



Plants and Animals

Kindergarten/ Life Science

In Kindergarten students will learn to formulate answers to questions such as, “Where do animals live and why do they live there?” Students are expected to develop an understanding of what plants and animals (including humans) need to survive and the relationship between their needs and where they live. (Adapted from NGSS)

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UNIT PLAN

Stage 1 Desired Results					
<p>K-LS1-1. Observe and communicate that animals (including humans) and plants need food, water, and air to survive. Animals get food from plants or other animals. Plants make their own food and need light to live and grow.</p> <p>K-LS1-2(MA). Recognize that all plants and animals have a life cycle: a. most plants begin as seeds, develop and grow, make more seeds, and die; and b. animals are born, develop and grow, produce young, and die. 2006- LS. 2. Differentiate between living and nonliving things. Group both living and nonliving things according to the characteristics that they share.</p> <p>ELA/Literacy RI. MA1.1 With prompting and support, ask, and answer questions about key details in a text. RI. MA.3. With prompting and support, describe the connection between two</p>	<i>Meaning</i>				
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #f4a460; padding: 5px;"> UNDERSTANDINGS <i>Students will understand that...</i> <ul style="list-style-type: none"> All animals need food in order to live and grow Animals obtain their food from plants or other animals Plants need water and light to live and grow </td> <td style="text-align: center; vertical-align: middle; font-weight: bold; font-size: 1.5em;">U</td> <td style="padding: 5px;"> ESSENTIAL QUESTIONS <ul style="list-style-type: none"> What do plants and animals need? What is growth? </td> <td style="text-align: right; vertical-align: middle; font-weight: bold; font-size: 1.5em;">Q</td> </tr> </table>	UNDERSTANDINGS <i>Students will understand that...</i> <ul style="list-style-type: none"> All animals need food in order to live and grow Animals obtain their food from plants or other animals Plants need water and light to live and grow 	U	ESSENTIAL QUESTIONS <ul style="list-style-type: none"> What do plants and animals need? What is growth? 	Q
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<i>Student Learning Targets</i>					
	<p>By the end of this unit, students will be able to...</p> <ol style="list-style-type: none"> 1. Sort pictures of plants, animals and nonliving things. 2. Identify three defining characteristics of plants: Plants stay in one place, Plants are alive, Plants make their own food. 3. Identify that all plants have a stem, leaves, and roots; some plants have flowers and/or fruits. 4. Describe an animal using three key questions: Where does it live?, How does it move?, What does it eat? 5. Show that humans are animals. 6. Identify that in order to survive plants need food, water, and air. 7. Identify that in order to survive animals need food, water, air, and shelter. 8. Illustrate the way that plants make food from water, air, and sunlight. 9. Identify the three ways to categorize animals by the types of foods that they eat: herbivore, carnivore, and omnivore. 10. Describe the life cycle of a plant. 11. Show that seeds come in many different shapes and sizes. 				

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<p>individuals, events, ideas, or pieces of information in a book.</p> <p>SL.K.5 Add drawings or other visual displays to descriptions as desired to provide additional detail.</p> <p>WS.K.1. Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book (e.g., <i>My favorite book is . . .</i>).</p>	<p>12. Identify the stages of the life cycle of animals including being born, growing and developing, producing young, and dying.</p> <p>13. Explain why habitats are important to an animal’s life cycle and for an animal to survive and thrive.</p> <p>14. Explain the differences and similarities of plant and animal life cycles.</p>
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Stage 2 – Evidence

Evaluative Criteria	Assessment Evidence
<ul style="list-style-type: none"> ● Participation ● Class activities/ projects ● Vocabulary Dictionary 	<p>OTHER EVIDENCE: OE</p> <ul style="list-style-type: none"> ● Participation in class and group conversations ● Participation and completion of class activities such as the plant collage, the animal clay project, the matching games, the photosynthesis handouts, the animal stomach presentations, the plant life cycle drawing, and the animal life cycle wheel project ● Vocabulary Science Dictionary

Stage 3 – Learning Plan

Throughout this unit, the students will create a science dictionary made up of all of the vocabulary words from each lesson.

Lesson 1 What are Plants?

In this lesson students will learn that plants are living organisms and have a limited capacity to move around. By observing examples they will discover that plants stay in one place, are alive, and make their own food. Students will observe a variety of types of plant forms (trees, shrubs, grasses, seaweeds, etc.) to discover the wide range of plant types.



Lesson 2 What are Animals?

In this lesson students will explore many different types of animals, how animals move and behave, where they live, and what they eat. They will also recognize that humans are animals, too.

Lesson 3 The Zoo (Literacy Lesson)

Students will read about some of the unique qualities of animals by reading *At The Zoo* by David M. Schwartz.

Lesson 4 Animal Needs vs. Plant Needs

In this lesson students will learn that plants and animals have specific needs (air, water, food/nutrients, shelter, sunlight). Some of their needs are the same and some are different. Through a matching game, video, conversation, and plant experiment, students will be able to recognize the needs of plants and animals.

Lesson 5 How Do Plants get Their Food?

In this lesson, students will learn how plants make their own food from water, air, and sunlight.

Lesson 6 How Do Animals Get Their Food?

Students will learn about the different types of food animals eat and how to categorize animals by the foods they eat. They will need to know that some animals eat only plants, some animals only eat meat and others eat both. Students will create the stomach of an animal to better understand what certain animals eat.

Lesson 7 Life Cycle of a Plant (Literacy Lesson)

The classroom teacher will read aloud *The Tiny Seed* by Eric Carle. Through the story of a tiny seed, students will experience the life cycle of a plant. This lesson should be completed prior to the Science Fellows teaching lesson 8.

Lesson 8 Life Cycle of a Plant

Students will observe the development of bean sprouts and record their observations in a Science Journal. After discussing observations and creating some hypotheses, students will watch a time-lapse video of the growth of a bean sprout, followed by a worksheet showing the full plant cycle. They will explore different types of seed and seed sources through a hands-on activity.

Lesson 9 The Life Cycle of an Animal

Students will learn about the life cycle stages of an animal and create a life cycle wheel of one of two animals.

Lesson 10 The Life Cycle of an Animal: Habitats

Students will explore how habitats are important for an animal to survive and thrive. They will organize animals into four basic habitats.

Lesson 11 Life cycle comparison of plants and animals

Students will compare the life cycle of a plant to an animal through song, dance, and class discussion. Students will understand that the cycles are very similar but have their unique differences.

Adapted from Massachusetts Department of Elementary and Secondary Education's Model Curriculum Unit Template. Originally based on Understanding by Design 2.0 © 2011 Grant Wiggins and Jay McTighe. Used with Permission July 2012

Tiered Vocabulary List

Tier 1	Tier 2	Tier 3
plant animal food water soil seed grow order change	categorize sort hop slither soar wild needs prediction shelter absorb cycle sprout seedling life cycle habitat	leaf stem root survive nutrients photosynthesis carnivore omnivore herbivore

Lesson 1: What Are Plants?

BACKGROUND

Overview of the Lesson

In this lesson, students will begin to explore the defining characteristics of plants. A sorting activity will introduce the concept of categorizing plants, animal, and non-living things. Through a Science Fellow-facilitated discussion, students will use examples from the video “Types of Plants” and their own experiences to draw conclusions about things all plants have in common. They can then use this information to create a plant collage, including roots, a stem, leaves and optional fruits and flowers. In the plant collage, they should include everything that plants need to grow (sun, soil, and water). **The classroom teacher should complete the science dictionary cover and the lesson 1 vocabulary worksheet in the science dictionary with the students before the science fellow(s) comes in.** The classroom teacher should add the new vocabulary words to the classroom word wall. **After the lesson, the classroom teacher should go over vocabulary and add the new words (leaf, stem, roots) to science dictionaries, which will be compiled over the course of the unit.

Focus Standard(s)

K-LS1-1. Observe and communicate that animals (including humans) and plants need food, water, and air to survive. Animals get food from plants or other animals. Plants make their own food and need light to live and grow.

[2006] LS. 2. Differentiate between living and nonliving things. Group both living and nonliving things according to the characteristics that they share.

Learning Targets

I can identify three defining characteristics of plants:

- Plants stay in one place.
- Plants are alive.
- Plants make their own food.

I can create a model of a plant that has a stem, leaves, and roots.

I can explain that plants have special parts in order to survive.

Assessment

Check that all plant collages include leaves, a stem and roots. During the presentations, listen to make sure that each student mentions the following during his or her plant presentations: 1) plants stay in one place, 2) they are alive, and 3) they make their own food.

After the lesson, hand out three index cards to each student, labeled “Non-living,” “Animal,” and “Plant.” Ask the students to draw an example from each category on each card.

Targeted Academic Language

Tier 1: plant, animal

Tier 2: categorize, sort

Tier 3: leaf, stem, root

RESOURCES AND MATERIALS

Quantity	Item	Source
1 per student	Copy of Science Dictionary (11 pages total which will be completed over the course of lessons 2-11) Only the cover page will be completed in this lesson	Binder (Classroom Teacher to make copies of all 11 pages for each student)
3 per class	Baskets for categorizing, labeled Plants, Animals, and Non-Living	Bin
1 set per class (at least one per student)	Cards for categorizing (includes plants, animals, and non-living items)	Bin
1 per class	Computer/projector for "Types of Plants" video	Classroom Teacher
	"Types of Plants" video: https://www.youtube.com/watch?v=LW0jUbKcn1I	Thumb Drive
Students will share	Crayons and markers	Classroom Teacher
	Construction Paper	Classroom Teacher
	String	Bin
	Leaves	Classroom Teacher
1 per student	Scissors	Classroom Teacher
1 set per group	Plant and Flower Outlines (5 pages total)	Binder
1 per student	Glue sticks and tape	Classroom Teacher
3 per student	Index cards	Classroom Teacher
	Chart paper	Classroom Teacher

****Items in bold should be returned for use next year****

LESSON DETAILS

The classroom teacher should begin the word wall on a large piece of chart paper. At the top please write, “Plants and Animals Word Wall.” As new vocabulary words are introduced the classroom teacher should add new words to the word wall so that students may refer back throughout the unit.

Lesson Opening/ Activator

Set up three baskets at the front of the room, labeled Plants, Animals, and Non-Living Things. The science fellow or teacher holds up one of the picture cards and looks at it and says, “This is a ____ it belongs in the _____ basket” to model their thinking for the students, then chooses a student to categorize a picture card the item into one of the three categories. Ask why they think the card should be placed there. Once all of the cards have been sorted discuss what makes each category unique and write the student’s responses on the board. You may opt to place students into small groups for the sorting activity and have them arrive at their conclusion together.

- How is an animal different from a plant?
- How do we know if something is “living” or “non-living”?

Tell students that today they are going to learn what living things need to survive. Both plants and animals are living things.

During the Lesson

Observing Plants (Activity)

1. Show the “Types of Plants” video (about 2 minutes long.) After viewing, discuss some of the plants they saw. Students will then do a *Think-Pair-Share*, and ask students to add their own examples not shown in the video. List them on chart paper or the board. The teacher should note that just as there are many different species of animals, there are many different species of plants.



2. Take a field trip outside and let students collect up to three plant items. Students may want to collect a blade of grass, a flower, a leaf, a root, etc. Students should be exploring what plants are and the different kinds that there are in their area. Once they have collected their plants, they can tape or glue them on the backside of their vocabulary worksheet for this lesson. Have students observe plants and notice that they are alive and they stay in one place. **If not feasible at this time of the year, save the field trip for later point in the unit and show pictures of various plants.**
3. Using the list of plants, ask students what they know about plants and what all plants have in common. Take plenty of time to discuss different possibilities and exceptions, but guide the discussion towards the three defining characteristics of plants. **[SP4: Analyzing data]**
 1. Plants are alive.
 2. Plants stay in one place.
 3. Plants make their own food.

Building a Plant (Activity)

Draw a diagram of a plant on the board and label the various parts of the plant. Using worksheet outlines of plant parts, the students build their very own plants. The students will be using materials such as construction paper strips, string, crayons, and leaves collected from outside to represent the different parts of the plant. Each plant must have at least leaves, a stem and roots. After students build their plant, the Science Fellow and Teacher should tell students that the roots are what help to hold the plant in place, and plants make their own food because their leaves take in sunlight. Students can take turns sharing with a partner what parts their plant has and how these parts help the plant survive.





Lesson Closing

Have students sit in a circle with their plant creation. Encourage students to share their plant, maybe pointing out one of the main parts (stem, roots) or tell something about their plant; remind students about the importance of these parts of the plant. This will be part of the assessment.

* After the lesson, the classroom teacher should go over vocabulary and add the words [stem, leaves, and roots] to the students' science dictionaries

Assessment

Check that all plant collages include leaves, a stem and roots. During the presentations, listen to make sure that each student mentions the following during his or her plant presentations: 1) plants stay in one place, 2) they are alive, and 3) they make their own food.

After the lesson, hand out three index cards to each student, labeled "Non-living," "Animal," and "Plant." Ask the students to draw an example from each category on each card.



Lesson 2: What Are Animals?

Background

Overview of the Lesson

Students will explore a variety of animals through a scavenger hunt, brainstorming session, and a classroom zoo, in which students take turns being animals and zoo guests. Students will be able to answer the following questions: how do animals move? Where do animals live? What do animals eat? Students should apply these questions to humans and determine whether humans are animals. **The classroom teacher should complete the lesson 2 vocabulary worksheet in the science dictionary with the students before the science fellow comes in and add words to the word wall.**

Focus Standard

K-LS1-1. Observe and communicate that animals (including humans) and plants need food, water, and air to survive. Animals get food from plants or other animals. Plants make their own food and need light to live and grow.

Learning Targets

I can describe an animal using three key questions:

- a. Where does it live?
- b. How does it move?
- c. What does it eat?

I can show that humans are animals.

Assessment

The students will design animals out of clay and asked to answer three questions about the defining characteristics of animals as they relate to their fictitious creatures: Where does it live? How does it move? What does it eat?

Check that each student contributes to the discussion surrounding humans as animals.

Targeted Academic Language/ Key Vocabulary

Tier 2: hop, slither, soar

RESOURCES AND MATERIALS

Quantity	Item	Source
1 per student	Science Dictionary (Hop, slither, soar page)	Binder (Classroom Teacher to copy)
1 set per class	Animal Images (colored copy)	Bin
Enough for each students to create a small animal	Modeling clay (various colors)	Bin

****Items in bold should be returned for use next year****

LESSON DETAILS

Lesson Opening/ Activator

Animal Scavenger Hunt: Display the animal images at the front of the classroom and invite the students to gather around it.

Ask the students to find creatures that fit the following descriptions (feel free to add your own!):

- an animal that flies
- an animal that swims
- an animal that's bigger than a desk
- an animal that would fit inside your backpack
- an animal with no legs
- an animal that lives in Massachusetts
- an animal that lives in the ocean

During the Lesson

Classroom Zoo:

1. As a class, verbally brainstorm a list of animals. (Be sure to include some insects, birds, reptiles, fish, crustaceans, and other non-mammalian creatures!) For each animal, talk about (1) where it lives, (2) how it moves, (3) what it eats.
2. Divide the class in half. Half of the students will spread out across the room and pretend to be different types of animals; the other half will be zoo guests and ask the “animals” questions. Offer some suggestions for questions students should be asking, such as “what do you eat?”, “where do you live?”, “how do you move?” Then, switch, so that everyone gets a chance to be a zoo animal and a guest. Gather as a class and discuss the types of questions that were

asked and what everyone learned about animals. What did the animals have in common? What was different about each animal? **[SP1: Asking questions]**

- For the purposes of this lesson, zoo animals can speak English.
 - It will be helpful to remind the students to be respectful of the classroom and each other: keep your hands to yourself, no climbing on furniture, etc.
 - Give each group about 10 minutes to play their part.
3. **Sleeping Creatures:** (This is a great “settling down” activity!) Each student finds a place to pretend to sleep like their animal. The Science Fellow is the “zookeeper.” If they see anyone move out of their sleeping animal position, they get taken to the zoo and become another zookeeper. Once the students are caught have them tell the science fellow what animal they were pretending to be and how did they portray the animal, in order to make the activity more educational. The last sleeping animal wins. This is a good time to talk about the importance of shelters. Start the discussion by talking about why animals need to sleep, and relate to students’ own lives by asking them where they usually sleep? Then ask each student to pair share and think back to the animal they just were pretending to be while sleeping, and ask them to imagine what/where they think their animal would be sleeping? What would the ground underneath you look like? Would there be anything over your head? Emphasize importance of shelter, and that different animals create different kinds of shelters depending on environment and needs.
4. **Build an Animal:** Using modeling clay, students can create their own animal. Make sure each student chooses a unique animal. As they design it, ask them to think about the following questions:
- Where does your animal live?
 - What does your animal eat?
 - How does your animal move?

Optional Lesson Extension

If it is possible, weather- and transportation-permitting, take the students on a field trip to a local forest or wildlife reserve. The following activities are designed to inspire students to observe animals in nature and draw conclusions about animal behavior.

- **Count the Sounds:** Students sit in a circle, close their eyes, and stay very still. They raise one finger for every type of sound they hear. When most students have about 5 fingers raised, the Science Fellow should ask everyone to open their eyes. Everyone can share a sound that they heard and a guess about the type of animal that may have made that sound and why,
- **Animal Tracking:** Ask the students to explore the area (within the teacher's sight and hearing distance, of course) for signs of animals. These may include tracks, broken branches, insects, eaten leaves, scat... What can we learn about the animals in the area from these signs? What can we learn about animal behavior? **[SP6: constructing explanations]**
- Have the students draw observations in their science journal, maybe collect some 'evidence' (e.g. bug-eaten leaves) that can be pasted into their journals when they get back to the classroom.

*Alternative: if means for transportation are not feasible, you can modify activity to take place outside (weather permitting) on school grounds. Can carry out sound activity (if teacher/science fellow makes call that there are enough variety of animal sounds to be heard i.e. birds?) To observe animal behavior: place bug boards in preparation a few days prior to lesson, and have students bring out science journals and observe what bugs/creatures now inhabit area under board. Sketch bugs they see, make observations about how they move.



*Tech/indoor alternative: play video of nature sounds (<https://www.youtube.com/watch?v=sdlnOxjDzdo>). Have students sit and close their eyes and listen to video for a few minutes. Ask them to make note of what sounds they hear, and where they think those sounds are coming from (answer should not literally be “from computer speakers”). Once students have opened their eyes, lead discussion, asking a few students to share what they think they heard and *why* they identify it the way they do.

Lesson Closing

Pose this question to the class: “Are humans animals?”

You may want to pose the three animal questions and try to answer them for humans: Where do humans live? What do we eat? How do we move?

Other guiding questions may include: how are we the same as bears (or monkeys or fish or snakes)? How are we different?

Assessment

The students will design animals out of clay and asked to answer three questions about the defining characteristics of animals as they relate to their fictitious creatures: Where does it live? How does it move? What does it eat?

Check that each student contributes to the discussion surrounding humans as animals.



Lesson 3: The Zoo (Literacy Lesson)

To be taught by the Classroom Teacher

BACKGROUND

Overview of the Lesson

In this lesson students will read, *At The Zoo* by David M. Schwartz. Students will think about different animals and how certain attributes help it obtain food or escape a dangerous situation.

Focus Standard(s)

K-LS1-1. Observe and communicate that animals (including humans) and plants need food, water, and air to survive. Animals get food from plants or other animals. Plants make their own food and need light to live and grow.

RI. MA1.1 With prompting and support, ask, and answer questions about key details in a text.

WS.K.1 Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book (e.g., *My favorite book is...*).

Learning Target

I can describe what attributes help animals acquire food or camouflage themselves so they don't become food.



Assessment

The students should have a picture of their favorite animal, its name (phonetic spelling is okay), and **one sentence** explaining why they chose the animal that they did. Students will also be assessed based on participation in class activities and discussions.

Targeted Academic Language/ Key Vocabulary

Tier 2: wild

Tier 3: survive

RESOURCES AND MATERIALS

Quantity	Item	Source
A few for each student	Crayons	Classroom Teacher
1 per student	Pencil	Classroom Teacher
1 per student	Lined writing paper with space for picture	Classroom Teacher
1 per class	<i>At the Zoo</i> by David M. Schwartz	Bin
1 per student	Science Dictionary page (Survive and Wild page)	Binder (Classroom Teacher to copy)

****Items in bold should be returned for use next year****



LESSON DETAILS

Lesson Opening/ Activator

Introduce the book. Show the cover and ask about the animal on the cover. What is it? Discuss the fact that there is no illustrator. Ask students why they think the book has photographs instead of drawn pictures. How does this help the author?

During the Lesson

1. **Prediction:** What are some animals we may read about?
 - What is the difference between animals in a zoo and animals in the wild?
 - What do you think the author wants you to know at the end of this book?
2. **Read:** *At The Zoo* by David M. Schwartz
3. **Ask** the following guiding questions while reading:
 - Page 1. What kind of animal is this? *Tiger*
 - Page 2. How do the stripes help? *helps it blend in with the grass.* How does this help it get food? *It gets closer to it's prey*
 - Page 3. What kind of bird is this? *A peacock*
 - Page 4. How do the feathers help? *It's how they attract a female* How might the big circles on the tail help it escape predators? *It may scare them*
 - Page 5. What kind of animal is this? *A lion*
 - Page 6. How do the whiskers help? *It helps them feel their way through the brush and get closer to prey*
 - Page 7. What animal is this? *Elephant*
 - Page 8. What do the long thick eyelashes do? *Protect the eyes from sand and dirt.*
 - Page 9. What kind of animal has humps? *Camel*

- Page 10. What do the humps do? *Store water* How does this help a camel feed? *It can go a long time using only the stored water in it's hump*
 - Page 11. What is this animal? *parrot*
 - Page 12. What does the strong beak do? *breaks open shells of seeds*
 - Page 13. What animal has black and white stripes?
 - Page 14. How do the stripes help? *They blur the zebra while running*
4. What other animals can you think of? What sort of things may help them survive?
 5. Students should write a few sentences about their favorite animal.
 6. Discuss rules for writing (i.e. beginning capital, finger space, end marks).
 7. Have students draw their favorite as well.
 8. When students have completed their sheets you can compile them into a classroom book with a cover labeled *My Favorite Animal Book*.

Lesson Closing

Share the book as a whole class and discuss.

Focus on the pictures and the attributes the animals have (i.e. elephants have big ears)

Assessment

The students should have a picture of their favorite animal, its name (phonetic spelling is okay), and **one sentence** explaining why they chose the animal that they did. Students will also be assessed based on participation in class activities and discussions.

Lesson 4: Plant Needs Versus Animal Needs

BACKGROUND

Overview of the Lesson

In this lesson, students will be making observations about what plants and animals need in order to survive. Students will complete a matching game and observe a plant experiment to demonstrate the needs of plants and animals.

Focus Standard

K-LS1-1. Observe and communicate that animals (including humans) and plants need food, water, and air to survive. Animals get food from plants or other animals. Plants make their own food and need light to live and grow.

Learning Targets

I can identify that in order to survive plants need food, water, and air.

I can identify that in order to survive animals need food, water, air, and shelter.

Assessment

- To assess students' knowledge of plant and animal needs, listen to the discussions in the classroom when talking about the videos and creating the Venn diagrams.
- To assess students' knowledge of plant and animal needs check to see that students finish the plant and animal needs matching game correctly.

Targeted Academic Language/ Key Vocabulary

Tier 1: food, water

Tier 2: needs, prediction, shelter

Tier 3: nutrients

RESOURCES AND MATERIALS

Quantity	Item	Source
1 per student	Science Dictionary page (Shelter and Food page)	Binder (Classroom Teacher to copy)
1 large bag	Potting soil	Bin
1 per student	Plant seeds	Bin
1 per student	Pots or small milk cartons	Bin
1 per student	Paper	Classroom Teacher
1	Projector for videos	Classroom Teacher
	Plant Needs video https://www.youtube.com/watch?v=dUBIQ1fTRzI	Thumb drive
	Animal Needs video https://www.youtube.com/watch?v=k4UDf3tF_04	Thumb drive
	Basic needs of living things video https://www.youtube.com/watch?v=wOXay8rdzRg	Thumb drive
1 liter	Water	Classroom Teacher
1 piece	Chart paper	Classroom Teacher
1 per group	Plant and animal needs matching game cards (should have 2 air, 2 water, 2 food, 1 shelter, and 1 sunlight)	Bin

****Items in bold should be returned for use next year****

LESSON DETAILS

Lesson Opening/ Activator

Begin with a discussion about what it means for a plant or animal to “need” something. Make sure the students understand that needing something to survive is not the same as wanting something. For example, what would happen if you got a really cool and fun video game? You would have a lot of fun, but would it help you survive? Not everyone has video games, but what is something that everyone must have in order to live, including all plants and animals? Have the students turn and talk to a partner to discuss some possible answers to this question. Remind students that they are thinking about both plants and animals and their answers should encompass both. After a few minutes, have some pairs share their answers with the whole class. Some of their responses might be water, air, food, soil, sunlight. When students respond ask them for specific examples, such as, “What kinds of things need water?” “What kinds of things need sunlight?”

During the Lesson

1. First, students will watch two videos.
 - a. One video is called, The Needs of an Animal, it plays a song based on the four basic things that animals need (food, shelter, water, and air). After viewing the video, review the four animals needs with the class.
https://www.youtube.com/watch?v=k4UDf3tF_04
 - b. Now play the second video which is about the needs of plants. Tell students to listen very carefully to see if plants need the same thing as animals. <https://www.youtube.com/watch?v=dUBIQ1fTRzI>
 - c. Extension video: This video is about the four basic needs of living things (approximately 6 minutes long). This video features two kids, with one girl educating a boy about what a living thing needs to survive.
<https://www.youtube.com/watch?v=wOXay8rdzRg>

2. After watching both videos, take time to have a discussion about each one. Ask the students to recall what the important things that a living thing needs are. Make sure to talk about humans as well because we are animals. Ask them if the basic needs of a human are the same basic needs of an animal. The science fellow may write the students' responses on the board and/or have the students write them down on a piece of paper.
3. On a piece of chart paper, the science fellow should create a class Venn diagram. This Venn diagram will compare the things that plants and animals need to survive. Label the diagram "Plant Needs vs. Animal Needs." Label one circle "plants," and the other circle "animals." The middle is reserved for things both categories have in common. Ask the students to raise their hands and shout out items that belong under each category. Note: Keep the piece of chart paper with the Venn diagram on it because it can be used as a reference for lesson 10.
 - a. Optional: Have the students copy the Venn diagram on a separate piece of paper for their own records.
 - b. Extension: Add a third circle to the Venn diagram that is labeled humans. See if students can make the connection that animals and humans would share everything in common. This will prove that humans are animals. Humans and plants would not share all of the same needs.
4. **Plant and Animal Needs matching game.** Students should get into groups of 4. Each group will receive 8 cards with the basic needs of both plants and animals. Each card will say either air (2), water (2), food (2), shelter (1), or sunlight (1). As a group, students should organize these cards into their correct categories, what animals need and what plants need. When the students think they have it correct, they should call over the science fellow or classroom teacher to check their work.
5. **Plant experiment:** Explain to students that they will be designing an experiment to see what happens if a plant does not have its needs met. Involve students in the process as much as possible, but the teacher should guide the students



into designing an experiment where one plant will be properly taken care of with sunlight, water, and air. The second plant will not be given any of those things (there will be only one for the class). Prior to the start of the lesson, ask students if they have any predictions of what will happen to the plants. The second plant should be kept covered up by a box so that it receives none of the essential things a plant needs in order to grow. Ask the students to observe what is going on with the plants on a daily basis. This experiment will illustrate that plants need those essential items such as sunlight, water, and air in order to grow. Ask students to make predictions and have the teacher document these predictions to check later. Remember to take care of the growing plant on a daily basis. **[SP3: planning and carrying out investigations]**

Each student should be given a cup, with their names labeled on it, students should prepare the cup for planting. Their cup will be placed in the window sill. There will be a class cup for the 'deprived' plant, which should be placed under the box. Children should check the cups each day to observe what is happening; students should draw their observations and make further predictions.

After students complete the planting, they can complete a science journal entry where they predict what each cup will look like in one week. To support students science journaling skills, the classroom teacher may draw a diagram on a piece of chart paper with pictures that represent the plants' growth day by day. Each day the classroom teacher will need to add a new picture to illustrate any changes. This will help students visually see the progress of the growing plant all at once.

Lesson Closing

Ask the students to think about what would happen if living things did not have these basic needs met such as food, water, shelter, nutrients, sunlight, and air. The plant experiment should help with this discussion. What would happen if an animal



did not receive these 4 basic needs? Would an animal who received nothing end up just like the plant that received none of its essential needs?

Assessment

- To assess students' knowledge of plant and animal needs, listen to the discussions in the classroom when talking about the videos and creating the Venn diagrams.
- To assess students' knowledge of plant and animal needs check to see that students finish the plant and animal needs matching game correctly.



Lesson 5: How Do Plants Get Their Food?

BACKGROUND

Overview of the Lesson

In this lesson, students will explore the process of photosynthesis through a worksheet and interactive game.

**Before the lesson begins, the classroom teacher should go over the vocabulary (soil, absorb, resource, photosynthesis) and add it to the science dictionary.

**The photosynthesis game requires a large running-around space.

Focus Standard

K-LS1-1. Observe and communicate that animals (including humans) and plants need food, water, and air to survive. Animals get food from plants or other animals. Plants make their own food and need light to live and grow.

Learning Target

I can illustrate the way that plants make food from water, air, and sunlight.

Assessment

Check the photosynthesis handouts. Make sure that each student has represented all of the resources (sunlight, air, and water) in the appropriate places.

Targeted Academic Language/ Key Vocabulary

Tier 1: soil

Tier 2: absorb

Tier 3: photosynthesis

RESOURCES AND MATERIALS

Quantity	Item	Source
1 per student	Science Dictionary page (Soil, absorb, photosynthesis page)	Binder (Classroom teacher to copy)
1 per student	Photosynthesis Handout	Binder
	Crayons	Classroom Teacher
1 per class	Hula Hoop	Borrow from P.E. Teacher
1 set per class	Large blue, yellow, and orange stickers	Bin
1 per class	Laptop/projector for Magic School Bus video (optional)	Classroom Teacher
	Photosynthesis Song https://www.youtube.com/watch?v=xuivYRmIACM	Thumb drive
1	The Flower Garden: By Eve Bunting	Bin

****Items in bold should be returned for use next year****

LESSON DETAILS

Lesson Opening/ Activator

In the previous lesson, the class planted two plants: one received water, air, and sunlight; the other did not get any of those things. Ask for volunteers to describe each plant and then discuss the differences between the two. (If possible, present the two plants as models.)

During the Lesson

1. Read *Flower Garden* by Eve Bunting. Once the story is read discuss how the flower garden is different from most flower gardens. How are they the same? Be sure to connect this idea to how plants get their food.
2. Distribute the photosynthesis handout. As you describe the process of photosynthesis, direct the students to add the “ingredients” of photosynthesis to their picture. (When all of the steps have been added, the students can color in the flower. Guiding directions and suggested color choices are provided, but you might also have a conversation with the students about what colors they imagine as being representative of the qualities, giving them the option to freely own their learning.) **[SP2: using models]**
3. Have students follow or create corresponding kinesthetic movements to accompany this model. Reach to the ground and pretend you are scooping up water for the roots. Extend your arms out wide and grab the air as the leaves collecting carbon dioxide and energy from the sun. Hug and rub your arms on your sides to show the absorption of these key nutrients to allow yourself to grow!

Say this:	Draw this:
Soil absorbs water. Plant roots take in that water from the soil.	Draw blue circles around the roots of the plant.
The leaves collect carbon dioxide from the air.	Draw yellow squares around the leaves.
The leaves also collect energy from sunlight.	Draw orange triangles around the leaves.

Using the energy from sunlight, the plants turn water and carbon dioxide into sugar called glucose. Sugar is plant food; it helps them grow and develop.

Color the stem and leaves green.

Photosynthesis Game: Divide the class into four groups- plants, sunlight, water, and air. Water gets blue stickers, Air gets yellow stickers, Sunlight gets orange stickers. The Plants are the taggers. Place a hula hoop at one end of the playing area. When the leader says “Go!,” the plants must try and tag one of each resource. When a resource is tagged, it stands in the hula hoop. When there is one Water, one Air, and one Sunlight in the hula hoop, all three players take off their wristbands and become Plants. (There cannot be more than one of any resource in the hula hoop. If Water is already tagged, then the Plants can’t tag another water; they must tag Air or Sunlight.) When all the resources are gone, the game is over and the Plants win.

- This game should be played outdoors in a field or in the gym.
- Be sure to go over appropriate playing rules beforehand.
- The orange, yellow, and blue stickers can be substituted with pinnies or name tags... anything that designates the different groups.
- If there is no large play space available, give everyone a label and start with three plants. Ask the plants to stand at the front of the room, while all the resources hide their labels. Each plant takes turn calling out a name: if they call out a resource that they don’t have, that resource goes to the front of the room and holds hands with the plants; if they call out the name of a resource that they already have, nothing happens. The plants keep taking turns until one plant gathers all their resources; then that plants chooses a new beginner plant and he or she (and all of her resources) get new labels and sit down.



Optional Lesson Extension

Show the students Photosynthesis Song (<https://www.youtube.com/watch?v=xuivYRmIACM>) to help them understand how plants get their food. Ask students if they have any questions about the video. If necessary, play the video again and pause at certain points and write important info on the board.

Lesson Closing

Ask every student to come up with two “quiz questions” for their partner about how a plant makes food. Take a few minutes for partners to quiz each other and then a few more minutes to switch roles. **[SP1: asking questions]** Both science fellows and the classroom teacher should circulate to ensure proper learning and comprehension. The classroom teacher should go over the vocabulary and add it to the science dictionaries after the lesson.

Assessment

Check the photosynthesis handouts. Make sure that each student has represented all of the resources (sunlight, air, and water) in the appropriate places.

Lesson 6: How Do Animals Get Their Food?

BACKGROUND

Overview of the Lesson

In this lesson students will learn about the different types of foods that animals eat. They will also learn how animals can be categorized by the types of foods they eat through discussions and a video. The students will be creating the stomach of an animal based on the foods that particular animal eats.

Note: To prepare for lesson 8, please read the bean planting directions and plant a week prior to teaching lesson 8.

Focus Standard

K-LS1-1. Observe and communicate that animals (including humans) and plants need food, water, and air to survive. Animals get food from plants or other animals. Plants make their own food and need light to live and grow.

Learning Target

I can identify the three ways to categorize animals by the types of foods that they eat: herbivore, carnivore, and omnivore.

Assessment

To assess students' knowledge of how animals, get their food and the three types of animals there are, observe the students' presentations of their stomachs in circle time and review the stomachs to make sure that the right kinds of foods are in the right stomach.

Targeted Academic Language/ Key Vocabulary

Tier 3: carnivore, omnivore, herbivore

RESOURCES AND MATERIALS

Quantity	Item	Source
1 per student	Science Dictionary page (Carnivore, herbivore, and omnivore page)	Binder (Classroom teacher to copy)
	Carnivore, Herbivore, Omnivore song https://www.youtube.com/watch?v=wjkqlt_H-ko	Thumb drive
1 per student	Glue sticks	Classroom Teacher
1 per student	Scissors	Classroom Teacher
1 per student	Stomach worksheet (3 total: carnivore stomach, herbivore stomach, and omnivore stomach)	Binder (Classroom teacher to copy)
1 per student	Food worksheet	Binder (Classroom teacher to copy)

****Items in bold should be returned for use next year****

LESSON DETAILS

Lesson Opening/ Activator

For this lesson students will be examining the types of foods animals eat. Start by asking the students to think about the different things that animals eat. The science fellow may want to list these out on the board or chart paper so students can see all the responses at once. If a student's response is plants or food ask them to be more specific. Ask the students to think about ways to categorize animals by the foods they eat. Guide the discussion so students arrive at the conclusion that there are 3 types of animals based on the food that they eat. There are carnivores who eat just meat, herbivores who eat just plants,

and omnivores that eat both. Make sure students are exploring different kinds of animals in their discussion, such as birds, insects, reptiles, mammals, and fish. Ask them where fruit fits under? Is it part of the plant or meat category?

Also mention the idea that plants and animals need each other. Animals eat plants in order to survive. Plants need animals too. This idea will be discussed later in the unit.

During the Lesson

1. Have students watch the Carnivore, Herbivore, Omnivore song on video (approximately 1 minute long). https://www.youtube.com/watch?v=wjkqIt_H-ko Ask students if they ever wondered what was inside an animal's stomach? Tell them that today they will be making the stomach of an animal. Spend some time discussing these three key terms (carnivore, herbivore, and omnivore).
2. Whole Group: Draw an outline of a stomach on a piece of white paper. Have either the teacher or science fellow follow along on the board so the children know what their stomach should look like.
3. Students will be creating the stomach of an herbivore, carnivore, or omnivore. The science fellow should model how this is going to be done for the class before they begin. Choose an animal that fits into each category (omnivore, herbivore, and carnivore) to help the students better understand the difference between the terms. Hand out a copy of each stomach to each student (they should each have 3 copies). They will be given a sheet of pictures that has both plants and meats on it. Students should cut out the food items they think belong in the stomach of an omnivore, carnivore and herbivore. For example, a herbivore stomach should only have plants in it. After students have completed their stomachs have them share with their classmates. It is recommended that that science fellow and classroom

teacher check the pictures the student have chosen for each stomach before they glue them to ensure accuracy.

[SP2: developing and using a model]

Lesson Closing

Talk about the function of food for animals. What does food do for animals? Why do they need food to survive? Food is essential to survival because it provides animals with nutrients and energy. Without it, animals would not be able to live. Why do animals eat different types of food? If it all provides energy, why can they not all eat the same thing? Certain animals eat certain types of food due to the way they are built. Carnivores have sharp teeth and claws to eat meat, while herbivores have flat teeth to grind plants. Also, the stomachs of each animal can digest certain types of food but not others. If you gave meat to a rabbit, it will become sick because it doesn't provide the right nutrients that are needed for the rabbit to survive!

Assessment

To assess students' knowledge of how animals, get their food and the three types of animals there are, observe the students' presentations of their stomachs in circle time and review the stomachs to make sure that the right kinds of foods are in the right stomach.

Lesson 7: The Tiny Seed (Literacy Lesson)

To be taught by the Classroom Teacher

BACKGROUND

Overview of the Lesson

Students will be introduced to the life cycle of a flower through a story. They will review the cycle and then apply the cycle to retell the story using pictures.

Focus Standard(s)

K-LS1-2(MA). Recognize that all plants and animals have a life cycle: a. most plants begin as seeds, develop and grow, make more seeds, and die; and b. animals are born, develop and grow, produce young, and die.

RI. MA1.1 With Prompting and support, ask, and answer questions about key details in a text.

Learning Target

I can sequence the event of the life cycle of “The Tiny Seed”.

Assessment

Students will be assessed on participation in class discussions and activities, as well as on the completion of a sequence worksheet that correctly shows the life cycle of a plant.

Targeted Academic Language/ Key Vocabulary

Tier 1: seed, grow

Tier 2: cycle

RESOURCES AND MATERIALS

Quantity	Item	Source
1 per student	Science Dictionary page (Cycle, seed, grow page)	Binder (Classroom Teacher to copy)
1 per student	First, Next, Then, Last Cycle Worksheet	Binder
1 per class	"The Tiny Seed" by Eric Carl	Bin

****Items in bold should be returned for use next year****

LESSON DETAILS

Lesson Opening/ Activator

The classroom teacher should read the title of the book and ask "What is a seed?" This is an opportunity for students to turn to their neighbor and answer the question. After a minute the teacher should ask for student pairs to share their responses.

During the Lesson

Background info: Eric Carle is also the author of "The Very Hungry Caterpillar," which might be familiar to students. Can use this as jumping off point, or not, depending on students' responses.

Preview the book: Before beginning the story you may want to ask the the class about Eric Carle and what they know about him. Hold the book cover up and guide them with questions such as, "Does this art on the cover look familiar? Has anyone read 'The Very Hungry Caterpillar'?" Might make connection to past book they've read and increase excitement, but if not can move on and ask students why he titled the book a "tiny" seed? What do you think this story will be about?

Read the story: While reading the story, the teacher can ask the following guiding questions. The classroom teacher should model the thinking on how to answer the questions in the story.

1. Which seed did this story focus on? (The tiny seed)
2. Where do flower seeds come from? (Flower pod)
3. How did the seeds travel from place to place? (Wind)
4. What season takes the seeds away from the flowers? (Fall)
5. What kind of animals like to eat seeds? (Bird, mice)
6. What happened to some of the other seeds? (One was burnt up by sun's rays, one got stuck in the icy on a mountain, one drowned in the ocean, one fell into the desert's dry and hot land, one was eaten by a bird, one was eaten by a mouse, one cannot get enough energy or water because of a weed, one has its stem broken by a child's foot, one was picked by a child.)
7. Why did the mouse and bird not eat the tiny seed? (Because it was so small, they didn't see it)
8. What do flowers need to grow? (Water, sunlight, soil)
9. What season do most flowers grow in? (Spring)
10. Why do you think spring is a good time for flowers to grow? (It rains a lot)
11. Why would it be difficult to grow flowers in the desert?
12. Name 3 types of flowers: (Rose, daisy, tulip, lilac, sunflower, lily, etc.)
13. Besides flowers, what else needs seeds to grow? (Fruits, vegetables, trees)
14. Why do people send friends flowers?
15. How is winter different from summer?
16. How is fall different from spring?
17. What does "April showers bring May flowers" mean?

After Reading:

1. Discuss how the tiny seed started and ended. The teacher should draw a picture of the what the seed looked like at the beginning of the story. Ask students the following and discuss.
 - What do you think would happen next if the story continued?
 - How do you know?
 - Why were there so many seeds?
 - Does this story show a cycle? Use the answers to the above questions to help students review.
 - Drawing the steps/process on the board may be required.
 - Ask how the stages of the seed are related to the seasons referred to in the story. (This may help students recall as the seasons are a cycle.)

Once the story is reviewed have students recap one last time using the words first, next, then, and last.

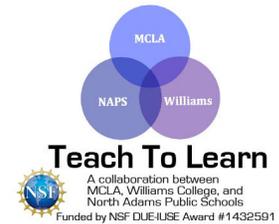
Word Study: Introduce the word “cycle” by asking students where else have they heard the word cycle? (Students may bring up bicycle or tricycle in such case guide discussion toward the tires and that they are circular.) If students bring up another natural cycle (water cycle etc.) have them discuss what they know.

Hand out the cycle sheet. Instruct students to start at the top with first. Have them draw the seed at the start of the story.

- Instruct students to fill in the rest next, then and last with the stages they remember of *The Tiny Seed*.
- Remind students to think about how the seed got to where it was at the end of the story.

Lesson Closing

Students will share their pictures with the rest of the class.



Assessment

Students will be assessed on participation in class discussions and activities, as well as on the completion of a sequence worksheet that correctly shows the life cycle of a plant.

NOTE: IN PREPARATION FOR NEXT LESSON ** One week before lesson 8 is taught, the classroom teacher should plant bean seeds with the class and hang them in a window. Once a day, students should draw their observations. See instructions below. The classroom teacher can complete the lesson 7 vocabulary worksheet in the science dictionary with the students before the science fellow comes in.



Lesson 8: Life Cycle of a Plant

BACKGROUND

Overview of the Lesson

In this lesson, students will explore the life cycle of plants using bean seeds. They will also have an opportunity to observe different types of seeds from different types of plants.

**** One week before this lesson is taught, the classroom teacher should plant the bean seeds with the class and hang them in a window. Once a day, students should draw their observations using the instructions below.*****

Focus Standard

K-LS1-2(MA). Recognize that all plants and animals have a life cycle: a. most plants begin as seeds, develop and grow, make more seeds, and die; and b. animals are born, develop and grow, produce young, and die.

Learning Targets

I can describe the life cycle of a plant.

I can observe that seeds come in many different shapes and sizes.

Assessment

Each student will draw the life cycle of a plant of her choosing. If a student has a question about what the seeds of the plant looks like, he may ask the teacher for help.

Targeted Academic Language/ Key Vocabulary

Tier 2: seed, sprout, seedling

RESOURCES AND MATERIALS

Quantity	Item	Source
1 per student	Science Dictionary page (Sprout and seedling page)	Binder (Classroom Teacher to copy)
1 per student	Bean seeds	Bin
1 per student	Clear plastic baggies (sandwich size)	Bin
1 per student	Paper towel	Bin
1 per student	Plant Journal	Classroom Teacher
	Water	Classroom Teacher
1 per class	Computer/projector for video	Classroom Teacher
	Timelapse video: https://www.youtube.com/watch?v=eu_l80m7K2o	Thumb drive
1 per student	Scissors	Classroom Teacher

1 per student	Glue sticks	Classroom Teacher
1 per student	“Plant Life Cycle” Booklet (5 pages)	Binder
	Crayons	Classroom Teacher
	Seed examples (citrus fruit, mustard seeds, pine cone, avocado)	Bin/ Teacher
Optional	<i>Pumpkin Jack</i> by Will Hubbell.	Classroom Teacher/Local Library

****Items in bold should be returned for use next year****

LESSON DETAILS

Lesson Opening/ Activator

One week before: Wet a paper towel and place it inside a plastic bag. Place a bean seed in between the side of the bag and the paper towel. Write the student’s name on the outside of the bag and hang it in a window where it will get plenty of sunlight. (Note that normally, plants need soil to grow, but growing bean plants in this way will allow us to watch them develop.) Distribute science journals to the class. Once a day, take some time to observe the seed and draw a picture.

Using the Plant Journals as a resource, discuss as a class the changes in the bean plant. What plant parts do the students see (roots? leaves? stems)? When did they appear? Can anyone guess what will happen next?

During the Lesson

1. Show the climbing beans time-lapse video (https://www.youtube.com/watch?v=eu_l80m7K2o) on the projector, making observations out loud as the plant cycle progresses. The video ends with tall bean plants with leaves. Explain that next, the bean plants would produce new beans, or seeds. The original bean plant will eventually die and turn into soil. The seeds produced by the original plant will grow into new bean plants.

2. Explain that the seeds start in a dish of water so that people watching the video can see them start to develop. They are then planted in soil that will help them grow tall and healthy.
3. At the end of the video, ask: what do plants need to develop and grow? (Answer: sunlight, soil, water)
4. Distribute the “Plant Life Cycle” booklet and have the students color in the pages. Once the booklet is finished, read it together as a class.

Seed Activity: At the front of the classroom, demonstrate that seeds come in many shapes and sizes. Cut open a citrus fruit to reveal the seeds; cut open a peach or avocado to show the pit; pass around a seed packet of tiny mustard seeds; bring in a bulb; explain that pine cones hold lots of little seeds. As the students observe, they can draw true-to-size pictures of the seed; labels can be added from a word bank on the board.

Lesson Closing

Ask the students to guess what part of the life cycle their bean plants are in, using what they have learned in class today. What will happen next? Use leftover beans from planting as examples of bean seeds.

Assessment

Each student will draw the life cycle of a plant of her choosing. If a student has a question about what the seeds of the plant looks like, he may ask the teacher for help.

Lesson 9: The Life Cycle of an Animal

BACKGROUND

Overview of the Lesson

In this lesson, students will be learning about the basic life cycle of an animal. They will be creating life cycle wheels to demonstrate the life cycle of either a butterfly or a panda bear (**please save the wheels for the students to use in lesson 11**).

Focus Standard

K-LS1-2(MA). Recognize that all plants and animals have a life cycle: a. most plants begin as seeds, develop and grow, make more seeds, and die; and b. animals are born, develop and grow, produce young, and die.

Learning Target

I can identify the stages of the life cycle of animals including being born, growing and developing, producing young, and dying.

Assessment

To assess students' knowledge on life cycles, listen to conversations from the lesson closing and check to see that the students life cycle wheels are correctly assembled.

Targeted Academic Language/ Key Vocabulary

Tier 1: order, change

Tier 2: life cycle

RESOURCES AND MATERIALS

Quantity	Item	Source
1 per student	Science Dictionary page (Order, life cycle, change page)	Binder (Classroom Teacher to copy)
students share	Circle tracer for bottom of life cycle wheel	Bin
1 per student	Cover for life cycle wheel (either butterfly or panda)	Binder
1 per student	Life cycle circle (either butterfly or panda)	Binder
1 per student	Scissors	Classroom Teacher
1 per student	Glue stick	Classroom Teacher
1 per student	Piece of poster board (for the bottom of life cycle wheels)	Bin
1 box per student	Crayons or markers	Classroom Teacher
1 per student	Brass fasteners	Bin
	https://www.youtube.com/watch?v=PadlN3ljyVU Life cycle of a frog	Thumb drive
	https://www.youtube.com/watch?v=3jl8P0w6X0g Life cycle of a butterfly	Thumb drive

****Items in bold should be returned for use next year****

LESSON DETAILS

Lesson Opening/ Activator

Students need to understand what a cycle is before starting this lesson. Ask students to refer back to the conversation they had previously on cycles. Have them turn and talk to a partner about what cycles are. **[SP1: asking questions]** Where you start is where you end up and the pattern continues again and again. If there is one in the room, grab a recycling bin and look

at the picture on it. Ask the kids what they notice about the pattern. There is no end point. There is also no beginning point. A cycle just keeps going. Like a circle!

During the Lesson

1. Have a class discussion about the stages of a life cycle. Talk about different stages for different animals. The science fellow will need to cover that first, animals are born, then as they grow they become children and young adults. As they continue to grow, animals become adults and have their own babies. Thus the life cycle starts all over again. Be sure to discuss ideas such as growth and change. A human life cycle is different from a butterfly's life cycle. Ask the students if they think every living species has a life cycle. Do all animals have a life cycle? (yes) Do plants have a life cycle? (yes) If they answer no, ask them why they think "no." What does it mean to go through a life cycle? Can you skip some stages and then come back to them? (no) Do you have to follow the stages in order? (yes) Does everyone follow the same order? (yes) Mention to the students that when animals have reached their adult stage they reproduce.
2. Have them watch this YouTube video about the life cycle of a frog. <https://www.youtube.com/watch?v=FIXoJYbBlS0> When the video is finished ask the students again to think about the cycle pattern. Why is there another arrow going from the adult frog to the eggs? Would the cycle make sense if the eggs came first, then the adult frog, and then the tadpole? Stress that life cycles are important. Everyone goes through every stage of the cycle whether they are a cat, fish, frog, or human. Note: Metamorphosis is not an important stage for the kids to understand, rather tell them to think of it as part of the stage of growing.
 - a. Extension: <https://www.youtube.com/watch?v=3jl8P0w6X0g> (approximately 2 minutes long). This video features the same characters but discusses the life cycle of a butterfly.

- b. Before beginning the life cycle wheel project talk to the students about the difference between a butterfly and a panda bear. A panda bear is born like humans are. Butterflies start out as eggs. This is one way that the life cycle of animals can be different. They are similar because they both grow and change over time.

In the case of time constraints, this is a spot where you can split this lesson into two parts.

3. Life cycle wheel project: Before beginning the project go over the sample wheel with the students. Point out the various stages of each animal.
 - a. First students should trace the large circle from the bin onto a piece of cardstock paper and then cut out the circle out. This will be the base of the life cycle wheel.
 - a. While students are cutting out their circles the science fellow should pass out the animal life cycle sheets (the butterfly or panda bear). Make sure to mix them up evenly among the class.
 - b. Next, they will need to cut out the 4 pie shaped pieces of their life cycle and place them back in the shape of a circle on their table or desk. The circle should be a complete life cycle. The pie pieces need to be in the correct order so that the cycle makes sense. Once the student has had his or her cycle checked by the science fellow or classroom teacher he or she should then glue the pieces down onto the cardstock circle they had first cut out, keeping all the pieces in the right order.
 - c. While the glue dries students should cut out a cover for their life cycle wheel. This can be done by using the cover tracer located in the bin. Students can label their wheel cover “ ____ ’s Life Cycle Wheel” (with their name in the blank space). They can decorate their wheel cover if they wish too. Once it is colored they will need to

cut the circle out. Make sure students cut out the pie shaped section so that there is a window in the top wheel. This will allow for one stage of the life cycle to be shown at a time.

- d. When both the bottom and top wheels are completed, the science fellow or teacher should go around and stick a brass fastener through both pieces of the wheel. It should be fastened loose enough so that the top portion of the wheel can still move. When the wheels are completed let the students play around with them.
- e. Have the students pair up. Ask one student to turn their wheel to a certain stage in the life cycle. The other student should try to guess what the next stage of the life cycle is. They can even guess what the stage before it is as well. This would be good if students with two different life cycles paired up.

Lesson Closing

1. What is different about the two life cycle wheels the students made? (One started out as an egg, the other was born.)
Although they started out differently are their life cycles relatively the same?
2. Ask students to think about other types of animals. What do their life cycles look like? Are they the same/different?

Assessment

To assess students' knowledge on life cycles, listen to conversations from the lesson closing and check to see that the students life cycle wheels are correctly assembled.

Lesson 10: The Life Cycle of an Animal: Habitats

BACKGROUND

Overview of the Lesson

**Note: This lesson may be taught as an advanced extension lesson. It is important to expose kindergarten students to the necessity of habitats in life cycles but it is not explicitly required by the state focus standard. In this lesson students will learn that in order for an animal to grow, survive, and thrive they need to be in the proper habitat. Students will be playing a game where they will place animals in their correct habitats so that they may survive and thrive.

Focus Standard

K-LS1-2(MA). Recognize that all plants and animals have a life cycle: a. most plants begin as seeds, develop and grow, make more seeds, and die; and b. animals are born, develop and grow, produce young, and die.

Learning Target

I can explain why habitats are important to an animal's life cycle and for an animal to survive and thrive.

Assessment

Ask students to name 1 animal and the correct habitat it belongs in. Ask them why this animal cannot survive in another habitat. This may be done through the class habitat matching activity.

Targeted Academic Language/ Key Vocabulary

Tier 2: habitat

RESOURCES AND MATERIALS

Quantity	Item	Source
1 per student	Science Dictionary page (Habitat page)	Binder (Classroom Teacher to copy)
1	“Welcome Home, Bear” Book	Bin
1 of each	Habitat Posters	Bin
1 set	Laminated Animal Images (each student to get one)	Bin
1 for teacher	Animal answer key	Binder
1 roll	Tape	Classroom Teacher

****Items in bold should be returned for use next year****

LESSON DETAILS

Lesson Opening/ Activator

Open the discussion with a talk about environments. What are surroundings? Ask students to think about why a polar bear does not live in a jungle or why a cow does not live in the ocean. Visit this website (<http://switchzoo.com/games/habitat.swf>) and project on the board and have an adult run the website by changing the animal and asking the kids what animal it is and where it should live then switch the environment to match what the children tell you until you get 100% compatibility. Have students turn and talk to a partner about what a habitat is. What is in a habitat? Are there different habitats? Come back together as a group and discuss some of the responses.

During the Lesson

1. Gather the students in a circle on the floor and read the book “Welcome Home, Bear.” Spend time talking about what the message of the book is. Why did the bear end up going back to his original home? Discuss the idea that habitats are important for animals to survive. Every animal is in its own unique habitat for a special reason. Animals have spent many years adapting to that particular environment in order to live and thrive.
 - a. You can talk about adaptation as well in a brief way. What does it mean to adapt to an environment? Reference the idea that humans started out has hunched over cavemen. They developed, grew, and adapted to their surroundings or their habitat. Through this they learned to survive and thrive.
2. Students will be working on an animal sorting activity. In this activity students will work as a class to place animals in their correct habitats.
 - a. There will be 4 posters of habitats (forest, ocean, desert, arctic). Set the posters up on an easel or a board and have the students sit in a circle around it.
 - b. Each student will receive one laminated animal image and a piece of tape. It is the student’s job to place the animal in the correct habitat. One by one ask the students to come up and place their animal in the correct habitat.
 - c. Once everyone thinks they have placed their animal in its correct home, the science fellow should go over each animal with the class to see if it is correct. Ask the students to collectively raise their hands if they think the

animal is in its correct habitat. (An answer key is provided in the binder). For some of the animals the science fellow may want to ask questions such as why does this animal need this habitat to survive? How come he or she cannot survive in one of the other habitats? What makes his habitat so unique for this animal? Also talk about what the animals look like. For example, most of the animals in the arctic are white, why is that?

Lesson Closing

Propose another type of habitat that there is not a poster for and ask the students to think of animals that belong in that habitat. Have students turn and talk to a partner and tell each other one thing they learned from this lesson. After a few minutes have the students come back together as a group and let some students share their responses.

Assessment

Ask students to name 1 animal and the correct habitat it belongs in. Ask them why this animal cannot survive in another habitat. This may be done through the class habitat matching activity.

NOTE: IN PREPARATION FOR LESSON (11): The rye grass seed will need to be planted on this first day of the week lesson 11 is being taught. Students may be assigned jobs daily, such as watering the grass and making sure it gets enough sunlight. As the week goes on, students should draw a chart or diagram of the grass' life cycle. Each day will have a new picture. The classroom teacher will need to spend about 15 minutes each day of the week with the students to complete this activity.

Lesson 11: Life Cycle Comparison

BACKGROUND

Overview of the lesson

In this lesson students will be comparing the life cycles of plants and animals through videos, song, and dance. Students will be putting together all the information they learned during this unit.

Focus Standard

K-LS1-2(MA). Recognize that all plants and animals have a life cycle: a. most plants begin as seeds, develop and grow, make more seeds, and die; and b. animals are born, develop and grow, produce young, and die.

Learning Target

I can explain the differences and similarities of plant and animal life cycles.

Assessment

To assess students' knowledge of life cycle differences and similarities listen to class discussion. Students will be discussing these life cycles in depth after videos, song, and dance activities.

Targeted Academic Language/ Key Vocabulary

Tier 2: similar, different

RESOURCES AND MATERIALS

Quantity	Item	Source
1 per student	Science Dictionary page (Similar and different page)	Binder (Classroom Teacher to copy)
1 package	Rye grass seed	Bin
1 liter	Water	Classroom Teacher
1 package	Soil	Bin
1	Container to plant rye grass seeds	Bin
	https://www.youtube.com/watch?v=Z-iPp6yn0hw Life cycle of a sunflower	Thumb drive
	https://www.youtube.com/watch?v=SvHWxDjfFB8 Life cycle of a ladybug	Thumb drive
	https://www.youtube.com/watch?v=cAUSKxWMIh0 Life cycle of a butterfly	Thumb drive
	https://www.youtube.com/watch?v=MupYQMAaKA Life cycle of a frog	Thumb drive
	https://www.youtube.com/watch?v=cYaPvSlcHac Life cycle flower dance	Thumb drive
	https://www.youtube.com/watch?v=miD-hZP9X0M Life cycle of a butterfly song	Thumb drive
	Life cycle of a butterfly song lyrics worksheet	Binder

****Items in bold should be returned for use next year****

LESSON DETAILS

Lesson Opening/ Activator

Now that the students are experts on plants and animals, they will be comparing them side by side. Have a class discussion reviewing the information that the students have learned in this unit. Talk about what plants and animals are, and what they need. Ask the students to recall the stages of the life cycle for both plants and animals. They may want to pull out their life cycle wheels or class charts that have been made in previous lessons. **[SP7: engaging in argument from evidence]**

During the Lesson

1. To compare life cycles, students will grow rye grass seed and view time lapse videos of animals. The rye grass seed will need to be planted on this first day of the week this lesson is being taught. Students may be assigned jobs daily, such as watering the grass and making sure it gets enough sunlight. As the week goes on, students should draw a chart or diagram of the grass' life cycle. Each day will have a new picture. The classroom teacher will need to spend about 15 minutes each day of the week with the students to complete this activity. Students will need time to look at the grass and draw pictures of it every day.
 - a. Extension: to see another plant's life cycle watch this video <https://www.youtube.com/watch?v=Z-iPp6yn0hw> Life cycle of sunflower from seed to flower (approximately 2 minutes long) There is not sound in this video, so the Science Fellow may want to narrate.
2. Now the students will watch the life cycle of a few different animals through video.
 - a. <https://www.youtube.com/watch?v=SvHWxDjfFB8> Life cycle of a ladybug (approximately 2 minutes long)
 - b. <https://www.youtube.com/watch?v=cAUSKxWMIh0> Life cycle of a butterfly (approximately 2 minutes long)
 - c. <https://www.youtube.com/watch?v=MupYQMAaKA> Life cycle of a frog (approximately 2 minutes long)

3. Talk about the differences and similarities in the videos the students just watched. Ask students to think about specific points where the cycles are the same. If necessary open all the videos in separate windows on the internet so that the science fellow may flip back and forth between all of the videos. Watch the videos twice and pause every few seconds to discuss what is going on in the video.
4. Now students will learn 2 interpretative dances to demonstrate the life cycle of a flower and a butterfly. The science fellow and classroom teacher should watch the provided videos ahead of time so that they can lead the dance for the class. It may be helpful to project the video on a screen so that the students can follow along.
 - a. <https://www.youtube.com/watch?v=cYaPvSlcHac> Flower - This video is an interpretative dance of a flower's life cycle. The teacher may want to play this video on the screen for direction and music. Ask the kids what they think each move means or represents in the life cycle.
 - b. <https://www.youtube.com/watch?v=miD-hZP9X0M> Butterfly - This video includes moves and a song to represent the life cycle of a butterfly. The song repeats every line twice. The classroom teacher or science fellow could say the first line and the students can repeat the line back to them. A worksheet with the lyrics are provided in the bin.

Lesson Closing

Spend a few extra minutes discussing the differences and similarities of life cycles. Ask the students to turn and talk to a partner and tell each other 3 things they learned from this unit about plants, animals, or life cycles. After a few minutes have students come back together as a class and share some of their responses with the group.

Assessment

To assess students' knowledge of life cycle differences and similarities listen to class discussion. Students will be discussing these life cycles in depth after videos, song, and dance activities.

List of Unit Resources

Lesson 1

Quantity	Item	Source
1 per student	Copy of Science Dictionary (11 pages total which will be completed over the course of lessons 2-11) Only the cover page will be completed in this lesson	Binder (Classroom Teacher to make copies of all 11 pages for each student)
3 per class	Baskets for categorizing, labeled Plants, Animals, and Non-Living	Bin
1 set per class (at least one per student)	Cards for categorizing (includes plants, animals, and non-living items)	Bin
1 per class	Computer/projector for "Types of Plants" video	Classroom Teacher
	"Types of Plants" video: https://www.youtube.com/watch?v=LW0jUbKcn1I	Thumb Drive
Students will share	Crayons and markers	Classroom Teacher
	Construction Paper	Classroom Teacher
	String	Bin
	Leaves	Classroom Teacher
1 per student	Scissors	Classroom Teacher
1 set per group	Plant and Flower Outlines (5 pages total)	Binder
1 per student	Glue sticks and tape	Classroom Teacher
3 per student	Index cards	Classroom Teacher
	Chart paper	Classroom Teacher

Lesson 2

Quantity	Item	Source
1 per student	Science Dictionary (Hop, slither, soar page)	Binder (Classroom Teacher to copy)
1 set per class	Animal Images (colored copy)	Bin
Enough for each student to create a small animal	Modeling clay (various colors)	Bin

Lesson 3

Quantity	Item	Source
A few for each student	Crayons	Classroom Teacher
1 per student	Pencil	Classroom Teacher
1 per student	Lined writing paper with space for picture	Classroom Teacher
1 per class	<i>At the Zoo</i> by David M. Schwartz	Bin
1 per student	Science Dictionary page (Survive and Wild page)	Binder (Classroom Teacher to copy)

Lesson 4

Quantity	Item	Source
1 per student	Science Dictionary page (Shelter and Food page)	Binder (Classroom Teacher to copy)
1 large bag	Potting soil	Bin
1 per student	Plant seeds	Bin

1 per student	Pots or small milk cartons	Bin
1 per student	Paper	Classroom Teacher
1	Projector for videos	Classroom Teacher
	Plant Needs video https://www.youtube.com/watch?v=dUBIQ1fTRzI	Thumb drive
	Animal Needs video https://www.youtube.com/watch?v=k4UDf3tF_04	Thumb drive
	Basic needs of living things video https://www.youtube.com/watch?v=wOXay8rdzRg	Thumb drive
1 liter	Water	Classroom Teacher
1 piece	Chart paper	Classroom Teacher
1 per group	Plant and animal needs matching game cards (should have 2 air, 2 water, 2 food, 1 shelter, and 1 sunlight)	Bin

Lesson 5

Quantity	Item	Source
1 per student	Science Dictionary page (Soil, absorb, photosynthesis page)	Binder (Classroom teacher to copy)
1 per student	Photosynthesis Handout	Binder
	Crayons	Classroom Teacher
1 per class	Hula Hoop	Borrow from P.E. Teacher
1 set per class	Large blue, yellow, and orange stickers	Bin
1 per class	Laptop/projector for Magic School Bus video (optional)	Classroom Teacher
	Photosynthesis Song https://www.youtube.com/watch?v=xuivYRmIACM	Thumb drive
1	The Flower Garden: By Eve Bunting	Bin

Lesson 6

Quantity	Item	Source
1 per student	Science Dictionary page (Carnivore, herbivore, and omnivore page)	Binder (Classroom teacher to copy)
	Carnivore, Herbivore, Omnivore song https://www.youtube.com/watch?v=wjkqIt_H-ko	Thumb drive
1 per student	Glue sticks	Classroom Teacher
1 per student	Scissors	Classroom Teacher
1 per student	Stomach worksheet (3 total: carnivore stomach, herbivore stomach, and omnivore stomach)	Binder (Classroom teacher to copy)
1 per student	Food worksheet	Binder (Classroom teacher to copy)

Lesson 7

Quantity	Item	Source
1 per student	Science Dictionary page (Cycle, seed, grow page)	Binder (Classroom Teacher to copy)
1 per student	First, Next, Then, Last Cycle Worksheet	Binder
1 per class	"The Tiny Seed" by Eric Carl	Bin

Lesson 8

1 per student	Science Dictionary page (Sprout and seedling page)	Binder (Classroom Teacher to copy)
1 per student	Bean seeds	Bin
1 per student	Clear plastic baggies (sandwich size)	Bin
1 per student	Paper towel	Bin

1 per student	Plant Journal	Classroom Teacher
	Water	Classroom Teacher
1 per class	Computer/projector for video	Classroom Teacher
	Timelapse video: https://www.youtube.com/watch?v=eu_l80m7K2o	Thumb drive
1 per student	Scissors	Classroom Teacher
1 per student	Glue sticks	Classroom Teacher
1 per student	"Plant Life Cycle" Booklet (5 pages total)	Binder
	Crayons	Classroom teacher
	Seed examples (citrus fruit, mustard seeds, pine cone, avocado)	Bin/ Teacher
Optional	<i>Pumpkin Jack</i> by Will Hubbell.	Classroom Teacher/Local Library

Lesson 9

Quantity	Item	Source
1 per student	Science Dictionary page (Order, life cycle, change page)	Binder (Classroom Teacher to copy)
students share	Circle tracer for bottom of life cycle wheel	Bin
1 per student	Cover for life cycle wheel (either butterfly or panda)	Binder
1 per student	Life cycle circle (either butterfly or panda)	Binder
1 per student	Scissors	Classroom Teacher
1 per student	Glue stick	Classroom Teacher
1 per student	Piece of poster board (for the bottom of life cycle wheels)	Bin
1 box per student	Crayons or markers	Classroom Teacher
1 per student	Brass fasteners	Bin
	https://www.youtube.com/watch?v=PadlN3IjyVU Life cycle of a frog	Thumb drive

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	https://www.youtube.com/watch?v=3jl8P0w6X0g Life cycle of a butterfly	Thumb drive
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Lesson 10

Quantity	Item	Source
1 per student	Science Dictionary page (Habitat page)	Binder (Classroom Teacher to copy)
1	“Welcome Home, Bear” Book	Bin
1 of each	Habitat Posters	Bin
1 set	Laminated Animal Images (each student to get one)	Bin
1 for teacher	Animal answer key	Binder
1 roll	Tape	Classroom Teacher

Lesson 11

Quantity	Item	Source
1 per student	Science Dictionary page (Similar and different page)	Binder (Classroom Teacher to copy)
1 package	Rye grass seed	Bin
1 liter	Water	Classroom Teacher
1 package	Soil	Bin
1	Container to plant rye grass seeds	Bin
	https://www.youtube.com/watch?v=Z-iPp6yn0hw Life cycle of a sunflower	Thumb drive

	https://www.youtube.com/watch?v=SvHWxDjffB8 Life cycle of a ladybug	Thumb drive
	https://www.youtube.com/watch?v=cAUSKxWMIh0 Life cycle of a butterfly	Thumb drive
	https://www.youtube.com/watch?v=MupYQMAaKA Life cycle of a frog	Thumb drive
	https://www.youtube.com/watch?v=cYaPvSlcHac Life cycle flower dance	Thumb drive
	https://www.youtube.com/watch?v=miD-hZP9X0M Life cycle of a butterfly song	Thumb drive
	Life cycle of a butterfly song lyrics worksheet	Binder