

Plants and Animals Lessons: Scope and Sequence

Lesson Number	Focus Question(s)	Main Learning Goal	Science Content Storyline
1a	What living things are in our terrarium?	Plants and animals are both living things in our terrarium.	In our terrarium, there are living and nonliving things. Living things can grow and change. The praying mantis, the ladybugs, the earthworm, and the plants are all living things. The rock, water, stick, and soil are nonliving things. In our next science lesson, we'll investigate ways to group living things.
1b	How can we group the living things in our terrarium?	Plants and animals are both living things in our terrarium.	In our terrarium, there are living and nonliving things. The living things can be grouped as plants or animals. Next, we'll investigate what animals and plants need to live and grow. We'll also figure out whether plants and animals need the same things to live and grow.
1c	Where do plants and animals in our terrarium get what they need to live and grow? Where do we get what we need to live and grow?	Plants and animals need an environment where they can get the things they need to live and grow.	We have many ideas about what plants and animals need to live and grow. We'll do some investigating to find out which of our ideas are correct. But one thing that's very important for all plants and animals is where they live. They must live in a place—an environment—where they can get everything they need to live and grow.
1d	Where do plants and animals in other places around the world get what they need to live and grow?	There are many different kinds of environments around the world.	We have many ideas about what plants and animals need to live and grow. We'll do some investigating to find out which of our ideas are correct. But one thing that's very important for all plants and animals is where they live. They must live in a place—an environment—where they can get everything they need to live and grow. There are many different kinds of environments around the world where plants and animals live.

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2a	To live and grow, what do animals need to get from their environment?	To live and grow, all animals need to get food, water, and air from their environment.	Animals, including humans, need food, water, and air to live and grow. They get these things from their environment.
2b	To live and grow, what do <i>all</i> animals need to get from their environment?	To live and grow, all animals need to get food, water, and air from their environment.	All animals, including humans, need food, water, and air to live and grow. They get these things from their environment. Last time, we learned that lions and praying mantises need to get food, water, and air from their environment to live and grow. Today we learned that ladybugs and earthworms need to get the same things from their environment to live and grow.
3a	How can experiments help us find out what plants need to live and grow?	Evidence from a scientific experiment shows that plants need to take in air from their environment to live and grow.	In the last lesson, we found out that animals need food, water, and air to live and grow. But do plants have the same or different needs as animals? We can answer this question by testing some of our ideas and predictions about what plants need based on our experiences. After studying an experiment that scientists conducted to find out whether plants need air and comparing our predictions with scientists' observations and evidence, we can conclude that plants need air from their environment to live and grow.
3b	How can experiments help us find out whether plants need light to live and grow?	Designing an experiment to find out whether plants need light to live and grow involves asking a question, designing an experiment, making predictions and observations, and gathering evidence.	To find out whether plants have the same or different needs as animals, we're conducting experiments to test some of our ideas about what plants need. In the last lesson, we studied a science experiment that provided evidence that plants need air to live and grow. Today we designed an experiment to help us figure out whether plants need light to live and grow. Then we made predictions based on our experiences with plants, set up the experiment, and developed a plan for making observations and collecting evidence to help us answer our question. Now we'll observe what happens and write down our observations to keep track of what happens during the experiment. The evidence we collect will help us figure out whether plants need light to live and grow.

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3c	How can experiments help us find out whether plants need water to live and grow?	Designing an experiment to find out whether plants need water to live and grow involves asking a question, designing an experiment, making predictions and observations, and gathering evidence.	To find out whether plants have the same or different needs as animals, we're conducting experiments to test some of our ideas about what plants need. First, we studied a science experiment that provided evidence that plants need air to live and grow. Then we designed an experiment to help us figure out whether plants need light to live and grow. We made predictions based on our experiences with plants, set up the experiment, and developed a plan for making observations and collecting evidence to help us answer our question. Today we designed an experiment to answer the question, "Do plants need water?" We made predictions and set up our experiment. Now we'll observe our plants and write down our observations to keep track of what happens. Then we'll use the evidence we collect to figure out whether plants need water to live and grow.
3d.1 (Optional lesson)	How can experiments help us find out whether plants need soil to live and grow?	Designing an experiment to find out whether plants need soil to live and grow involves asking a question, designing an experiment, making predictions and observations, and gathering evidence.	To find out whether plants have the same or different needs as animals, we're conducting experiments to test some of our ideas about what plants need. Today we designed an experiment to answer the question, "Do plants need soil?" We made predictions and set up our experiment. Now we'll observe our plants and write down our observations to keep track of what happens. Then we'll use the evidence we collect to figure out whether plants need soil to live and grow.
3d.2 (Optional lesson)	Do plants need soil to live and grow? What is your evidence?	Many plants have soil in their environment, but not all plants need soil to live and grow.	To find out what plants need to live and grow, we set up two experiments to test our ideas about whether plants need water and light. We also set up an experiment to test our ideas about whether plants need soil to live and grow. When we observed seeds planted with and without soil, we found out that seeds can grow when they're planted in moist paper towels instead of soil. We also looked at different examples of plants and found out that some plants live their entire lives hanging in the air or floating underwater without any soil at all. So not all plants need soil to live and grow.

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4a	Do plants need light to live and grow? What is your evidence?	Plants need light to live and grow. Plants kept in the dark turn yellow and eventually die.	To find out whether plants need light to live and grow, we conducted an experiment where we put some plants in the dark and some plants in the light. The plants in the light stayed green and grew taller. The plants in the dark turned yellow and wilted. This is evidence that plants need light to live and grow. We now have evidence from our experiments to show that plants need air and light to live and grow. But not all plants need soil.
4b	Do plants need water to live and grow? What is your evidence?	Plants need water to live and grow. Plants that don't have water turn brown and eventually die.	To find out whether plants need water to live and grow, we conducted an experiment where we watered some plants and didn't water other plants. The plants that had water stayed green and grew taller. The plants without water turned brown and wilted, and their leaves fell off. This is evidence that plants need water to live and grow. We now have evidence from our experiments to show that plants need air, light, and water to live and grow. But not all plants need soil.
5a	Do plants need food? What is our evidence?	Like animals, plants need food to live and grow. But plants make their own food with sunlight, water, and air they get from their environment. Animals can't do this.	We know that plants need sunlight, water, and air to live and grow. But just like animals, plants also need food. 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.
5b	How do plants get their food?		
5c	What are different ways we can show how plants make their own food?	Models and diagrams show how plants take in light, water, and air from their environment and make food inside their leaves that they can use to live and grow. Animals can't do this.	We've learned that plants take in light, water, and air from their environment and make food inside their leaves that they can use to live and grow. Animals can't do this. Today we explored two different models to help us think about what happens inside a plant leaf. Models are similar to and different from the real-life things they represent. We used a mixing-bowl analogy and a diagram to show how plants make their own food inside their leaves with the sunlight, air, and water they get from their environment.

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5d	What is another way we can show how plants make their own food?	We can use a role-play as a model to show how plants take in light, water, and air from their environment and make food inside their leaves that they can use to live and grow. Animals can't do this.	We've learned that plants take in light, water, and air from their environment and make food inside their leaves that they can use to live and grow. Animals can't do this. There are different ways we can show what happens inside a plant when it makes food. In our last lesson, we used a mixing-bowl model and a diagram to show how plants make food inside their leaves. Today we used a role-play to help us think about happens when plants make food. Models are similar to and different from the real-life things they represent. All three of our models showed that plants take in light, air, and water from their environment and make food inside their leaves that they use to live and grow.
6a/b	Do plants and animals need the same things to live and grow? Explain your thinking.	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.	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.