make their own food inside their leaves.
1 min	Lesson focus question: The teacher introduces the focus question, <i>How do plants get their food?</i>	
3 min	Setup for activity: The teacher introduces a book the class will read together that will provide more information about plants and how they get their food.	<ul style="list-style-type: none"> Both plants and animals need food to live and grow, but plants get their food in a different way.
10 min	Activity: Students listen to a story about how plants get or make their own food by using light, air, and water from their environment. Then they share what they've learned.	<ul style="list-style-type: none"> Like animals, plants need food to live and grow. But plants get their food by taking in sunlight, air, and water from their environment and using those things to make their own food inside their leaves.
10 min	Follow-up to activity: After the teacher reviews the focus question, students share their answers based on new information from the reading. Then the teacher reviews the double bubble map and challenges students to think about whether plants and animals get their food in the same way.	<ul style="list-style-type: none"> Both plants and animals need food, water, and air to live and grow. Animals catch and eat food from their environment. But plants make their own food in their leaves by using sunlight, air, and water from their environment.
8 min	Synthesize/summarize today's lesson: Working in pairs, students compare what plants and animals need from their environments and identify things on the double bubble map that both plants and animals need, things that only animals need, and things that only plants need. Then they share their findings in a class discussion.	<ul style="list-style-type: none"> Like animals, plants need food to live and grow. But they get their food in a very different way. Plants use sunlight, water, and air from their environment to make their own food in their leaves. Animals have to find their food in their environment.
1 min	Link to next lesson: The teacher reviews the unit central question and foreshadows the next lesson in which student use different models to help them show how plants make their own food.	

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7 min	<p>Link to Previous Lesson</p> <p>Synopsis: The teacher reviews the unit central question and engages students in summarizing key ideas from the previous lesson about what plants need to live and grow. Then students share how their ideas have changed about whether plants need food.</p> <p>Main science idea(s):</p> <ul style="list-style-type: none"> Both plants and animals need water and air to live and grow, but only plants need light. Like animals, plants also need food, but instead of catching and eating it, they take in sunlight, air and water from their environment and use these things to make their own food inside their leaves. 	<p>Link science ideas to other science ideas.</p> <p>Engage students in making connections by synthesizing and summarizing key science ideas.</p>	<p>Show slides 1 and 2.</p> <p>Remember the big question we’re trying to answer about plants and animals? Let’s read it together: <i>Do plants and animals need the same things to live and grow? Explain your thinking.</i></p> <p>NOTE TO TEACHER: <i>Direct students’ attention to the unit central question on the board and point to each word as you read the question aloud together.</i></p> <p>Let’s summarize what we’ve learned so far about what plants need from their environment to live and grow.</p> <p>Show slide 3.</p> <p>To refresh our memories, let’s look at the double bubble map we created last time. A double bubble map helps us compare two things and find out what is the same or different about them. The bubbles in the middle of the map help us see what <i>both</i> plants and animals need from their environment to live and grow. The bubbles on the left and right sides of the map show what only plants or animals need.</p> <p>Let’s look at what we added to our map last time to show what plants need from their environment.</p> <p>NOTE TO TEACHER: <i>The double bubble map from the previous lesson should show that both plants and</i></p>		

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		<p>Link science ideas to other science ideas.</p> <p>Engage students in communicating in scientific ways.</p>	<p><i>animals need water and air, that only plants need sunlight, and that plants use air, water, and sunlight to make food.</i></p> <p>What does it say in the center of this bubble?</p> <p>NOTE TO TEACHER: <i>Point to the plant bubble on the bubble map or on the slide.</i></p> <p>What do plants need from their environment to live and grow? Make sure to give your reasons for why plants need something you mention.</p> <p>NOTE TO TEACHER: <i>If students insist that plants need soil, make sure to challenge this idea. If you decide to add it to the thinking map, include a question mark so students realize that the evidence they've collected doesn't support this idea/claim.</i></p>	<p>What plants need from their environment.</p> <p>Plants need light to make their own food.</p> <p>Plants need water. If they don't have water, they can't make their own food.</p> <p>Plants need air. They can't make their own food if they don't have air.</p> <p>Plants need soil, too!</p>	<p><i>Questions to ask during the discussion:</i></p> <ul style="list-style-type: none"> • Does anyone disagree? Why? • Can anyone add on to that? • What is your evidence? • How do you know? <p>What is your evidence that plants need soil to</p>

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		<p>Highlight key science ideas and focus question throughout.</p> <p>Ask questions to elicit student ideas and predictions.</p>	<p>Show slide 4.</p> <p>So we know that plants need light, air, and water from their environment to live and grow. And we learned last time that plants use these three things to make their own food.</p> <p>Based on what we learned in our last lesson, have any of your ideas changed about whether plants need food? If so, how did your ideas change?</p>	<p>My evidence is that we always grow plants in the soil.</p> <p>I disagree. We saw pictures of plants that live and grow in air or water without any soil. And our bean seeds grew in damp paper towels without soil.</p> <p>I thought that because plants don't have mouths, they wouldn't need food. But I found out that plants do need food to live and grow.</p>	<p>live and grow?</p> <p>Does anyone agree or disagree?</p>

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				<p>I thought that water was food for plants, but I learned that plants use water, air, and light to make their own food.</p> <p>I thought that the plant food we give our plants at home was food for plants. But now I know that plants make their own food, so I'm not sure what plant food is.</p>	
1 min	<p>Lesson Focus Question</p> <p>Synopsis: The teacher introduces the focus question, <i>How do plants get their food?</i></p>	Set the purpose with a <u>focus question</u> or goal statement.	<p>Show slide 5.</p> <p>In today's lesson, we'll learn more about how plants get their food.</p> <p>Our focus question is <i>How do plants get their food?</i></p> <p>NOTE TO TEACHER: Write the focus question on the board for students to refer to throughout the lesson and draw a box around it. Point to each word as you repeat the question aloud.</p>		
2 min	<p>Setup for Activity</p> <p>Synopsis: The teacher</p>		<p>Show slide 6.</p> <p>Last time, we read about plants from one of our</p>		

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	<p>introduces a book the class will read together that will provide more information about plants and how they get their food.</p> <p>Main science idea(s):</p> <ul style="list-style-type: none"> Both plants and animals need food to live and grow, but plants get their food in a different way. 	<p>Make explicit links between science ideas and activities before the activity.</p> <p>Summarize key science ideas.</p>	<p>books. In that reading, we learned that plants need food to live and grow like we do, but they make their own food inside their leaves.</p> <p>What do plants need from their environment to make their own food?</p> <p>Today we'll read a new book together. This book will help us learn more about how plants get their food.</p> <p>As I read the story, listen carefully for any new ideas about plants and how they get their food.</p> <p>ELL support: During the lesson preview, read and discuss the story <i>How Do Plants Get Food?</i> to help students understand the concepts so they can participate more fully in the lesson. Make sure to discuss the pictures as well.</p>	<p>They need sunlight, water, and air to make their food.</p> <p>They take in sunlight, water, air from their environment and mix them all together in their leaves to make their own food.</p>	<p>What do plants do with these three things to make their own food?</p>

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10 min	<p>Activity</p> <p>Synopsis: Students listen to a story about how plants get or make their own food by using light, air, and water from their environment. Then they share what they've learned.</p> <p>Main science idea(s):</p> <ul style="list-style-type: none"> Like animals, plants need food to live and grow. But plants get their food by taking in sunlight, air, and water from their environment and using those things to make their own food inside their leaves. 	<p>Make explicit links between science ideas and activities during the activity.</p> <p>Engage students in analyzing and interpreting data and observations.</p> <p>Engage students in communicating in scientific ways.</p> <p>Engage students in constructing explanations and arguments.</p>	<p>NOTE TO TEACHER: <i>Read the story How Do Plants Get Food? (PowerPoint presentation). Display each page from the book so you can point to the words as you read. Pause to discuss the pictures in the book and review what students have learned from the reading so far.</i></p> <p><i>Begin reading the story on PowerPoint slide 5; then pause and discuss the picture on PPT slide 6.</i></p> <p>How are the children in this picture getting the food they need to live and grow?</p> <p>Can they make their own food inside their bodies?</p> <p>Where does their food come from?</p> <p>What about the plant in the picture? Is it getting any food?</p>	<p>They're eating eggs and bacon.</p> <p>They have cereal and orange juice, too.</p> <p>No. They have to get their food from the store.</p> <p>Their food comes from chickens and pigs and oranges and cereal.</p> <p>Probably, because if it has air and water and light, it can</p>	<p>Does anyone agree, disagree, or want to add on?</p>

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			<p><i>[Continue reading the story. Then pause at PPT slide 8 and discuss the following question.]</i></p> <p>What do we know about why this plant’s roots, stem, and leaves are important?</p> <p><i>[Continue reading the story. Then pause on PPT slide 10 and discuss the following question.]</i></p>	<p>make its own food.</p> <p>The plant needs roots to take in water.</p> <p>To drink.</p> <p>To stay alive.</p> <p>To make its own food.</p> <p>The plant needs a stem to carry the water to its leaves.</p> <p>The plant needs leaves to get the sunlight and mix it with air and water to make food.</p>	<p>Why does the plant need water?</p> <p>Any other ideas about why the plant needs water?</p>

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			<p>What is the boy in this picture doing that will help the plant make its food?</p> <p><i>[Continue reading the story. Then pause at PPT slide 12 and ask the following question.]</i></p> <p>What is happening in this picture?</p> <p><i>[Continue reading the story. Then pause at PPT 14 and ask the following question.]</i></p> <p>What is happening in this picture?</p> <p>Where do you see the water going in the picture?</p> <p>Where are the arrows in the picture?</p>	<p>He's giving the plant water.</p> <p>The air is going inside the plant, through the holes in the leaves.</p> <p>The roots are taking water from the soil into the plant.</p> <p>Up through the stems and into the leaves.</p> <p>There are arrows going along the roots of the plant.</p>	<p>Yes! We just learned about the holes in the leaves and how they help the plant take in air.</p>

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			<p>What do the arrows tell us?</p> <p>ELL support: Some ELL students may not understand what the arrows mean in the plant pictures. Discuss this in depth during the lesson preview so that students understand how arrows are used in scientific contexts compared to other contexts.</p> <p><i>[Continue reading the story. Then pause at PPT 16 and ask the following question.]</i></p> <p>What do you see happening in this picture?</p>	<p>There are arrows going up the stem of the plant.</p> <p>There are arrows going out to the plant's leaves.</p> <p>They tell us where the water is going in the plant.</p> <p>There's lots of arrows going everywhere!</p> <p>The blue arrows show the roots taking in water from the soil, and the water going up through the stem to</p>	<p>What are the blue arrows showing us?</p>

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			<p><i>[Continue reading the story. Then pause at PPT slide 18 and ask the following question.]</i></p> <p>What is happening in this picture?</p> <p><i>[Continue reading the story. Then pause at PPT slide</i></p>	<p>the leaves.</p> <p>The white arrows show the plant taking in air through its leaves.</p> <p>Plants use air to make food.</p> <p>There's sunlight shining on the plant's leaves.</p> <p>The leaves are taking the light inside the plant.</p> <p>The plant uses light to make its own food.</p>	<p>What are the white arrows showing us?</p> <p>Why do you think air is important for the plant?</p> <p>Why do you think sunlight is important for the plant?</p>

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			<p><i>20 and discuss the following questions.]</i></p> <p>What do you think is happening in this picture? Is the plant getting what it needs to make its own food?</p> <p><i>[Continue reading the story. Then pause at PPT slide 22 and discuss the following questions.]</i></p> <p>What do you think is happening in this picture? Is the</p>	<p>The plant looks dry and droopy, and its leaves are turning yellow.</p> <p>A leaf fell off.</p> <p>The soil and the roots look dry.</p> <p>I think the plant is dying!</p> <p>It doesn't have any water. It needs all three—sunlight, water, and air.</p> <p>To make food.</p>	<p>What else do you notice about the plant?</p> <p>If this plant is getting light and air, why do you think it's dying?</p> <p>Why does the plant need all three things?</p>

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			<p>plant getting what it needs to make its own food?</p> <p>NOTE TO TEACHER: <i>Read PPT slide 23 as a summary. If students still think that water, air, and sunlight are food for plants, you can use this reading to emphasize that these three things react together to make food for the plant, but they aren't food by themselves. After reading the page, ask students, "Is water food for plants?" "Is air food for plants?" "Is sunlight food for plants?" Then ask how each of these things relates to food. Make sure students understand that water, food, and sunlight are all used or mixed together to make food.</i></p> <p>ELL support: During the lesson preview, discuss with ELL students what making food means in this context. They're likely to think that plants mix water, air, and light together like their families mix ingredients together to make food. Make sure they</p>	<p>The plant looks like it's dying.</p> <p>It looks droopy, and its leaves are turning brown.</p> <p>The room looks dark, and it looks like the plant isn't getting any sunlight.</p> <p>To make food.</p>	<p>How can you tell the plant is dying?</p> <p>Why do you think that is happening?</p> <p>Why does the plant need sunlight?</p>

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		Summarize key science ideas.	<p>understand that plants mix sunlight, air, and water together in a different way than mixing food together.</p> <p>So like our reading last time, we learned from today’s story that plants need food to live and grow.</p> <p>How do plants get their food?</p> <p>One of our beginning ideas was that soil is food for plants. What did we learn about soil today? Is soil food for plants?</p>	<p>Plants make their own food from air, water, and sunlight.</p> <p>No. Plants use air, water, and sunlight to make their food, but these things aren’t food for plants.</p> <p>No. Soil isn’t food for plants. Soil has water that plants need to make food, and plants take in water in through their roots.</p>	<p>Are air, water, and sunlight food for plants?</p>
10 min	<p>Follow-Up to Activity</p> <p>Synopsis: After the</p>	Highlight key	<p>Show slide 7.</p> <p>Our focus question today is <i>How do plants get their</i></p>		

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	<p>teacher reviews the focus question, students share their answers based on new information from the reading. Then the teacher reviews the double bubble map and challenges students to think about whether plants and animals get their food in the same way.</p> <p>Main science idea(s):</p> <ul style="list-style-type: none"> Both plants and animals need food, water, and air to live and grow. Animals catch and eat food from their environment. But plants make their own food in their leaves by using sunlight, air, and water from their environment. 	<p>science ideas and focus question throughout.</p> <p>Make explicit links between science ideas and activities after the activity.</p> <p>Engage students in constructing explanations and arguments.</p> <p>Ask questions to probe student ideas and predictions.</p> <p>Ask questions to challenge student thinking.</p>	<p><i>food?</i></p> <p>What did we learn today that can help us answer this question?</p> <p>Did we learn anything new about how plants make their own food?</p> <p>What other new ideas did we learn about?</p>	<p>We learned that plants make their own food!</p> <p>Yes! We learned that the roots of a plant take in water from the soil, and then the water goes up the stem and into the leaves.</p> <p>Because the blue arrows showed where the water was going.</p> <p>The plant takes in air through holes in its leaves.</p> <p>Because the leaves are where the plant makes its food.</p>	<p>How do we know that?</p> <p>Why do you think air needs to get inside the plant's leaves?</p>

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		<p>Ask questions to elicit student ideas and predictions.</p>	<p>Show slide 8.</p> <p>Now let's look at our double bubble map again. We know that plants need food just like animals, but do plants and animals get their food the same way or in different ways?</p> <p>Think about this question for a minute. Then I'm going to use equity sticks to call on some of you to share your ideas and evidence, so be ready!</p> <p>Individual think time (1 min).</p> <p>NOTE TO TEACHER: Consider having students engage in a Think-Pair-Share so they can practice sharing their ideas and evidence with a partner before sharing them with the class.</p> <p>Whole-class discussion: Let's have a show of hands first. How many of you think that plants and animals</p>	<p>We learned that sunlight goes inside the plant's leaves too.</p> <p>Because the plant needs water, air, and light to make food inside its leaves.</p>	<p>Why is that important for the plant?</p>

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		<p>Engage students in constructing explanations and arguments.</p> <p>Engage students in communicating in scientific ways.</p> <p>Ask questions to probe student ideas and predictions.</p> <p>Ask questions to challenge student thinking.</p>	<p>get their food the same way?</p> <p>How many of you think that plants and animals get their food in different ways?</p> <p>OK, let's hear why you think plants and animals get food in different ways. When you share your ideas, use one of the sentence starters on the slide:</p> <p><i>I think plants and animals get their food in the same way because ...</i></p> <p>OR</p> <p><i>I think plants and animals get their food in different ways because ...</i></p> <p>ELL support: During lesson preview, give ELL students an opportunity to practice using the sentence starter to construct their explanations so they know what's expected of them and can participate more fully in the discussion.</p>	<p>I think plants and animals get their food in different ways because plants don't catch their food, and animals do.</p> <p>I think plants and animals get their food in different ways because plants can make their food, and animals can't.</p> <p>I agree that they get foods in different ways because plants make their own food, and animals</p>	<p>Does anyone agree, disagree, or want to add on?</p> <p>Does anyone agree, disagree, or want to add on?</p>

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			<p>Show slide 9.</p>	<p>can't make their own food.</p> <p>Animals have to catch and eat their food.</p> <p>Animals are different because they can't eat sunlight.</p> <p>Plants don't eat sunlight, but it's their food. <i>[Misconception]</i></p> <p>Sunlight isn't the plant's food, but the light mixes together with air and water to make food.</p>	<p>Do plants eat sunlight?</p> <p>Does anyone agree or disagree?</p> <p>Let's go back to the book and see what it says about sunlight. Is sunlight the plant's food? <i>[See slide 17 of the PowerPoint presentation.]</i></p>

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		Highlight key science ideas and focus question throughout.	So both plants and animals need food, but they get their food in different ways. Plants use light, water, and air to make their own food inside their leaves. Animals have to find food in their environment that they can catch and eat.		
8 min	<p>Synthesize/Summarize Today's Lesson</p> <p>Synopsis: Working in pairs, students compare what plants and animals need from their environments and identify things on the double bubble map that both plants and animals need, things that only animals need, and things that only plants need. Then they share their findings in a class discussion.</p> <p>Main science idea(s):</p> <ul style="list-style-type: none"> Like animals, plants need food to live and grow. But they get their food in a very different way. Plants use sunlight, water, 	<p>Engage students in making connections by synthesizing and summarizing key science ideas.</p> <p>Engage students in communicating in scientific ways.</p>	<p>Show slide 10.</p> <p>Let's summarize our ideas about what plants and animals need from their environment to live and grow.</p> <p>Turn and Talk: Pair up with an elbow partner and look at each of the things we listed on our double bubble map.</p> <p>Which things on our map do <i>both plants and animals</i> need?</p> <p>Which things do just the <i>animals</i> need?</p> <p>Which things do just the <i>plants</i> need?</p> <p>Whole-class share-out: Let's hear your ideas about what plants and animal need.</p> <p>As your classmates share their ideas, listen carefully and be ready to talk like scientists. Think about whether you agree or disagree with an idea someone shares, or whether you can add a new idea or evidence to the discussion.</p>		

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	<p>and air from their environment to make their own food in their leaves. Animals have to find their food in their environment.</p>		<p>I'm going to use our equity sticks to call on some of you, so be ready!</p> <p>Are there things on our bubble map that <i>both plants and animals</i> need from their environment?</p> <p>Are there any things on our map that <i>only animals</i> need from their environment?</p> <p>Are there any things on our map that <i>only plants</i> need from their environment?</p>	<p>Yes. Both plants and animals need air.</p> <p>And they both need water.</p> <p>Yes. Only animals need to get food from their environment.</p> <p>Because plants can make their own food inside their leaves.</p> <p>Yes. Only plants need sunlight.</p> <p>Because plants use sunlight to make their own food.</p>	<p>So why don't plants need to get food from their environment?</p> <p>What are your reasons?</p> <p>So why don't animals need sunlight to make</p>

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			<p>So plants and animals both need water and air from their environment to live and grow. And they both need food. But plants get their food by making it themselves inside their leaves, and animals have to get their food from the environment.</p> <p>Show slide 11.</p> <p>Optional activity: Look at this picture of two children having a picnic. Do you see any other living things in the picture?</p> <p>How are the children and the plants getting the food they need to live and grow?</p>	<p>Because only plants can make their own food.</p> <p>Plants.</p> <p>Grass.</p> <p>Trees.</p> <p>The plants are making their own food out of air, water, and light.</p> <p>The children have food they brought with them.</p>	<p>food?</p> <p>Where did they get their food?</p>

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
				<p>From home.</p> <p>From the store.</p> <p>From their environment.</p>	
1 min	<p>Link to Next Lesson</p> <p>Synopsis: The teacher reviews the unit central question and foreshadows the next lesson in which student use different models to help them show how plants make their own food.</p>	Link science ideas to other science ideas.	<p>Show slide 12.</p> <p>Now we have more ideas to help us answer our big question for this unit, <i>Do plants and animals need the same things to live and grow? Explain your thinking.</i></p> <p>We'll keep thinking about this question as we learn more about what plants and animals need in the following lessons. Then we'll use everything we've learned to answer this question in our final lesson.</p> <p>Show slide 13.</p> <p>Next time, we'll think some more about the amazing things plants can do with light, air, and water.</p> <p>We'll also find out how we can use different models to help us show how plants make their own food.</p>		