

Plants and Animals

Lesson 6a: Synthesis

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| Grade: Kindergarten | Length of lesson: 38 minutes | Placement of lesson in unit: 6a 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: Do plants and animals need the same things to live and grow? Explain your thinking. |
| Main learning goal: Both plants and animals need food, water, and air to live and grow. Animals get these things from their environment. Plants use sunlight, water, and air from their environment to make their own food. Animals can't do this. | | |
| Science content storyline: Both plants and animals need food, water, and air to live and grow. Plants also need sunlight to live and grow. Animals get the things they need directly from their environment. Plants take in sunlight, water, and air from their environment, but they get their food in a different way. Using the sunlight, water, and air they get from their environment, plants make their own food inside their leaves. Animals can't do this. They have to get food from their environment by eating plants and other animals. | | |
| Ideal student response to the focus question: Both plants and animals need air and water to live and grow, but only plants need sunlight. They get all of these things from their environment. Plants and animals need food, too, but they get their food in different ways. Plants use sunlight, air, and water from their environment to make their food inside their leaves. Animals can't make their own food. They have to get food from their environment by eating plants and other animals. | | |

Preparation

Materials Needed

- Science notebooks
- Chart paper and markers
- Final version of the double bubble thinking map from lessons 5a–d
- Crayons (1 set per student)
- Blank T-charts (1 per student)

Ahead of Time

- Decide how much review work you want to do with students before the drawing/writing activity. If you think you can learn more about students' understandings without this work, feel free to skip the review of key ideas from previous lessons and in the activity setup.
- Create a master T-chart with the title "What Do All Animals and Plants Need to Live and Grow?" and two columns with the headings "What All Plants Need" and "What All Animals Need." (**Option:** You could omit the column headings and have students write them on their own charts.) Make enough copies of the T-chart to give each student one copy, with a few extra replacement copies. Alternatively, have students create the T-chart (What Do All Plants and Animals Need to Live and Grow?) for the drawing/writing activity in their science notebooks.
- **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. In particular, review the unit central question and the final double bubble map from lessons 5a–d. Also explain the drawing/writing activity and give students an opportunity to practice drawing pictures of what plants and animals need so they understand what's expected of them and can participate more fully in the activity.

Lesson 6a General Outline

| Time | Phase of Lesson | How the Science Content Storyline Develops |
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| 5 min | Link to previous lessons: The teacher engages students in reviewing what the plants and animals in their class terrarium need to live and grow. Then the teacher summarizes key ideas about what plants and animals need from their environment to live and grow. | <ul style="list-style-type: none"> Both plants and animals need air, water, and food to live and grow, but they get their food in different ways. Plants also need sunlight from their environment, which they use with air and water to make their own food inside their leaves. Animals can't make their own food. They have to get food from their environment by eating plants or other animals. |
| 1 min | Lesson focus question: The teacher introduces the focus question, which is also the unit central question: <i>Do plants and animals need the same things to live and grow? Explain your thinking.</i> | |
| 8 min | Setup for activity: Students review the needs of plants and animals they listed on the double bubble map from lesson 5. Then the teacher sets up a drawing activity in which students show how the needs of plants and animals are similar and different. | <ul style="list-style-type: none"> Animals need food, water, and air to live and grow. Plants need the same things, but they also need sunlight. Plants and animals get their food in different ways. Plants use sunlight, air, and water from their environment to make their own food inside their leaves. Animals can't make their own food. They have to get food from their environment by eating plants or other animals. |
| 10 min | Activity: Students draw pictures to show how the needs of plants and animals are similar and different. | |
| 8 min | Follow-up to activity: Students share their drawings and give one another feedback. | |
| 5 min | Synthesize/summarize today's lesson: The teacher reviews the unit central question/focus question. Then students answer the question and summarize their ideas in a class discussion. | <ul style="list-style-type: none"> Plants and animals have some common needs, such as food, water, and air, but plants also need sunlight. Plants and animals get their food in different ways. Plants use sunlight, air, and water from their environment to make their own food inside their leaves. Animals can't make their own food. They have to get food from their environment by eating plants or other animals. |
| 1 min | Link to next lesson: The teacher announces that in the next lesson, students will use everything they've learned about the needs of plants and animals to help students from another class decide what to put in their terrarium. | |

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| 5 min | <p>Link to Previous Lessons</p> <p>Synopsis: The teacher engages students in reviewing what the plants and animals in their class terrarium need to live and grow. Then the teacher summarizes key ideas about what plants and animals need from their environment to live and grow.</p> <p>Main science idea(s):</p> <ul style="list-style-type: none"> Both plants and animals need air, water, and food to live and grow, but they get their food in different ways. Plants also need sunlight from their environment, which they use with air and water to make their own food inside their leaves. Animals can't make their own food. They have to get food from their environment by eating plants or other animals. | Link science ideas to other science ideas. | <p>Show slides 1 and 2.</p> <p>NOTE TO TEACHER: <i>If you prefer assessing students' understandings of the Plants and Animals science content without reviewing key ideas from previous lessons, you may want to skip the review work in this phase and the activity-setup phase. If so, introduce the lesson focus question and then move directly into the drawing/writing activity.</i></p> <p><i>If you decide to conduct this review, make sure everyone can see the class terrarium.</i></p> <p>Let's look at our class terrarium again to review what we've learned in this unit about the needs of plants and animals.</p> <p>What do the <i>plants</i> in our terrarium need to get to live and grow?</p> <p>Before we share our ideas, I want you to spend some think time counting up how many things plants need to live and grow. When you have a number in mind, show me with your fingers how many things you think plants need.</p> <p>NOTE TO TEACHER: <i>Look to see how many fingers students hold up. If they hold up three fingers, they're probably thinking of water, air, light. If they hold up four or more fingers, they may be thinking of food, environment, and/or soil in addition to water, air, and light.</i></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>OK, let's start with those who held up three fingers. What three things do you think plants need to live and grow?</p> <p>Who held up four or more fingers? What do you think plants need?</p> <p>Any other ideas about what plants need?</p> | <p>Air, water, and sunlight.</p> <p>I think they need air, water, sunlight, and soil.</p> <p>I agree that plants need air, water, and sunlight, but I don't think they need soil because we grew bean seeds without soil, and we learned about plants that can grow in air or water without any soil.</p> <p>They also need food.</p> <p>No. Plants make their own food.</p> <p>They get sunlight,</p> | <p><i>Questions to ask during the review:</i></p> <ul style="list-style-type: none"> • Does anyone agree, disagree, or have something to add? • How do you know plants/animals need these things? What's your evidence? • How do plants/animals get these things from their environment? <p>How do plants get their food? Do they get it from the environment?</p> <p>How do plants make their own food?</p> |


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| | | Summarize key science ideas. | <p>And what about animals? What do they need to live and grow?</p> <p>NOTE TO TEACHER: <i>If students say that animals and/or plants need an environment to live and grow, emphasize that living things get what they need from the environment. You might also point out that it isn't possible to conduct an experiment without an environment to see whether organisms need one.</i></p> <p>Show slide 3.</p> <p>In this unit, we've been learning about the needs of plants and animals. Animals need food, water, air to live and grow. Plants need the same things, but they also need sunlight. Plants and animals get their food in different ways. Plants use sunlight, water, and air from their environment to make their own food inside their leaves. Animals can only get food from their environment by eating plants and other animals.</p> | <p>air, and water from their environment and mix them together in their leaves to make food for the plants.</p> <p>Animals need food, water, and air.</p> <p>I think that animals and plants need an environment.</p> <p>Because they can't get food, air, and water without an environment.</p> | <p>Does anyone agree, disagree, or want to add on?</p> <p>Why do you think they need an environment?</p> |
| 1 min | Lesson Focus Question | | Show slide 4. | | |

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| | <p>Synopsis: The teacher introduces the focus question, which is also the unit central question: <i>Do plants and animals need the same things to live and grow? Explain your thinking.</i></p> | <p>Set the purpose with a <u>focus question</u> or goal statement.</p> | <p>Today we're going to use everything we've learned about the needs of plants and animals to answer the big question we've been thinking about in our lessons: <i>Do plants and animals need the same things to live and grow? Explain your thinking.</i></p> <p>This is also our focus question for today.</p> | | |
| 8 min | <p>Setup for Activity</p> <p>Synopsis: Students review the needs of plants and animals they listed on the double bubble map from lesson 5. Then the teacher sets up a drawing activity in which students show how the needs of plants and animals are similar and different.</p> <p>Main science idea(s):</p> <ul style="list-style-type: none"> • Animals need food, water, and air to live and grow. Plants need the same things, but they also need sunlight. • Plants and animals get their food in different ways. Plants use | <p>Make explicit links between science ideas and activities before the activity.</p> | <p>We've learned a lot about what plants and animals need to live and grow, haven't we?</p> <p>In a few minutes, you're going to show what you know about the needs of plants and animals by drawing pictures and writing down your ideas. Then you'll share your drawings and writings with the class.</p> <p>NOTE TO TEACHER: <i>If you prefer assessing students' understandings of the Plants and Animals science content without reviewing the double bubble map from lesson 5, you may want to skip this setup activity. If so, move directly to the drawing/writing activity.</i></p> <p><i>If you decide to conduct this review, display the final version of the double bubble thinking map from lessons 5a–d and make sure everyone can see it.</i></p> <p>Show slide 5.</p> | | |

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| | <p>sunlight, air, and water from their environment to make their own food inside their leaves. Animals can't make their own food. They have to get food from their environment by eating plants or other animals.</p> | <p>Select content representations and models matched to the learning goal and engage students in their use.</p> <p>Engage students in communicating in scientific ways.</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</p> | <p>To help you think about what you should include in your drawing, let's look at our double bubble map from another lesson.</p> <p>What things do both plants and animals need from their environment?</p> <p>So we learned that both plants and animals need water and air. They both need food, too, but they get their food in different ways.</p> <p>What does our bubble map say about things that only plants need?</p> | <p>They both need water and air.</p> <p>They both need food, too.</p> <p>I disagree. I think their food is different.</p> <p>Plants make their own food. Animals can't do that.</p> <p>It says that only plants need sunlight.</p> <p>Because plants use sunlight with air</p> | <p><i>Questions to ask during the review:</i></p> <ul style="list-style-type: none"> • Can you say more about that? • Does anyone agree, disagree, or want to add on? • Can you explain what you're thinking? • What's your evidence? • Why do you think that? <p>Why do plants need sunlight and not animals?</p> |

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| | | thinking. | <p>Do you see anything on our map that only animals need?</p> <p>So now I'm going to give everyone a sheet of paper with a chart on it. Make sure you listen carefully so you'll know what to do.</p> <p>NOTE TO TEACHER: <i>Distribute the blank T-charts you created in advance (see Ahead of Time); then give each student a set of crayons to use. Go over the following directions for the drawing/writing activity with students. Feel free to modify these directions to best meet the needs of your class.</i></p> <p><i>The T-chart should look something like this:</i></p> <table border="1"> <thead> <tr> <th colspan="2">What Do All Plants and Animals Need to Live and Grow?</th> </tr> <tr> <th>What All Plants Need</th> <th>What All Animals Need</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table> <p><i>Alternatively, have students create T-charts in their science notebooks using the model on the slide.</i></p> | What Do All Plants and Animals Need to Live and Grow? | | What All Plants Need | What All Animals Need | | | <p>and water to make their own food. Animals can't make their own food.</p> <p>No.</p> | |
| What Do All Plants and Animals Need to Live and Grow? | | | | | | | | | | | |
| What All Plants Need | What All Animals Need | | | | | | | | | | |
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| | | | <p>Show slide 6.</p> <p>On your paper, you'll see a chart with a question at the top. Let's read this question together.</p> <p>NOTE TO TEACHER: <i>Point to each word on the slide as you read the question aloud with students.</i></p> <p>Underneath the question are two big boxes. One box says "What All Plants Need," and the other box says "What All Animals Need."</p> <p>In the first box, you're going to draw a picture that shows what <i>plants</i> need to live and grow. Then you'll write words to describe your picture.</p> <p>In the second box, you'll draw another picture that shows what <i>animals</i> need to live and grow. Then you'll write words to describe your picture.</p> <p>Make sure to show how plants and animals have some of the <i>same</i> needs and some <i>different</i> needs.</p> <p>Be ready to share your drawings with the class and explain what they show about the needs of plants and animals and how these needs are the same and different.</p> <p>NOTE TO TEACHER: <i>You might want to review key vocabulary words from previous lessons (on charts, circle maps, and the double bubble map) that describe what plants and animals need. Let students</i></p> | <p>What do all plants and animals need to live and grow?</p> | |

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| | | | <p><i>know they can use these words to label or describe their drawings. If you haven't done so already, add these words to a word wall for students to refer to during the activity and invite students to let you know if they want to add any other words to the word wall.</i></p> <p>ELL support: If you decide to create a word wall, review the vocabulary words with ELL students during the lesson preview. Encourage them to look through their notebooks as well as their shared picture dictionary (if they made one) for words to add to the wall.</p> | | |
| 10 min | <p>Activity</p> <p>Synopsis: Students draw pictures to show how the needs of plants and animals are similar and different.</p> <p>Main science idea(s):</p> <ul style="list-style-type: none"> • Animals need food, water, and air to live and grow. Plants need the same things, but they also need sunlight. • Plants and animals get their food in different ways. Plants use sunlight, air, and water | <p>Engage students in using and applying new science ideas in a variety of ways and contexts.</p> <p>Select content representations and models matched to the learning goal and engage students in their use.</p> | <p> Embedded Assessment Task</p> <p>NOTE TO TEACHER: <i>As students are working on their drawings and writings, circulate around the room and assess their understandings of the science ideas. Ask probe questions to determine what students understand and what they're still confused about. Ask challenge questions that will push them to make connections between science ideas and use new ideas appropriately. Make sure that students are clear about the purpose of the activity and help them stay focused.</i></p> <p><i>You may want to allow students to work in pairs on this activity to promote collaborative idea building and synthesis of information.</i></p> | | <p><i>Probe questions to ask as students work on their drawings:</i></p> <ul style="list-style-type: none"> • What were you thinking when you put the word [X] right here? • Why did you draw [X] here? • Can you tell me |

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| | <p>from their environment to make their own food inside their leaves. Animals can't make their own food. They have to get food from their environment by eating plants or other animals.</p> | <p>Ask questions to probe student ideas and predictions.</p> <p>Ask questions to challenge student thinking.</p> | | | <p>what your picture shows?</p> <p><i>Challenge questions to ask:</i></p> <ul style="list-style-type: none"> • How does your picture show that plants and animals have the same needs? • How does your picture show that plants and animals have different needs? |
| 8 min | <p>Follow-Up to Activity</p> <p>Synopsis: Students share their drawings and give one another feedback.</p> <p>Main science idea(s):</p> <ul style="list-style-type: none"> • Animals need food, water, and air to live and grow. Plants need the same things, but they also need sunlight. • Plants and animals get their food in different ways. Plants use sunlight, air, and water | <p>Engage students in making connections by synthesizing and summarizing key science ideas.</p> <p>Engage students in</p> | <p>Now I'd like some of you to share your drawings using the document reader.</p> <p>NOTE TO TEACHER: <i>If you feel it would be helpful, allow students to practice their presentations with a partner first. Then invite a few students to come up one at a time and share their drawings and writings with the class. Display each student's drawing on the document reader during the presentation.</i></p> <p>Show slide 7.</p> <p>Talk like scientists as you describe your drawings and then present your ideas and evidence. I want everyone else to listen carefully like good scientists and be</p> | | |

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| | <p>from their environment to make their own food inside their leaves. Animals can't make their own food. They have to get food from their environment by eating plants or other animals.</p> | <p>communicating in scientific ways.</p> <p>Ask questions to probe student ideas and predictions.</p> <p>Ask questions to challenge student thinking.</p> | <p>ready to agree or disagree, add on, or ask questions after each presentation.</p> <p>As we share our ideas with each other, we want to be sure to use our new science ideas accurately. Think about the ideas other share and whether you want to make any changes to your drawings or what you wrote. Good scientists are open to changing their own ideas if they hear a new idea that's better or more accurate.</p> <p>NOTE TO TEACHER: <i>If you want students to revise their drawings during the discussion, make sure they have at least one crayon to use. Alternatively, allow time for them to revise their drawings following the presentations (or simply skip this step).</i></p> <p><i>Remind students to allow their classmates to finish their presentations before they give feedback. Encourage students to use the sentence starters from the CSW poster as they respond to the ideas and evidence their classmates present.</i></p> <p><i>Make sure to correct any misconceptions or inaccuracies that come to light during the presentations or class discussions. Also reinforce corrections students suggest by highlighting their importance and accuracy.</i></p> | <p><i>Sample explanations:</i></p> <ul style="list-style-type: none"> • Plants need food, air, and water, but they make their own food with sunlight, air and water. • Animals need food, air and water. • Animals have to catch food in their environment. • Animals eat plants and other animals. • Animals can't make their own food like plants do. | <p><i>Questions to ask after each presentation:</i></p> <ul style="list-style-type: none"> • Did this give you any new ideas for your own drawing or writing? • Do you have any different ideas about this? • Can you tell me more about [X]? • What evidence do you have to support this idea? • Does anyone agree, disagree, or want to add on? • Does anyone have any questions? |

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| 5 min | <p>Synthesize/Summarize Today’s Lesson</p> <p>Synopsis: The teacher reviews the unit central question/focus question. Then students answer the question and summarize their ideas in a class discussion.</p> <p>Main science idea(s):</p> <ul style="list-style-type: none"> Plants and animals have some common needs, such as food, water, and air, but plants also need sunlight. Plants and animals get their food in different ways. Plants use sunlight, air, and water from their environment to make their own food inside their leaves. Animals can’t make their own food. They have to get food from their environment by eating plants or other animals. | <p>Highlight key science ideas and focus question throughout.</p> <p>Engage students in making connections by synthesizing and summarizing key science ideas.</p> <p>Ask questions to probe student ideas and predictions.</p> <p>Ask questions to challenge student ideas and predictions.</p> | <p>Show slide 8.</p> <p>Today’s focus question is the same as the big question we’ve been thinking about in every lesson: <i>Do plants and animals need the same things to live and grow? Explain your thinking.</i></p> <p>Let’s answer this question based on what we’ve learned about plants and animals in this unit.</p> <p>What do both plants and animals need to live and grow? Who can tell me one thing they need that is the <i>same</i>?</p> <p>NOTE TO TEACHER: <i>If students say that both plants and animals need an environment, remind them that they get the things they need from the environment.</i></p> <p>What is <i>different</i> about what plants and animals need?</p> <p>NOTE TO TEACHER: <i>After the class discussion, you could have students do one of the following:</i></p> | <p>They both need water.</p> <p>They both need air.</p> <p>They both need food.</p> <p>They both need an environment.</p> <p>How they get their food.</p> <p>Plants need sunlight to make their food.</p> | <p><i>Questions to ask:</i></p> <ul style="list-style-type: none"> Can you explain your thinking? What evidence do we have that both plants and animals need this? How do you know that animals don’t need sunlight too? |

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| | | | <ol style="list-style-type: none"> 1. <i>Circle the things in their drawings that both plants and animals need.</i> 2. <i>Revise their drawings and/or writings, based on other ideas or evidence they heard.</i> | | |
| 1 min | <p>Link to Next Lesson</p> <p>Synopsis: The teacher announces that in the next lesson, students will use everything they've learned about the needs of plants and animals to help students from another class decide what to put in their terrarium.</p> | Link science ideas to other science ideas. | <p>Show slide 9.</p> <p>Next time, we'll help students from another class decide what to add to their terrarium. They've already decided to put a praying mantis and a plant in the terrarium, but what else do they need?</p> <p>To help them, we'll need to use everything we've learned about what plants and animals need to live and grow in their environment!</p> | | |