

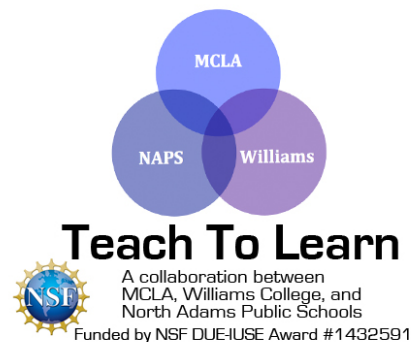
The Evolution of the T2L Science Curriculum

Over the last four years, the Teach to Learn program created 20 NGSS-aligned science units in grades K-5 during our summer sessions. True to our plan, we piloted the units in North Adams Public Schools, and asked and received feedback from our science fellows and our participating teachers. This feedback served as a starting point for our revisions of the units. During year 2 (Summer of 2015), we revised units from year 1 (Summer/Fall 2014) and created new units to pilot. In year 3, we revised units from years 1 and 2 and created new units of curricula, using the same model for year 4. Our understanding of how to create rich and robust science curriculum grew, so by the summer of 2018, our final summer of curriculum development, we had created five exemplar units and established an exemplar unit template which is available in the T2L Toolkit.

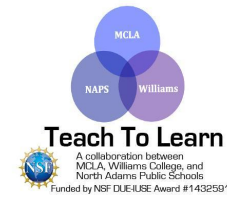
We made a concerted effort to upgrade all the existing units with exemplar components. We were able to do much, but not all. So, as you explore different units, you will notice that some contain all elements of our exemplar units, while others contain only some. The fully realized exemplar units are noted on the cover page. We did revise all 20 units and brought them to a baseline of “exemplar” by including the Lessons-At-A-Glance and Science Talk elements.

Grade 1

Plants and Animals



T2L Curriculum Unit



Plants and Animals

Life Science/Grade 1

In this unit, students will develop an understanding of how plants and animals use their external parts to help them survive, grow, and meet their needs. Students will learn how behaviors of parents and offspring help the offspring survive. (Adapted from NGSS)

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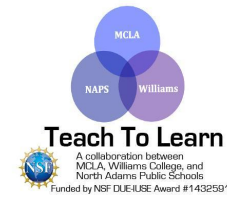
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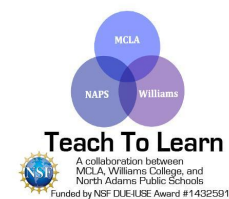


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UNIT PLAN

Stage 1 Desired Results

Stage 1 Desired Results	
	Meaning
<p>1-LS1-1. Use evidence to explain that (a) different animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air, and (b) plants have roots, stems, leaves, flowers, and fruits that are used to take in water, air, and other nutrients, and produce food for the plant. Clarification Statement: Descriptions are not expected to include mechanisms such as the process of photosynthesis.</p> <p>1-LS1-2. Obtain information to compare ways in which the behavior of different animal parents and their offspring help the offspring to survive. Clarification Statement: Examples of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).]</p> <p>1-LS3-1. Use information from</p>	<p>UNDERSTANDINGS U</p> <p><i>Students will understand that...</i></p> <ul style="list-style-type: none"> All organisms have body parts. Animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, as well as, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive. Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways. <p>ESSENTIAL QUESTIONS Q</p> <ol style="list-style-type: none"> How and why do animals move? Why do plants have different parts? What do animals need to survive? What do plants need to survive?

<p>observations (first-hand and from media) to identify similarities and differences among individual plants or animals of the same kind. [Clarification Statements: Examples of observations could include that leaves from the same kind of plant are the same shape but can differ in size. Inheritance, animals that undergo metamorphosis, or hybrids are not expected.]</p> <p>ELA/Literacy -</p> <p>RI.1.1 Ask and answer questions about key details in a text.</p> <p>RI.1.2 Identify the main topic and retell key details of a text.</p> <p>W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.</p>	<p style="text-align: center;"><i>Student Learning Targets</i></p> <p><i>By the end of this unit, students will be able to...</i></p> <ul style="list-style-type: none"> ● Identify ways animals protect themselves. ● Discuss how animal parents protect their young. ● Describe the ways in which different animals move. ● Describe the body parts that animals have and how they use them to move. ● Identify animals and the class that it belongs to. ● Identify the four basic needs of an animal - air, food, water, and shelter. ● Recognize animals and plants need food and water to survive. ● Identify ways in which animals use their bodies to protect themselves. ● Identify ways in which animals behave or act to protect themselves. ● Identify ways in which animal parents care for their offspring so that the offspring can survive. ● Describe the life cycle of a plant and identify the different parts of a plant. ● Identify that plants need water, air, and sunlight to survive. ● Identify that plants make their own food. ● Label the parts of a plant (stem, roots, leaves, flower/fruit). ● Compare and contrast two plants. ● Identify that fruits have seeds but vegetables do not have seeds. ● Identify that plants of the same type can have variations. (For example: apples come in different colors.) ● Identify ways in which plants defend themselves. ● Explain how and why plants spread their seeds. ● Identify similarities and differences among animals and plants of the same kind.
<p>Stage 2 – Evidence</p>	

Evaluative Criteria	Assessment Evidence
Science journal Class discussions Group presentations Individual projects/ activities	Unit Assessment –CEPA <ul style="list-style-type: none"> ● Independent science journal entries from each lesson ● Class discussions ● Presentations (both individual and group) ● Individual activities such as, the animal classes sorting activity, the <i>Things My Pet Needs</i> booklet project, the camouflage design project, the how to plant a seed guide project, the top and bottom plant activity, the drawing and labeling a plant activities, the super seed project, and the animal matching worksheet.

Stage 3 – Learning Plan

Word wall: *As students learn new words for each lesson a word wall will be created, this will be a piece of large chart paper. Every time a lesson has new vocabulary words those words should be added to the word wall. This word wall should be hung up in the classroom so students may refer back to it, it will also be referenced in the very last lesson of the unit. Classroom teachers are encouraged to try out new word wall designs and activities related to the Academic Language Professional Development.*

Lesson 1: Swallows in the Birdhouse (Literature Lesson: taught by the classroom teacher)

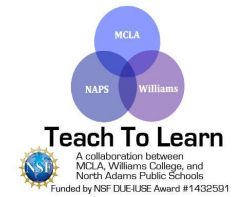
Students listen to the story about a family watching two birds make a home and raise a family in a birdhouse in their yard. Students will draw a birdhouse at the end of the story. Teachers will then present the class with a birdhouse for students to observe.

Lesson 2: Animal Moves

Students will watch a video and complete a worksheet about how animals move. They will also imitate animals by copying the way a particular animal moves.

Lesson 3: Animal Classes

Students will learn about the six animal classes. First, the science fellow will review a PowerPoint and play a game with the class. Students will be paired up and organize a worksheet of animals into the six classes.



Lesson 4: Animal Needs

Students learn that animals need four basic things to survive. They will explore this idea through conversation, a sentence puzzle, and by making a booklet of needs.

Lesson 5: Tillena Lou's Day in the Sun (Literature Lesson: taught by the classroom teacher)

The classroom teacher will read a story (*Tillena Lou's Day In the Sun* by Barbara Tharp) that emphasizes essentials for living things, students will be illustrating the three essentials things in a poster that can then be collated.

Lesson 6: Animal Survival

Students learn about the three ways that animals protect themselves in order to survive, either by building shelters, making sounds, or using defense strategies.

Lesson 7: Caring for Your Offspring

Students learn how different animal mothers care for their offspring; they will be reviewing information and pictures via powerpoint. Afterwards, they will break into groups and create a skit for how they would take care of a certain animal baby that is assigned to them.

Lesson 8: Plant Life Cycles

Students review the life cycle and parts of a plant through a flow chart and song. They will then see examples of scientific diagrams and create their own diagrams to explain the life cycle of an apple tree.

Lesson 9: Plant Needs

The class will collaborate to create a "How To Plant A Seed" guide that includes all the things plants need to make their own food. They will get to test their plan by planting their own seeds.

Lesson 10: Tops & Bottoms (Literature Lesson: taught by the classroom teacher)

Read *Tops and Bottoms* by Janet Stevens. This trickster tale features the "tops" (tomatoes, corn) and "bottoms" (roots- carrots, potatoes) of plants. Read the story and discuss the types of plants. Students can make a class mural of a garden adding either a top or bottom plant.

Lesson 11: Comparing Plants

Students explore the differences and similarities between fruits and vegetables through a series of categorization activities. In the beginning of the lesson they will use background knowledge to sort pictures of fruits and vegetables, students will have a chance to explore variations in plants of the same species by taste testing yellow, green, and red apples.

Lesson 12: Plant Survival

Students will learn about how animals and plants protect themselves from predators and things that want to eat them. The lesson begins with a puppet show about a familiar, hardy plant (dandelions) followed by a class discussion and a puzzle game. Finally, the class will play charades and think about how they would defend themselves if they were plants.

Lesson 13: Spreading Seed

The concept of seed dispersal will be introduced with Eric Carle's *"The Tiny Seed."* A video will explain the purpose and types of seed dispersal. Afterward, students will employ their own creativity to design a Super Seed.

Lesson 14: Plants and Animals Look Like Their Parents

Students will be learning why plants and animals look like their parents, and will also be completing animal matching worksheets.

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

Lessons-At-A-Glance



Independent online student research



Technology integration



YouTube Video



Outdoor education



Kinesthetic learning



Lab work

Lesson	Core Activities	Extensions	Aspects of Lesson
1. Swallows in the Birdhouse(Literacy)	<ul style="list-style-type: none"> • Reading: <i>Swallows in the Birdhouse</i> • Birdhouse Activity or Eagle Cam • Pine Cone Activity 	<ul style="list-style-type: none"> • Reading: <i>Blue Bird in the Garden</i> 	
2. Animal Moves	<ul style="list-style-type: none"> • Who am I? • Science Journaling 	<ul style="list-style-type: none"> • Watching Eagle Cam 	
3. Animal Classes	<ul style="list-style-type: none"> • Guessing Game • Sorting Activity • Science Journaling 		
4. Animal needs	<ul style="list-style-type: none"> • “What do Animals Need” Activity • “Things my Pet Needs” Activity 		
5. Tillena Lou’s Day in the Sun(Literacy)	<ul style="list-style-type: none"> • Reading: <i>Tillena Lou’s Day in the Sun</i> 		

6. Animal Survival	<ul style="list-style-type: none"> • Rattle Activity • Camouflage Activity • Camouflage Puppet Show 		
7. Caring for your Offspring	<ul style="list-style-type: none"> • Taking care of a baby animal 	<ul style="list-style-type: none"> • Reading: "Animals and Their Babies" 	
8. Plant Life Cycles	<ul style="list-style-type: none"> • Scientific Diagram 		
9. Plant Needs	<ul style="list-style-type: none"> • "How to Plant a Seed" 		
10. Tops and Bottoms (Literacy)	<ul style="list-style-type: none"> • Reading: <i>Tops and Bottoms</i> • Drawing plants animals 		
11. Comparing Plants	<ul style="list-style-type: none"> • Fruit shape visualizations 	<ul style="list-style-type: none"> • Apple testing • Diet Tracking • Research on Fruit 	
12. Plant Survival	<ul style="list-style-type: none"> • Dandelion Puppet Performance • Puzzle and skit 		
13. Spreading Seeds	<ul style="list-style-type: none"> • Reading: <i>The Tiny Seed</i> • Travelling Seeds Game 	<ul style="list-style-type: none"> • Nature Hike 	
14. Plants and Animals Look Like Their Parents	<ul style="list-style-type: none"> • Matching Babies & Parents • Matching Plants • Science Journaling 	<ul style="list-style-type: none"> • Optional Science Journaling 	

Lesson Feature Key

Lessons in this unit include a number of features to help instructors. This key is a quick guide to help identify and understand the most important features.

Icons



Talk science icon: Look for this icon to let you know when to use some of the talk science strategies (found in the unit resources of this unit)



Anchor phenomenon icon: Indicates a time when an anchoring scientific phenomenon is introduced or when an activity connects back to this important idea.

Text Formatting:

[SP#:] Any time you see a set of brackets like this, it indicates that students should be engaged in a specific science or engineering practice.

Underlined text in the lesson:

This formatting indicates important connections back to the central scientific concepts, and is useful to note these connections as an instructor, as well as for students.

Callouts

Teaching Tip

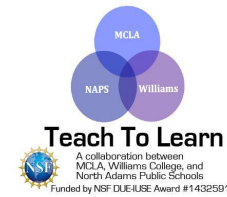
In these call out boxes, you'll find tips for teaching strategies or background information on the topic.

Student Thinking Alert

Look out for common student answers, ways in which students may think about a phenomenon, or typical misconceptions.

Tiered Vocabulary List

Tier 1	Tier 2	Tier 3
birdhouse move swim food air pet comfortable parent baby harvest fruit vegetable poisonous parent	materials predict leap describe class characteristics need imaginary essential camouflage protection non fiction diagram trunk cycle clever profit dispersal strategy similar different	migration brood predator sessile mammal reptile amphibian survive nectar offspring nutrients resources survival defense offspring



Lesson 1: Swallows in the Birdhouse

This lesson should be taught by the classroom teacher before the science fellows begin

BACKGROUND

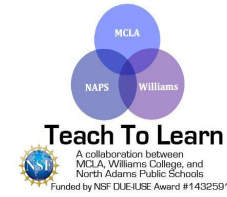
Overview of the Lesson

In this lesson, students will listen to a story about Swallows and how parent Swallows behave. Students will put up a birdhouse in a window in their classroom to observe. Students will then illustrate what the inside of the birdhouse could look like. The classroom teacher should begin the word wall vocabulary chart. **There is an optional break point in the activities in case there is not enough time to complete the entirety of the lesson in one class period (at the discretion of the science fellows and classroom teacher).**

Focus Standard(s)

1-LS1-1. Use evidence to explain that (a) different animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air, and (b) plants have roots, stems, leaves, flowers, and fruits that are used to take in water, air, and other nutrients, and produce food for the plant. [Clarification Statement: Descriptions are not expected to include mechanisms such as the process of photosynthesis.]

1-LS1-2. Obtain information to compare ways in which the behavior of different animal parents and their offspring help the offspring to survive. [Clarification Statement: Examples of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).]



RI.1.1 Ask and answer questions about key details in a text.

RI.1.2 Identify the main topic and retell key details of a text.

W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

Learning Targets

I can identify ways animals protect themselves

I can discuss how animal parents protect their young

I can illustrate nesting materials needed for a bird

Assessments

- Students will make an illustration of the inside of a birdhouse with appropriate objects and nesting material, birdhouse pictures should include appropriate nesting items (string, grass, leaves, yarn).
- In class discussions, verbalize how animal parents protect their young.

WIDA Language Objectives

(Dependent on the needs of your ELL students)

Targeted Academic Language/ Key Vocabulary

Tier 1: birdhouse

Tier 2: material, predict

Tier 3: migration, brood, predator

RESOURCES AND MATERIALS

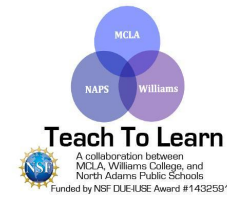
Quantity	Item	Source
1	<i>Swallows in the Birdhouse</i> by Stephen R Swinburne	Bin
1	My Spy Birdhouse/Nesting box with suction cups that attach to a window	Bin
Class set	Large drawing paper	Classroom Teacher
Class set	Crayons	Classroom Teacher
1	Compendium of Academic Language Techniques	Updated regularly on the NAPS Website
4 containers per class	Frosting	Bin
3 bags per class	Birdseed	Bin
1 10" piece per student	String or ribbon	Bin
1	Box	Classroom Teacher
	Newspaper	Classroom Teacher
Class Set	Pinecones	Bin/Classroom Teacher

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

LESSON DETAILS

Word Wall

Before beginning this lesson, the classroom teacher should begin the word wall, every new vocabulary word should be written on the word wall. The word wall should be hung up in the classroom so students may see the words and reference



them at any time during this unit, new vocabulary words should be added before each lesson is taught. It is the classroom teacher's responsibility to pre-teach the vocabulary words for the next lesson before the science fellow comes in.

Lesson Opening/ Activator

Introduce the following words to the class

- a. **migration**- the process or act of moving to a new location
- b. **brood** - to sit upon eggs to be hatched (refers to a bird)
- c. **predator** – an animal that hunts a smaller or weaker animal

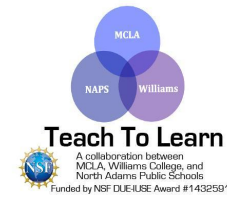
These words can either be placed on the word wall, or the students can begin composing a glossary in their science journals. This decision can be made at the discretion of the classroom teacher and science fellows in order to adequately meet the needs of each individual classroom. **If the science journal option is chosen, this can be included in the assessment of student comprehension for this lesson.**

These words should be revisited throughout the week by the classroom teacher and also throughout the entire Plants and Animals unit. This could be done by: keeping the word wall up until the end of the unit, incorporating the terms into ELA lessons, and/or revisiting older terms on the word wall to see how they relate to terms that are being added.

During the Lesson

Reading: *Swallows in the Birdhouse*

1. Show the class the cover of the book and ask students what they notice. Ask students to predict what may happen in the book? The teacher should read the book, stopping and asking questions about the events in the story. Make sure to point out new vocabulary words that are in the story.



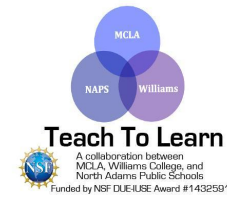
2. After the story, discuss that the female and male both took care of their baby, ask if they can think of some of the jobs the female did and the male did. Were some the same? Were they different? Review the behaviors of the male & female:
 - a. female—builds nest, warms eggs, feeds young, teaches how to catch bugs
 - b. male—protects the nest, announces “family is coming”, feeds young, teaches how to catch bugs
3. Ask students if this sometimes happens in human homes too. Do different family members have different responsibilities or jobs? Do they work together?

Birdhouse Activity:

4. The teacher will then show students the My Spy Birdhouse and together they will hang it on a classroom window. Students then can draw a picture of the inside of a birdhouse as they see it, and also a predictive sketch of what the bird house will look like once birds move in. Students can revisit this drawing throughout the unit/later to compare with their timely observations. If limited on space, share with the other first grade class.
5. Throughout the unit the students can observe the birdhouse and ask some prompting questions:
 - Have there been any changes in the bird house since putting it up/yesterday/last week/?
 - What changes do you see?
 - Is this shelter in a good spot for the birds? Why?
 - What do you think this shelter looks like at night?

Write down observations in science journal, and sketch what birdhouse would look like once a bird moves in. Can sketch specific components/elements that a bird would bring in with it (i.e. nesting materials).

Another option if the birdhouse activity does not match the comfort level of the classroom is to display the Eagle Cam (<http://www.dceaglecam.org/>) and have students observe a eagle and its nest the same way they would their local birds.



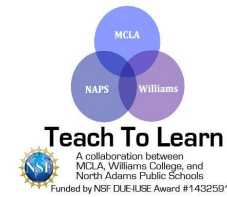
*If birdhouse activity is unsuccessful and birds do not settle, emphasize predictive elements/hypothetical connections - ask students what they would expect to see etc.

This is a possible break point so that the lesson can be completed over two class periods as opposed to a single class period.

Pine Cone Activity:

Explain that animals need food to survive, people can help animals get food; one way is to make bird feeders. Today we are going to make pinecone bird feeders for the birds that live around our school or around your home. *Note - this activity is weather dependent, and the optimal seasonal time is fall or spring

- a. Have students go outside to collect pine cones that are medium to large size. If there are not many around the school, the classroom teacher or science fellow may need to collect some in advance. Each student will need his or her own pinecone.
- b. The science fellow should give every student a pre-cut piece of string to tie around their pine cone so they can hang it up. The classroom teacher and science fellow may need to help students tie the string. Next students will need to cover the outside of their pinecone in frosting.
- c. Lastly have students cover the pinecones in birdseed. Find a medium size box and cover the bottom with paper or newspaper and pour the birdseed into the bottom of the box. Have students come up a few at a time to roll their pine cones in the birdseed.
- d. Take a field trip outside to hang the bird feeders around the school in trees. If this is not possible have the students put their pine cones in a plastic bag and let them take their bird feeders home.
- e. After a few days ask students: Are your bird feeders still covered with seeds? What have you observed? What has or has not changed about your bird feeders? Can you make any future predictions concerning your bird feeders? Have students write a few sentences about their observations in science journals, and sketch a bird feeder diagram



(optional: with labels) over the few days span so they can compare before and after. **[SP6: constructing explanations and designing solutions]** The students can use the following sentence frames to help them record their findings:

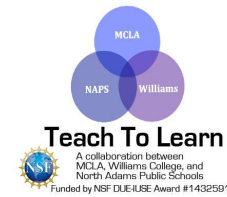
- i. My bird feeder has __ seeds than it did when I first put it up.
- ii. The __ on my bird feeder has changed/stayed the same since I first put it up.
- iii. In the future, I think my bird feeder will __ be different from the way it is now because ____.

Assessments

- Students will make an illustration of the inside of a birdhouse with appropriate objects and nesting material, birdhouse pictures should include appropriate nesting items (string, grass, leaves, yarn).
- In class discussions, verbalize how animal parents protect their young.

Extension

- Read *Blue Bird in the Garden* to class.
- Have a discussion on recycled bird houses, such as hollowed out gourds or other materials that may be recyclable (ex. Milk cartons). -Have the kids brainstorm things they may be able to use in their house or the classroom that would act as recycled birdhouses.



Lesson 2: Animal Moves

BACKGROUND

Overview of the Lesson

In this lesson, students will learn about how animals move. Students will be watching a video of animals moving and will complete an observation worksheet to go along with the video. Students will also be imitating animal movements as well as drawing a picture in their science journals to illustrate this. The classroom teacher should review and discuss the vocabulary words for this lesson before the science fellow comes to teach.

Focus Standard

1-LS1-1. Use evidence to explain that (a) different animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air, and (b) plants have roots, stems, leaves, flowers, and fruits that are used to take in water, air, and other nutrients, and produce food for the plant. [Clarification Statement: Descriptions are not expected to include mechanisms such as the process of photosynthesis.]

Learning Targets

I can describe the ways in which different animals move.

I can describe the body parts animals use to help them move

Assessment

At the end of this lesson, ask each student to stand up, pick their favorite animal, and pretend to move the way that animal should. Students should try their best not to repeat previously used animals; science fellows and classroom teacher could offer alternatives if the student cannot think of one. They should also say a word to describe the way that animal moves. This may also

be observed in the class activity “Who Am I?” Be sure to ask them what body part they are using to make that move. Review the students’ science journals after they have completed the drawing activity.

Targeted Academic Language/ Key Vocabulary

Tier 1: Move, swim

Tier 2: leap, describe

Tier 3: sessile

RESOURCES AND MATERIALS

Quantity	Item	Source
1 per student	Science journal	Classroom Teacher
1 box per student	Crayons, markers, pencils	Classroom Teacher
2 pieces	Chart paper (1 for word wall, and 1 for opening activity)	Classroom Teacher
	https://www.youtube.com/watch?v=gP2te1jF0y0 (Animal moves video)	CMC Website
1 per student	Animal Movement Worksheet	Binder

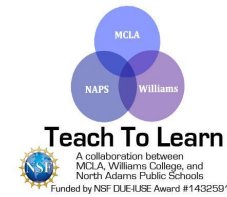
****Items in bold should be returned for use next year***

LESSON DETAILS

Lesson Opening/ Activator



(Science Talk: allow students to voice their ideas, while also being careful to guide the discussion towards the desired conclusion). Talk about what it means to move, does moving always mean that you went from one place to another?



Could you stay in your seat and still move? Ask the class to move, if they wish they can get up out of their seats. Ask the students to describe the way they are moving. For example, some students may say they are jumping, walking, or wiggling. If they give you a word such as walk or jump, ask them how they did it. What body parts did they have to use to make that move? Now that we know how humans move, let's talk about the way that animals move. Do animals move just like humans do? What body parts do animals use? Can the students name several ways in which animals move?

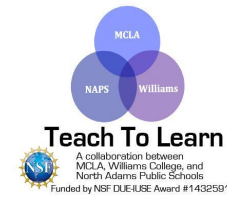
During the Lesson

Show the YouTube video "Moving Right Along", from the show Animal Atlas:

<https://www.youtube.com/watch?v=vR15MQRRLIQ> . It is approximately 22 minutes long, and contains lots of information regarding how animals use their body parts to move. **Teachers can review the video ahead of time to decide if they would like to show only parts of the video.** Students should watch this video and fill out the corresponding worksheet either during or after watching the video, dependent on the needs of the students. Scaffold as needed. Alternative modification: depending on needs of students, can also do the worksheet as a whole class, or break students up until small groups.

Activity 1: Who Am I?

(Before beginning this activity check with the classroom teacher about appropriate behavior expectations) - Weather permitting, the following activity should take place outside so that the students have a larger landscape to act out in. Every student is going to pretend to be a different animal. Give each students an animal to act out but to keep it to himself or herself and not tell anyone. Students should get up out of their seats ONE BY ONE and imitate the animal they have decided to be. When a student is pretending to be an animal they can move around the whole classroom or outdoors area if they wish to. The students who are still sitting should try to guess the animal that is being acted out using appropriate classroom behavior (raising their hand, using inside voices, etc...). Tell the students that when acting out an animal they are NOT allowed to speak. The class should guess what the animal is based on the movements, if the class is struggling to guess, then the acting student may make noises to give them a hint. If the class is struggling to identify the animal, the science fellows or classroom teacher can provide



hints as to the identity of that animal (i.e. “It looks like they have a bushy tail and love to nibble on things!” (Squirrel), etc...) Once the activity is completed, move back indoors. **[SP8: obtaining, evaluating, and communicating information]**

Alternative: You could also split class up into three groups to allow for more discussion and student talk.

Activity 2: Science Journaling

Now that students know how and why animals move, they will be drawing an example in their science journal. At the top of a new page students should put the title of this lesson “Animal Moves” and write the date. Ask students to pick the animal they imitated. The students should draw a picture of that animal, once the students have finished their pictures, they should write one or two words describing the way that animal moves. The classroom teacher and science fellow will need to walk around and help students write the words correctly in their science journals, as well as offer guidance on extraordinary movement words (i.e. scurry, waddle, pounce, etc.;). The students can use the following sentence frames to guide their responses:

1. This animal ___ when moving slowly, and ___ when moving quickly.
2. This animal ___ in order to move through the ___ (i.e. air, water, soil).

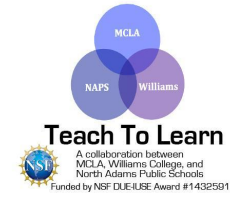
Lesson Closing



(Science Talk: allow students to voice their ideas, while also being careful to guide the discussion towards the desired conclusion). Talk about why animals need to move? How does a habitat (where an animal lives) impact the way an animal moves? Why would they want to go from one place to another? Why would they want to move at all? How does moving help them survive? Be sure to discuss birds specifically and think back to what was discussed in lesson one.

Assessment

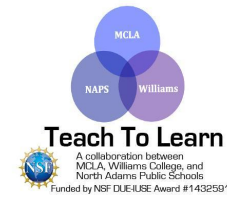
At the end of this lesson, ask each student to stand up, pick their favorite animal, and pretend to move the way that animal should. Students should try their best not to repeat previously used animals; science fellows and classroom teacher could offer



alternatives if the student cannot think of one. They should also say a word to describe the way that animal moves. This may also be observed in the class activity “Who Am I?” Be sure to ask them what body part they are using to make that move. Review the students’ science journals after they have completed the drawing activity.

Extension

- Watch Eagle Cam (available at <https://www.dceaglecam.org>) with class and record some of the eagles’ behavior. Animal webcams often have short lifespans, so check to make sure that this webcam is still active before the start of the lesson.



Lesson 3: Animal Classes

BACKGROUND

Overview of the Lesson

In this lesson, students will learn about the six different classes of animals. The science fellow will need to review the PowerPoint in this lesson before coming in to teach. Students will be working as a class to sort through animals and put them in their correct classes. The classroom teacher should review and discuss the vocabulary words for this lesson before the science fellow comes in to teach and add the new vocabulary words to the word wall. **There is an optional break point in the activities in case there is not enough time to complete the entirety of the lesson in one class period (up to the discretion of the science fellows and classroom teacher).**

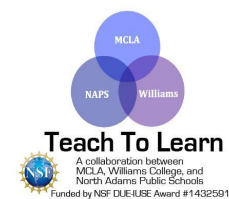
Focus Standard

1-LS3-1. Use information from observations (first-hand and from media) to identify similarities and differences among individual plants or animals of the same kind. [Clarification Statements: Examples of observations could include that leaves from the same kind of plant are the same shape but can differ in size. Inheritance, animals that undergo metamorphosis, or hybrids are not expected.]

Learning Targets

I can identify animals and the class that it belongs to.

I can group animals by same class



Assessment

Review the students' science journals to make sure they have selected and drawn the correct animal for their given class. If students have incorrectly classified an animal, ask them what their reasoning was. **[SP7- Engaging in Argument from Evidence]**

WIDA Language Objectives

(Dependent on the needs of your ELL students)

Targeted Academic Language/ Key Vocabulary

Tier 2: class, characteristic

Tier 3: mammal, reptile, amphibian

RESOURCES AND MATERIALS

Quantity	Item	Source
1 per student	Science journal	Classroom Teacher
3 sets per class	Animal Image worksheet (laminated color copies)	Bin
1	PowerPoint of animal classes	CMC Website
	Various Math Manipulatives	Classroom Teacher

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

LESSON DETAILS

Lesson Opening/ Activator

Why do we group things or classify things? (This skill can be demonstrated or practiced using math manipulatives.) Why do we have groups of items such as food, tools, and toys? Is grouping helpful to us? How do we group animals? How else can we

group animals? Scientists group animals that are alike or share similar characteristics. Who thinks they can give me an example of a group of animals?



(Science Talk: allow students to voice their ideas, while also being careful to guide the discussion towards the desired conclusion). Talk about the different characteristics that a group of animals have in common, build off student responses. If they say dog, for example, all dogs are the same because they have fur and four legs. This includes lots of other animals too, many animals have fur and four legs. These could all fit under one group “mammals.”

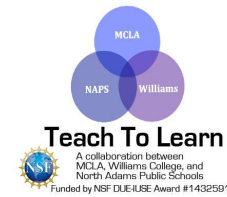
During the Lesson

Guessing Game:

1. Talk to the students about how to categorize animals by class. There are six main classes of animals that we will be focusing on. Put the six classes on the board and ask students to describe any of the ones they have heard before. Ask the students to name some of the animals that belong to each class. For example, the fish class includes a clownfish and a seahorse. **This is a good opportunity to create a class anchor chart!** The anchor chart should be made on a sheet of paper that is easily accessible and can be revisited both during and after the PowerPoint.

- a) Birds
- b) Amphibians
- c) Mammals
- d) Reptiles
- e) Fish
- f) Invertebrates

Go over descriptions of each class. Use the PowerPoint “Animal Classes” to help communicate the characteristics of each class (This PowerPoint is on the CMC Website). The science fellow should review the PowerPoint before teaching the lesson. Make sure to spend time discussing the characteristics of each class introduced in the



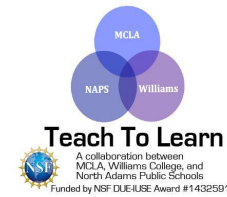
PowerPoint. At the end there is a mini guessing game, a picture of an animal is presented with a riddle and the students then have to guess what class that animal belongs to. The answer is presented on the following slide.

This is a possible break point (up to the discretion of the classroom teacher and the science fellows) if there is not time to complete the entire lesson in one class period.

2. **Sorting Activity** - Students should work in small groups or as a class to sort the animals
Students will work as a class or in small groups to organize the animal pictures into the six animal classes. Students should take the animals and place them in the category they think they belong in, providing justification to the science fellows and classroom teachers as necessary.
3. **Science Journaling**
Have students write down the six classes of animals and an example of an animal from each class in their science journal. Write a sentence for each of the example animals they chose explaining why that animal belongs in that class (or however many teacher finds feasible). The students should also draw pictures of the animals they choose.

Assessment

Review the students' science journals to make sure they have selected and drawn the correct animal for their given class. If students have incorrectly classified an animal, ask them what their reasoning was. **[SP7- Engaging in Argument from Evidence]**



Lesson 4: Animal Needs

BACKGROUND

Overview of the Lesson

In this lesson students will learn about the four basic needs of animals. They will be solving a sentence puzzle and creating a booklet about these needs. The classroom teacher should review and discuss the vocabulary words for this lesson before the science fellow comes in to teach and add new vocabulary words to the word wall.

Focus Standard

1-LS1-1. Use evidence to explain that (a) different animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air, and (b) plants have roots, stems, leaves, flowers, and fruits that are used to take in water, air, and other nutrients, and produce food for the plant. [Clarification Statement: Descriptions are not expected to include mechanisms such as the process of photosynthesis.]

Learning Target

I can identify the four basic needs of an animal - air, food, water, and shelter.

Assessment(s)

- Review what students wrote in their science journals about what humans need to live humans are animals, which they learned in previous lessons so they should list the four basic things that animals need. It would also be helpful to review animal classes to reinforce what they had learned in the previous lesson. No matter how different the animals in different classes are, all animals need the four basic things.
- Review with students *Things My Pet Needs* booklet.
- Talk about the importance of pet care with the students and ask them about any pet care experiences they may have had.

WIDA Language Objectives

(Dependent on the needs of your ELL students)

Targeted Academic Language/ Key Vocabulary

Tier 1: food, air, pet

Tier 2: need, imaginary

Tier 3: survive

RESOURCES AND MATERIALS

Quantity	Item	Source
1 per student	Science Journal	Classroom Teacher
1 per student	Scissors	Classroom Teacher
1 per pair	What do Animals Need Worksheet	Binder
1 per student	Glue stick	Classroom Teacher
1 per pair	Construction paper	Classroom Teacher
1 per class	Stapler	Classroom Teacher
1 per student	Things My Pet Needs Booklet (3 pages)	Binder
1 box per student	Crayons and or markers	Classroom Teacher
1 per student	Medium or large size pine cone	Classroom Teacher/ Bin

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

LESSON DETAILS

Lesson Opening/ Activator

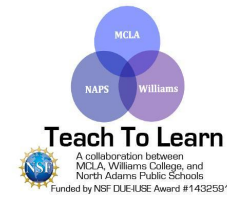


(Science Talk: allow students to voice their ideas, while also being careful to guide the discussion towards the desired conclusion). The science fellow should lead a discussion about what it means for animals to need something. Ask students to think about animals in the wild or even their pet's needs. What are some of the things that animals need in order to survive? If answers like "dog toys" come up, explain to the students that the animal probably would not die if it did not have its toys. If an animal went without food though it would not survive. Make sure to talk about where they can find ways to satisfy their needs. For example, if a dog needs food how does he get it? Do people provide him food or does the environment provide food? How do animals in the wild find their food? Do they need to hunt for it? Can animals always find food?

During the Lesson

"What do Animals Need" Activity:

- a. Have students pair up with a partner. Tell them they will be solving a puzzle to figure out what animals need. Hand each pair one of the "What do Animals Need" worksheet.
- b. This worksheet is divided up into squares with one or two words on each square. The students must cut the squares up and put them together making full sentences, once they have finished they will know the answer to the question, "What do animals need to survive?" Each square will be used up so there should be no leftover words.
- c. Have the students glue the sentences on a piece of construction paper in their correct order. Have them write their names on the back and hang the pictures up in the classroom if possible.
- d. The answer key is provided here. When students have their sentences together it should look like this...
 - i. What do animals need to live?
 - ii. Animals need food to live.
 - iii. Animals need water to live.



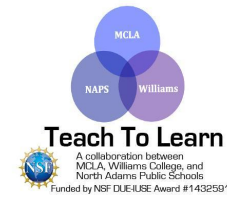
- iv. Animals need shelter to live.
- v. Animals need air to live.
- e. If some groups of students finish early or need additional guiding steps, have them illustrate their sentences.

Activity 2

***Things My Pet Needs* booklet**

Students will be creating a booklet about what an animal needs to survive. ***Teacher can also create booklet structure and stapled ahead of time and pass out to students, depending on needs of students/feasibility of constructing their own during class time.**

- a. This booklet will have a cover page where the students can pick and draw their imaginary pet. (It does not have to be their cat or dog.)
- b. On the inside there will be four pages that have the words “My pet needs ____ to live.” Students should write one of the four basic needs on each page, making sure that they have one page for each need. Once they write the word to complete the sentence, students should draw a picture of what it is that the animal needs. For example, if their first page says “My pet needs shelter to live.” then the student should draw a shelter for that animal.
- c. The last page has the sentence “My pet can survive now!” The student may draw an accompanying picture. Make sure students put their name on the front or back page of their booklets.
- d. Encourage students to bring the book home and share with family members and friends.



Challenging Alternative:

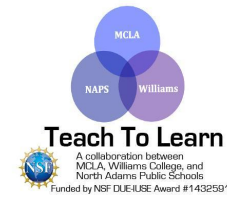
- a. Make the booklet 8 pages instead of 4, or instead have students write and draw in their science journals.
- b. For each page that the student writes one of the four basic needs, have the next page be about something that their pet wants or likes. The students should write down their own sentences and illustrate them as described above.
- c. This activity should allow students to be creative about what they imagine their pets would like and to think actively about the differences between the things their pets *need* versus the things their pets *like* (e.g. what would happen if their pet doesn't get what they like?).

Lesson Closing

Have students gather in a circle with their booklets. Allow some students to share and read the booklet that they made. Again, relate this lesson back to birds. What do the birds outside need to survive?

Assessment(s)

- Review what students wrote in their science journals about what humans need to live humans are animals, which they learned in previous lessons so they should list the four basic things that animals need. It would also be helpful to review animal classes to reinforce what they had learned in the previous lesson. No matter how different the animals in different classes are, all animals need the four basic things.
- Review with students *Things My Pet Needs* booklet.
- Talk about the importance of pet care with the students and ask them about any pet care experiences they may have had.



Lesson 5: “Tillena Lou’s Day in the Sun”

This lesson should be taught by the classroom teacher.

BACKGROUND

Overview of the Lesson

In this lesson the classroom teacher will read *Tillena Lou’s Day in the Sun* by Barbara Tharpy. Tillena Lou and her siblings spend a lazy day imagining what it might be like if they were other types of animals. Students will draw the essential things (air, food, water) needed to live on their posters at the end of the lesson.

Focus Standard(s)

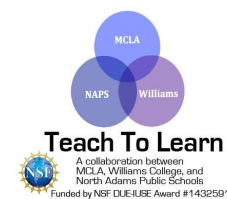
RI.1.1 Ask and answer questions about key details in a text. (1-LS1-2),(1-LS3-1)

RI.1.2 Identify the main topic and retell key details of a text. (1-LS1-2)

1-LS1-1. Use evidence to explain that (a) different animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air, and (b) plants have roots, stems, leaves, flowers, and fruits that are used to take in water, air, and other nutrients, and produce food for the plant.

[Clarification Statement: Descriptions are not expected to include mechanisms such as the process of photosynthesis.]

1-LS1-2. Obtain information to compare ways in which the behavior of different animal parents and their offspring help the offspring to survive. [Clarification Statement: Examples of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).]



Learning Targets

I can recognize that animals and plants need food and water to survive.

I can identify ways animals protect themselves.

Assessment

Students should be able to respond to the question: What is essential for living things to survive?

WIDA Language Objectives

(Dependent on the needs of your ELL students)

Targeted Academic Language/ Key Vocabulary

Tier 1: comfortable

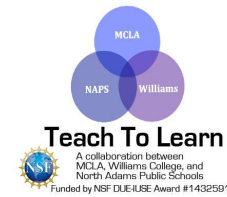
Tier 2: essential

Tier 3: nectar

RESOURCES AND MATERIALS

Quantity	Item	Source
1	http://ccitonline.org/ceo/home/content_images/Needs_Bk2_s.pdf online version of <i>Tillena Lou's Day In the Sun</i> by Barbara Tharp	CMC Website
Optional	http://www.bioedonline.org/tasks/render/file/index.cfm?fileID=8E28B3AE-957F-2A75-00EF2F01812C503B	Online
1 per student	Piece of white paper	Classroom Teacher

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



LESSON DETAILS

Lesson Opening/ Activator

Ask students what essential means, do the same with the words behaves, nectar, and comfortable. Write the students' ideas on the board. Once they have given their ideas, write the correct definitions on the board and ask the students to write them down in their science journals.

Essential—extremely important and necessary

Nectar—a sweet liquid produced by plants and used by bees to make honey

Behaves—acts in a particular way

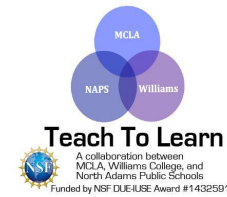
Comfortable—allowing you to be relaxed and have no worries

During the Lesson

1. Read the story aloud on the overhead projector.
2. After reading, discuss with your students what they had learned from the story. What were the three essentials of life in the story (food, air, water)? Can you think of another essential of life? The fourth and final essential for an animal to survive is shelter.

Assessment

Students should be able to respond to the question: What is essential for living things to survive?



Lesson 6: Animal Survival

BACKGROUND

Overview of the Lesson

In this lesson students will learn that animals protect themselves in many different ways. Some of their protection may come from their actions, the way they behave, or the type of shelter they build. The science fellow(s) and classroom teacher will be presenting a puppet show for the class; they should read the puppet show before the lesson to prepare. The classroom teacher should review and discuss the vocabulary words for this lesson before the science fellow comes in as well as add the new vocabulary words to the word wall. **There is an optional break point in the activities in case there is not enough time to complete the entirety of the lesson in one class period (at discretion of the science fellows and classroom teacher).**

Focus Standard

1-LS1-1. Use evidence to explain that (a) different animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air, and (b) plants have roots, stems, leaves, flowers, and fruits that are used to take in water, air, and other nutrients, and produce food for the plant. [Clarification Statement: Descriptions are not expected to include mechanisms such as the process of photosynthesis.]

Learning Targets

I can identify ways in which animals use their bodies to protect themselves.

I can identify ways in which animals behave or act to protect themselves.

Assessment(s)

- Students will be assessed through class discussion
- Review the camouflage activity that students had to design to know if they understand how camouflage works

- Review science journals

WIDA Language Objectives

(Dependent on the needs of your ELL students)

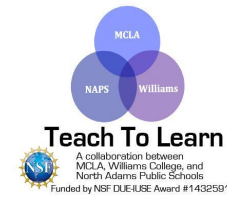
Targeted Academic Language/ Key Vocabulary

Tier 2: camouflage, protection

RESOURCES AND MATERIALS

Quantity	Item	Source
1 per student	Science Journal	Classroom Teacher
1 box per student	Crayons and or markers	Classroom Teacher
1 per student	Scissors	Classroom Teacher
1 per student	Glue stick	Classroom Teacher
	Construction paper	Classroom Teacher
	PowerPoint on Animal Shelters	CMC Website
1 per student	Plastic Eggs	Bin
¼ cup per student	Sunflower seeds	Bin
1 per student	Items to decorate eggs with: googly eyes, Elmer's glue, colorful tape	Bin
1 copy for SF; 1 for CT	Puppet Show: "Camouflage" (Hands on Nature p. 232-233)	Binder
	Puppets	Bin

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



LESSON DETAILS

Lesson Opening/ Activator

Open this lesson with a discussion about what it means to protect yourself. How do humans protect themselves? We use sweaters and coats in the winter to protect our bodies from the cold. We use sunscreen to protect our skin from the sun. We use our houses or shelter to protect us from the weather. Animals protect themselves too. Ask students how animals protect themselves? They certainly do not have winters coats and sunscreen. Do animals need to protect themselves from the same kinds of things that humans need to protect themselves from? Is it the same for every animal? **[SP1: asking questions and defining problems]**

During the Lesson

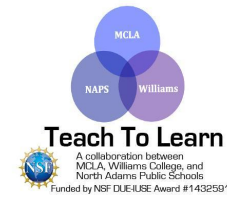
1. **Building shelters:** Animals build shelters as a way to protect themselves. As a class, go through the PowerPoint and have students guess who made the shelter. Why did they make the shelter? How did they make the shelter? Did it come from their own bodies? Did they use sticks and leaves? (The PowerPoint is on the unit CMC Website).
2. **Using sounds:** Many animals make sounds to scare off other animals. Making these sounds sometimes helps them to survive. One great example of an animal that makes noise to ward off predators is the rattlesnake. Show the students a YouTube video of rattlesnake noises, teachers do not need to show the entire video just enough for the students to grasp the idea, then ask if they can make the noise themselves. Today we are going to pretend we are rattlesnakes.
3. **Rattle activity:** Each student will need one plastic Easter egg and a tablespoon of sunflower seeds.
 - Place tablespoon of sunflower seeds into the plastic Easter egg and close it, use tape if needed.
 - Optional: Have the students decorate Easter eggs if they would like to, using the items provided in the bin and additional materials available in the classroom. They could also reflect on why they have chosen the materials or colors that they have chosen (perhaps for protection or camouflage).

- Once the rattles are completed, have the science fellow step outside the classroom without making a scene. The science fellow should wait right outside the door for a few seconds. The classroom teacher will explain to the kids that rattlesnakes use their rattles to scare away predators that may want to hurt or eat them, and this is one way that animals use their body parts to survive. The science fellow should come back in when he or she hears the classroom teacher finish explaining. As the science fellow comes in the classroom teacher should say, “Look! Here comes a predator now! What are you going to do?” The class should catch on that they need to shake their rattles to get the science fellow to leave the classroom again.
- After the activity, ask students to either put away their rattles or collect them after the activity so they don’t misuse them during the rest of the class.

This is a possible break point (up to the discretion of the science fellows and classroom teacher) if there is not enough time to complete the entirety of this lesson in one class period.



4. **Defense strategies:** (Science Talk: allow students to voice their ideas using A/B talking protocol). Think-Pair-Share: Ask students break up into pairs to brainstorm different ways animals can defend themselves against predators and nature. Some defense strategies may include being prickly, smelling bad, stingers, hard shell, sounding scary, looking scary, being slimy or slippery, camouflage, and tasting bad. Ask probing questions to guide the students, such as: What kind of things might hurt this animal? How do you think the animal protects itself from that danger? What’s unusual about this animal? Do you think that might help it defend itself?
5. Animals use lots of different body parts to protect themselves. Giraffes have long necks and fight with them, porcupines have quills and stick them into people or animals, skunks spray others so they do not use their body parts too much to fight, toads taste bad so they use their whole body to ward off a predator. Talk about how different animals use different defense mechanisms. Have the pairs share the ideas they thought of with the class.



6. **Camouflage Activity:**

Read Mixed Up Chameleon and lead class in a discussion on camouflage.

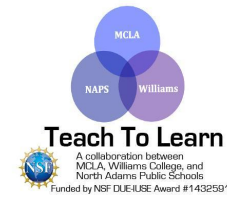
7. **Camouflage puppet show:** The science fellow(s) and classroom teacher can work together to put on the puppet show for the class, use the puppets included in the bin. The puppet show comes from pages 232 and 233 of the Hands on Nature book. A handout is included in the binder. It is recommended that the science fellow(s) and classroom teacher read the puppet show before reading it to the class. If the students are willing, ask for volunteers for the roles of Freddie Fox, Ellie Eft, and the birthday Cake. Ask students to pay attention to the puppet show.

Lesson Closing

- 1 Have students get together in a large circle, ask them one by one to go around and say one thing they learned today or answer the question “How do animals survive?”
2. Afterwards, have the students go back to their desk and write down in their science journals one thing that they learned from this lesson about animal survival. Time permitting, a couple of students can share their entries with the class, or have every student engage in pair share.

Assessment(s)

- Students will be assessed through class discussion
- Review the camouflage activity that students had to design to know if they understand how camouflage works
- Review science journals



Lesson 7: Caring for Your Offspring

BACKGROUND

Overview of the Lesson

In this lesson students will learn about how animal parents care for their offspring. Students will work in groups to pretend to care for a baby animal based on information that will be passed out to them. The classroom teacher should review and discuss the vocabulary words for this lesson before the science fellow comes in to teach as well as add new vocabulary words to the word wall.

Focus Standard

1-LS1-2. Obtain information to compare ways in which the behavior of different animal parents and their offspring help the offspring to survive. [Clarification Statement: Examples of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).]

Learning Target

I can identify ways in which animal parents care for their offspring so that the offspring can survive.

Assessment(s)

- Listen to student group presentations on how animal parents care for their offspring.
- Review the students' science journals.

Targeted Academic Language/ Key Vocabulary

Tier 1: parent, baby

Tier 2:

Tier 3: offspring

RESOURCES AND MATERIALS

Quantity	Item	Source
1 per student	Science Journal	Classroom Teacher
1 per group	Animal baby and parent cards (laminated)	Bin
	Projector and Computer	Classroom Teacher
	Are you My Mother video: https://www.youtube.com/watch?v=x4Koi-RJATE	CMC Website
Optional	Are you My Mother by P.D Eastman	Library

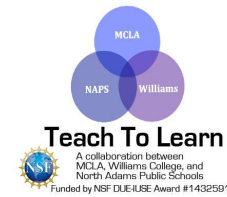
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LESSON DETAILS

Lesson Opening/ Activator



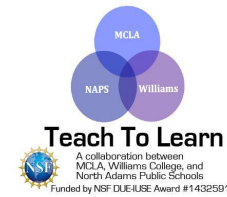
(Science Talk: allow students to voice their ideas, while also being careful to guide the discussion towards the desired conclusion). To begin this lesson, have a small discussion about what it means to take care of someone. How do people take care of their kids? Ask students how their parents or grandparents take care of them. How do those things help you survive every day? Do you think that animals do the same thing? Do they take care of their offspring in the same way



that your parents take care of you? Ask the students to complete a think-pair-share activity in which they discuss how they think animals take care of their offspring (nesting, providing food and shelter, etc.....). Have the pairs share their ideas and use them to create a comprehensive list on the whiteboard, adding components and guiding discussion as necessary in order to insure student comprehension during the following activities. **Science Fellows should review different strategies that animals utilize in the caring of their offspring if they are not comfortable with the subject so that they can effectively guide discussion.**

During the Lesson

1. The science fellow can present a this video (<https://www.youtube.com/watch?v=x4Koi-RJATE>) or read the book “Are you My Mother” by P.D Eastman to the students and discuss how the baby bird knew that the bird at the end is his mother based on their physical appearance and then discuss what the mother provides for the baby bird ad how their parents provide for them
2. **Taking Care of A Baby Animal** - Students will work together in groups to take care of a baby animal the way that its real parents would.
 - a. Students will need to be in groups of three or four. Place students in a mixed ability group, the classroom teacher will need to assign groups. There will be seven different animal babies to take care. The students will receive a kangaroo, a penguin, an elephant, an orangutan, a rabbit, an alligator, or a cheetah.
 - b. Each group will receive information about their animal baby. This information can be written on a card and the classroom teacher or science fellow will need to hand one card to each group. Animal descriptions are located in the binder and the bin. Tell the students that they are now the parents of this baby. Ask the students to work together to read the card and figure out how they should take care of their baby. Note: The classroom teacher and science fellow



will need to circulate the classroom and help groups who are struggling to read the information. The instructor can help the group by asking probing questions:

- i. Do you remember the four things all animals need to survive? (food, air, water, shelter)
 - ii. How can you give each of the four things to the baby?
- c. Once the students know how to take care of their baby, tell them that they need to prepare a skit that shows what they learned. They will present this skit to the entire class so everyone will have the chance to learn about each animal. Suggest to the students that maybe one student should narrate what is going on while the other students pretend to be the parents; they could also each take turns doing a different part to take care of their babies. Give the students some time to think about and practice what they will say. Have students gather in a circle on the floor. One by one have the groups come up and present their skit to the class. **[SP8: obtaining, evaluating, and communicating information]**
- i. Depending on the wants and needs of the class and classroom teacher, a skit might not be the most helpful way of portraying this information. Alternatively, students could write a few sentences and create an illustration of how they would take care of their baby animal. Students should share their work at the front of the class.
- d. Once everyone has presented, have students debrief in their science journals about what they learned today. Ask them to write 1-2 sentences about something that surprised them (that they learned) and why.

Optional Lesson Extension: Read the book “Animals and Their Babies” and encourage classroom dialogue to reinforce these concepts.

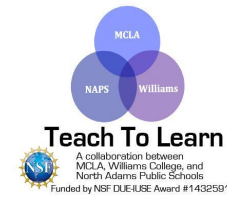
Lesson Closing



(Science Talk: allow students to voice their ideas, while also being careful to guide the discussion towards the desired conclusion). Talk about the ways that animals and humans are similar. Do they both take care of their young in the same way? Ask students to point out similarities and differences. The science fellow may want to record these on the board in a chart or on a Venn diagram. Also, talk about how the birds outside the school care for their young. Does the care change? Do they do things differently in the spring versus the winter?

Assessment(s)

- Listen to student group presentations on how animal parents care for their offspring.
- Review the students' science journals.



Lesson 8: Plant Life Cycles

BACKGROUND

Overview of the Lesson

****This lesson requires borrowing non-fiction resources from the library or scheduling time with a laptop/tablet cart.**

Students will review the life cycle and parts of a plant through a flow chart and song. They will then see examples of scientific diagrams and create their own diagrams to explain the life cycle of an apple tree. The classroom teacher should review and discuss the vocabulary words for this lesson before the science fellow comes in to teach as well as add the new vocabulary words to the word wall.

Focus Standard

1-LS1-1. Use evidence to explain that (a) different animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air, and (b) plants have roots, stems, leaves, flowers, and fruits that are used to take in water, air, and other nutrients, and produce food for the plant.

[Clarification Statement: Descriptions are not expected to include mechanisms such as the process of photosynthesis.]

Learning Target

I can describe the life cycle of a plant and identify the different parts of a plant.

Assessment

Ask the student to describe the life cycle of a plant that grows at their house (maybe in a garden or in their backyard). Be sure that they can reference the parts of a plant by name.

Targeted Academic Language/ Key Vocabulary

Tier 2: nonfiction, diagram, trunk, cycle

RESOURCES AND MATERIALS

Quantity	Item	Source
1 per classroom	Projector and computer	Classroom Teacher
	“Plant Parts” video: http://www.schooltube.com/video/8b5cd92efbe9708a4a5a/Plant-Parts	CMC Website
1 per student	Large blank paper	Classroom Teacher
1 per student	Colored pencils	Classroom Teacher
	Textbook diagrams of plants	Library or Internet access
5-10	Research resources/non-fiction books about plants	Library
1 per student	Life Cycle Reading and Questions (Plants from Seeds: 4 pages)	Binder
Enough for each child to have a few	Post-its	Bin

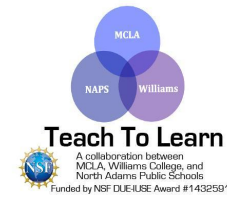
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LESSON DETAILS

Lesson Opening/ Activator

As a group, fill in the Plant Life Cycle diagram. This activity should call on plant knowledge from kindergarten. These questions may be useful in guiding the conversation:

- What is a “life cycle?”



- How does a plant start its life? What happens next?

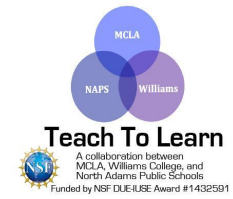
During the Lesson

1. Watch the plant parts video as a class. Afterwards, invent movements to represent the different parts of a plant. (eg, hands at your sides for a stem, hands above your head for a flower, arms outstretched for leaves, and touch the floor for roots.) Repeat the video, this time including these movements.
2. Give the class time to explore books about plants. This activity can also be done using laptops or tablets and an online search engine. If the latter option is chosen, the following websites might be helpful sites:
<http://www.saps.org.uk/secondary/teaching-resources/707-parts-of-a-plant-and-a-flower>
<https://www.biodiversitylibrary.org/item/84253#page/51/mode/1up>
<https://www.kew.org/blogs/library-art-and-archives/from-poppies-to-pixels>

Using post-its, ask them to bookmark any diagrams that they find. A diagram is a simple, labeled drawing that shows the appearance or structure of something. It may be helpful to ask the school library for some additional non-fiction material about plants.

Scientific Diagram:

3. Explain that they are going to create their own scientific diagram that they can use to educate their friends about apple trees.
 - Step 1: Start by drawing a seed and labeling it.
 - Step 2: Draw a seedling. Label the stem, roots, and leaves.
 - Step 3: Draw a small tree. Explain that a trunk is a type of stem. Label the trunk, roots, and leaves.
 - Step 4: Draw a small tree with flowers. Explain that these are apple blossoms. They will grow into apples. Label the flowers, trunk, roots, and leaves.
 - Step 5: Draw an apple tree with apples. Label the fruits, trunk, roots, and leaves.



Step 6: Draw the inside of an apple. Explain that these are where apple trees keep their seeds. Label the fruit and seeds.

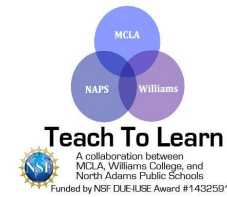
Alternative: To guide student understanding, Google 'life cycle of an apple tree' in images. Talk about the similarities and the differences in the images that you find. What are the constants? You might also bring in an apple and cut it in half in front of the class for them to see. Let them touch the halves of the apple, noticing the seeds and their positioning, emphasizing their role in recreating the life cycle of the apple tree.

Lesson Closing

Ask the students to volunteer different ways that plants produce seeds. (Examples: dandelion seeds, orange seeds, peach pits, etc.) and create a list together.

Assessment

Ask the student to describe the life cycle of a plant that grows at their house (maybe in a garden or in their backyard). Be sure that they can reference the parts of a plant by name.



Lesson 9: Plant Needs

BACKGROUND

Overview of the Lesson

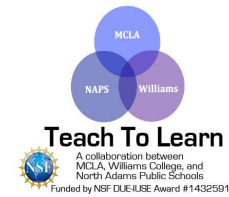
In this lesson, the class will collaborate to create a “How To Plant A Seed” guide that includes all the things plants need to make their own food. They will get to test their plan by planting their own seeds and review plant needs by acting out the ways in which plants gather the necessary resources. The classroom teacher should review and discuss the vocabulary words for this lesson before the science fellow comes in to teach as well as add the new vocabulary words to the word wall. **There is an optional break point in the activities in case there is not enough time to complete the entirety of the lesson in one class period (up to the discretion of the science fellows and classroom teacher).**

Focus Standard

1-LS1-1. Use evidence to explain that (a) different animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air, and (b) plants have roots, stems, leaves, flowers, and fruits that are used to take in water, air, and other nutrients, and produce food for the plant. [Clarification Statement: Descriptions are not expected to include mechanisms such as the process of photosynthesis.]

Learning Targets

I can identify plants need water, air, and sunlight to survive, they take in these resources through their leaves and roots.
I can explain how plants make their own food.



Assessment

Read and evaluate the “How to Plant A Seed” guide, checking to make sure that all necessary plant resources are included. Individually, ask each student where plants get their food and what they need to get it.

WIDA Language Objectives

(Dependent on the needs of your ELL students)

Targeted Academic Language/ Key Vocabulary

Tier 3: nutrient, resource

RESOURCES AND MATERIALS

Quantity	Item	Source
	Chart paper and markers	Classroom Teacher
1 per group	White paper	Classroom Teacher
	Markers, crayons, and or colored pencils	Classroom Teacher
1 per class	Clear front report cover (for binding the class book)	Bin
1 per student	Small plastic cup	Bin
1 cup per student	Potting soil	Bin
1 per student	Seeds	Bin
	Water	Classroom Teacher
1 per classroom	Projector and computer (optional)	Classroom Teacher

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

LESSON DETAILS

Lesson Opening/ Activator

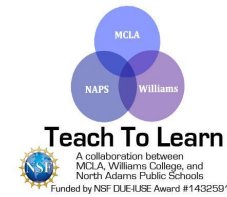
Remind the students of the “Plant Parts” song and dance from the previous lesson. Ask for volunteers to demonstrate each part and its accompanying dance move. As a class, do the dance once through. (Re-play the video if it helps participation.)

During the Lesson

1. As a class, you will create a “How To” guide for planting a seed. Begin by brainstorming all the things that plants need to survive (water, sunlight, air). Pose the following questions to the class:
 - a. How do plants get water? (The roots absorb water from the surrounding soil. Roots also absorb nutrients, such as nitrogen, iron, and calcium.)
 - b. Where do plants get their food? (They make their own food in the form of sugar.)
 - c. Why do plants need sunlight? (They use the energy from the sun to make their own food.)
 - d. What do the leaves of a plant do? (They take in energy from the sun and carbon dioxide from the air.)
 - e. What happens if plants don’t get sunlight, water, and air? (They wilt and die.)

This is a possible break point if the lesson cannot be completed in one class period (this is up to the discretion of both the science fellows and the classroom teacher)

2. Now that you have gathered the basic information, you are ready to put it in order. Discuss the basic steps of planting a seed; below is a suggested outline, but the specific steps may vary by class. Divide the class into small groups based on the number of steps. Each group will fill out a page of the book with a sentence explaining the direction along with an illustration. The classroom teacher should label and laminate a cover for the “How To Plant A Seed” booklet; when the students are finished, it can be bound together and kept in the classroom for the rest of the unit.
 - a. Step 1: Fill a planter with soil.



- b. Step 2: Dig a small hole and plant the seed.
- c. Step 3: Cover the seed up with soil.
- d. Step 4: Place the plant somewhere that it can get lots of sunlight.
- e. Step 5: Water the plant when needed (when the soil doesn't look damp).

To note:

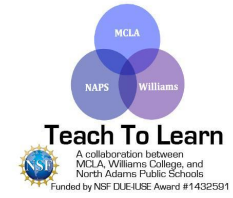
- The pages of the book should be filled out in “portrait” orientation.
- Before dividing the class into groups, check with the teacher regarding the ability of the students. Some groups may need extra support particularly with writing sentences.

If lesson is too complex for class, consider finding a how to plant seeds list online or create your own and place them out of order so the students can place them in the correct order in order to use their investigation skills but in a more time saving and simple way.

3. Now the students will have a chance to plant their own bean seeds following the directions that they came up with. Each student will get a seed.
4. After seeds are planted make sure students record growth in their science journals for the next week or so.

Lesson Closing

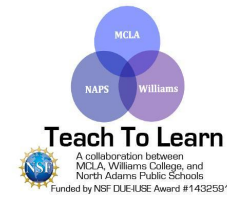
Tell the students that although plants can't move from place to place some plants can move their leaves and stems. For example, the upside-down trees at Mass MoCA have trunks that grow toward the sky (toward the sunlight); African daisies (gazania) close up their flowers at night and open during the day when the sun comes out. If you would like to add an optional internet component to this lesson, let the students research plant movement and look at videos of such online. The website <http://plantsinmotion.bio.indiana.edu/plantmotion/movements/nastic/nastic.html> is the best place to go for time-lapse footage



of plant movement. The captions may be a bit advanced for the students, so the teacher and science fellow should explain to the students what is going on in each video.

Assessment

Read and evaluate the “How to Plant A Seed” guide, checking to make sure that all necessary plant resources are included. Individually, ask each student where plants get their food and what they need to get it.



Lesson 10: Tops & Bottoms

This lesson should be taught by the classroom teacher

BACKGROUND

Overview of the Lesson

Students will see that fruits and vegetables come from different sections of the plant (top, middle, bottom). The classroom teacher should review and discuss the vocabulary words for this lesson as well as add the new vocabulary words to the word wall.

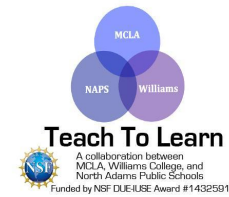
Focus Standard(s)

1-LS1-1. Use evidence to explain that (a) different animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air, and (b) plants have roots, stems, leaves, flowers, and fruits that are used to take in water, air, and other nutrients, and produce food for the plant. [Clarification Statement: Descriptions are not expected to include mechanisms such as the process of photosynthesis.]

RI.1.1 Ask and answer questions about key details in a text. (1-LS1-2),(1-LS3-1)

RI.1.2 Identify the main topic and retell key details of a text. (1-LS1-2)

W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-LS3-1)



Learning Targets

I can label the parts of a plant (stem, roots, leaves, flower/fruit).

I can compare and contrast two plants.

I can use information from the story to provide answers and make a mural.

Assessment

Students will write an example of a “top” plant and a “bottom” plant and include a picture of each. Students should write how these plants are the same and how they are different.

Targeted Academic Language/ Key Vocabulary

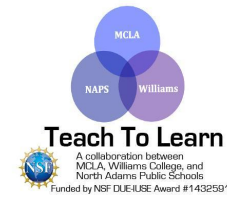
Tier 1: harvest

Tier 2: clever, profit

RESOURCES AND MATERIALS

Quantity	Item	Source
1	<i>Tops and Bottoms</i> by Janet Stevens	Bin
as many as needed	old magazines	Classroom Teacher
20	Paper plates	Classroom Teacher
Class set	Crayons, markers, colored pencils and/or scissors,	Classroom Teacher

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



LESSON DETAILS

Lesson Opening/ Activator

Begin this lesson with a think-pair-share activity in which the students brainstorm what they think was important information from the previous lessons (focusing mainly on Lesson 9). The pairs will then take turns sharing with the class, allowing for a class discussion to occur. This discussion should be guided by the science fellows as appropriate so that the key facts about nutrients and resources are reviewed prior to the teaching of this lesson. Ask students if they know what a trickster might be. Tell the students to pay close attention to what the hare does in the story. Have students concentrate on the different fruits and vegetables in the story

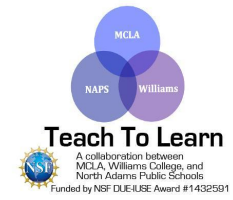
During the Lesson

Reading *Tops and Bottoms*:

1. Read the story *Tops and Bottoms* to the class.
2. After the story ask the students the following questions:
 - a. What type of character is the Bear? (lazy, not a hard worker, sleepy, unmotivated)
 - b. What type of character is the Hare? (trickster, hard worker, takes care of his family)
 - c. Why did the Bear change from wanting the tops of the plant to the bottom/middle of the plants? (He saw the rabbit was getting all the good parts of the plants)
 - d. How do you think the Bear changes from the beginning of the story to the end? (Bear learns he needs to do work to get the food he needs. He changes into a hard working bear.)

Drawing Plants:

Hand a paper plate to each student, have them write top and bottom on the upper half and lower half of the plate. Then, using old magazines, cut out plants and animals (or draw plants and animals) where they fall on the top to bottom gradient.



Lesson Closing

Hang up all paper plates and let the students discuss the differences in their plates

Assessment

Students will write an example of a “top” plant and a “bottom” plant and include a picture of each. Students should write how these plants are the same and how they are different.

Lesson 11: Comparing Plants

BACKGROUND

Overview of the Lesson

In this lesson, students will explore the differences and similarities between fruits and vegetables through a series of categorization activities. In the beginning of the lesson they will use background knowledge to sort pictures of fruits and vegetables and then check their choices by observing and discussing real fruits and vegetables. Then they will have a chance to explore variations in plants of the same species by taste-testing yellow, green, and red apples. This idea of variation in plants of the same type can be further explored with a trip outside to observe various types of plants. The classroom teacher should review and discuss the vocabulary words for this lesson before the science fellow comes in to teach as well as add the new vocabulary words to the word wall.

Focus Standard

1-LS3-1. Use information from observations (first-hand and from media) to identify similarities and differences among individual plants or animals of the same kind. [Clarification Statements: Examples of observations could include that leaves from the same kind of plant are the same shape but can differ in size. Inheritance, animals that undergo metamorphosis, or hybrids are not expected.]

Learning Targets

I can identify that fruits have seeds and vegetables do not have seeds

I can identify that plants of the same type can have variations, for example, apples come in different colors

Assessment

Ask each student to name one fruit and one vegetable and explain why each belongs in its category.

Targeted Academic Language/ Key Vocabulary

Tier 1: fruit, vegetable

RESOURCES AND MATERIALS

Quantity	Item	Source
1 set per class	Fruits and vegetables sorting cards	Bin
	Chart paper and markers	Classroom Teacher
	Tape	Classroom Teacher
1 set per class	Apple, strawberries, potato, tomato	Sue Beauchamp
1 per student	Glue sticks	Classroom Teacher
1 per student	Scissors	Classroom Teacher
1 per student	Paper plates	Bin
	Magazines (with pictures of fruits and vegetables- cooking magazines suggested)	Bin
	Computer and Projector	Classroom Teacher
	Red, yellow, and green apples (enough for the whole class to try one slice of each color)	Sue Beauchamp

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

LESSON DETAILS

Lesson Opening/ Activator

Label one piece of chart paper “Fruits” and the other “Vegetables.” As a class, sort all of the pictures of fruits and vegetables then discuss the following:

- How are the fruits different from each other? How are they the same?
- How are the vegetables different from each other? How are they the same?



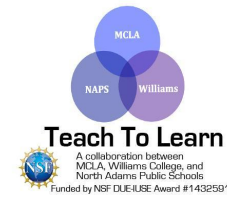
During the Lesson

1.

(Science Talk: allow students to voice their ideas, while also being careful to guide the discussion towards the desired conclusion). Demonstrate cutting open an apple and a potato at the front of the room. Show the class the inside of both the apple and potato (if necessary, use the projector). Explain that all fruits have seeds and vegetables do not. Use strawberries as another example of a fruit; point out that sometimes the seeds are on the outside of a fruit. Refer to the opening activity: did you categorize a tomato as a fruit or a vegetable? Cut open a tomato and show the class the seeds and explain that it is a fruit. Discuss with the class the importance of a seed’s shape (a dandelion seed is fluffy at the top so it can float in the winds, the seeds that get caught on your clothes help to relocate them into other areas of the forest, helicopter seeds spin away when blown off the tree).

2. Using what you have just learned, go over the initial categorization activity. Does anything need to be changed?

Note: These fruits are often mislabeled as vegetables: cucumber, tomato, and eggplant.

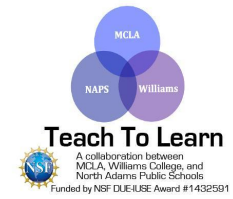


3. Explain that fruits and vegetables come in many different colors. It's important to eat lots of different colors, so your body gets all of the nutrients it needs. Challenge the class to fill a paper plate with fruits and vegetables of every color in the rainbow.

Possible alternative/art extension: fruit and vegetable stamping - to create a visual representations or categorization of the different shapes of fruits and veggies. Provide students with slices of different fruits and vegetables (apples, oranges, lemons, cucumbers, peppers etc.), a small amount of paint, and white sheets of paper. Tell the students that they should carefully dip one of their fruit and veggie slices in the paint and press it onto their sheet of paper. Once completed, ask the class if any of the shapes are similar. The ask if they can predict why they look similar or different.

4. Pass out the paper plates and then distribute magazines evenly among the tables. The students will have to take turns choosing and cutting out pictures; it may help to go over proper sharing etiquette before starting this activity. The students will cut out pictures of fruits and vegetables of their choice and glue them on the plate.
5. Ask the class how many students included apples on their plate. How many included red apples? Green apples? Yellow apples? Although these all come from the same type of plant, they look very different.

Optional: Have a class taste test of the three types of apples, then make a bar graph showing how many students preferred each color of apple. To generate the numbers for the graph, either ask students to raise their hand for their favorite type of apple without voting twice (each vote = 1 point for that type) or ask students to rate their preference for each type on a scale of 1-3 (with 3 being like the most).

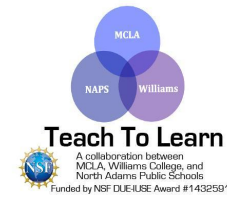


Assessment

Ask each student to name one fruit and one vegetable and explain why each belongs in its category.

Extensions:

- 1) Have students track their veggie and fruit intake for a week and then make a classroom graph so the kids can see the differences in their diets with how much fruit they eat versus how many veggies they eat.
- 2) Look up fruits and vegetables on the internet and discuss why some fall under both categories for different reasons. E.g. Zucchini, tomato, and squash are treated as vegetables but they are fruits because they have seeds.



Lesson 12: Plant Survival

BACKGROUND

Overview of the Lesson

In this lesson, students will use background knowledge of the ways in which animals protect themselves from predators to explore the ways in which plants protect themselves from things that want to eat them. The lesson begins with a puppet show about a familiar, hardy plant (dandelions) followed by a class discussion and a puzzle game. The students may need some assistance identifying pieces of the puzzle, so leave time to answer questions. Finally, the class will play charades and think about how they would defend themselves if they were plants. The classroom teacher should review and discuss the vocabulary words for this lesson before the science fellow comes in to teach as well as add the new vocabulary words to the word wall.

Focus Standard

1-LS1-1. Use evidence to explain that (a) different animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air, and (b) plants have roots, stems, leaves, flowers, and fruits that are used to take in water, air, and other nutrients, and produce food for the plant. [Clarification Statement: Descriptions are not expected to include mechanisms such as the process of photosynthesis.]

Learning Target

I can identify ways in which plants defend themselves.

Assessment

Have each student draw a picture of a plant that they learned about during the lesson and write one sentence describing how it protects itself.

WIDA Language Objectives

(Dependent on the needs of your ELL students)

Targeted Academic Language/ Key Vocabulary

Tier 1: poisonous

Tier 3: survival, defense

RESOURCES AND MATERIALS

Quantity	Item	Source
1 set per class	Puppets	Bin
1 per students	Dandelion puppet show script (<i>Hands on Nature</i> p.181)	Binder
2 sets per class	Puzzle pieces (laminated)	Bin
	Puzzle Key (for teacher to reference)	Binder
1 per student	Paper, crayons, pencils, etc.	Classroom Teacher

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

LESSON DETAILS

Lesson Opening/ Activator

Dandelion Puppet Show:

Perform the dandelion puppet show from *Hands on Nature*. Afterward, ask the students to identify several ways in which the dandelion protected itself.

During the Lesson



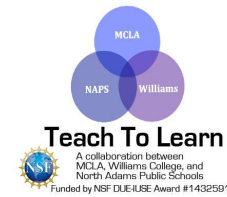
1. (Science Talk: allow students to voice their ideas, while also being careful to guide the discussion towards the desired conclusion). Earlier in the unit, the students learned how animals defend themselves. Ask them to name a few strategies (ex: toads are poisonous, skunks spray bad-smelling chemicals, porcupines have spikes). Everyone knows to stay away from these animals, because they could be dangerous. Ask if the students can think of any plants that they have been told to stay away from (ex: poison ivy, poison oak, cactuses). Why? How do these plants protect themselves?

Puzzle and Skit:

1. Divide the students into small groups and distribute one puzzle piece to each student and explain that they will use the pieces to make up groups of plants and animals that defend themselves in the same way. Before starting the activity ask if anyone does not recognize their plant and take the opportunity to go over the plant's protection mechanism as a class; some students may need more help to complete the activity. If you would like to have the students use the internet, have them research the defense mechanism of their plant or animal online before the skit.
2. In their puzzle groups ask students to imagine a plant that defends itself in a way that matches the theme of their group. Act out a skit in which two unsuspecting students come upon this plant and perform it for the class. (Be sure to note that this is a keep-your-hands-to-yourself activity.)

Assessment

Have each student draw a picture of a plant that they learned about during the lesson and write one sentence describing how it protects itself.



Lesson 13: Spreading Seeds

BACKGROUND

Overview of the Lesson

This lesson requires a large space for playing a game such as the gym or a playing field. The concept of seed dispersal will be introduced with Eric Carle's "The Tiny Seed." A video will explain the purpose and types of seed dispersal and then the students can explore the ideas through a game. Afterward, students will employ their own creativity to design a Super Seed. The classroom teacher should review and discuss the vocabulary words for this lesson before the science fellow comes in to teach as well as add the new vocabulary words to the word wall.

Focus Standard

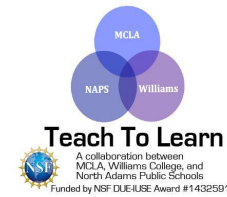
1-LS1-1. Use evidence to explain that (a) different animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air, and (b) plants have roots, stems, leaves, flowers, and fruits that are used to take in water, air, and other nutrients, and produce food for the plant. [Clarification Statement: Descriptions are not expected to include mechanisms such as the process of photosynthesis.]

Learning Target

I can explain how and why plants spread their seeds.

Assessment

Ask the students to design and draw a Super Seed that can travel very far and very fast, interview each student regarding their design plan and have them categorize their seed dispersal method.



WIDA Language Objectives

(Dependent on the needs of your ELL students)

Targeted Academic Language/ Key Vocabulary

Tier 2: dispersal, strategy

RESOURCES AND MATERIALS

Quantity	Item	Source
1 per class	"The Tiny Seed" by Eric Carle	Bin
1 per class	Projector and laptop	Classroom Teacher
	"Seed Dispersal" video: https://www.youtube.com/watch?v=3CCOWHa-qfc	CMC Website

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

LESSON DETAILS

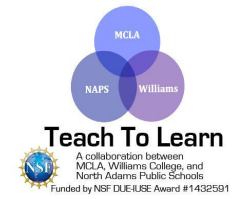
Lesson Opening/Activator

Read *"The Tiny Seed"* by Eric Carle. Ask the students the following questions:

- 1 How did the seeds travel?
- 2 Why did they travel so far from their parent flower?

During the Lesson

1. Watch the "Seed Dispersal" video as a class. Ask the students to keep an eye out for the things that help seeds move.



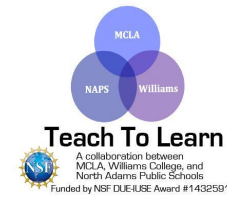
2. **Traveling Seeds Game:** Gather the students in a tight circle in the center of a large space (such as outside or in the gym) around the game leader. The leader is the parent tree and all of the students are seeds. The parent tree will yell out commands and all of the seeds will have to follow the directions. You can play this game as long as you like, but allow at least 10-15 minutes for the game. These are the commands:
- A bear eats you! Take four bear-steps away from the tree (crawling on all fours).
 - The wind blows you away! Take two steps from the tree, with your arms out like you are sailing on the wind.
 - FOREST FIRE! Stop, drop, and roll away!
 - You are caught on a rabbit's fur! Take three hops away from the tree.

Optional Lesson Extension

Take the students on a nature hike to collect seeds. Once you return to the classroom, sort the seeds according to which seed dispersal method they fit into. If time and resources allow have the students walk through a field of long grass wearing tall socks; this is an excellent way to demonstrate the animal dispersal method. (Any nature hikes should include close-toed shoes and be followed by a careful tick check.)

Assessment

Ask the students to design and draw a Super Seed that can travel very far and very fast, interview each student regarding their design plan and have them categorize their seed dispersal method.



Lesson 14: Plants and Animals Look Like Their Parents

BACKGROUND

Overview of the Lesson

Students will learn about why plants and animals look like their parents. They will also be completing an animal matching worksheet. The classroom teacher should review and discuss the vocabulary words for this lesson before the science fellow comes in to teach as well as add the new vocabulary words to the word wall. The classroom teacher will need to copy worksheets before teaching the lesson.

Focus Standard

1-LS3-1. Use information from observations (first-hand and from media) to identify similarities and differences among individual plants or animals of the same kind. [Clarification Statements: Examples of observations could include that leaves from the same kind of plant are the same shape but can differ in size. Inheritance, animals that undergo metamorphosis, or hybrids are not expected.]

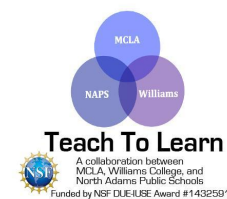
Learning Targets

I can identify similarities and differences among animals of the same kind.

I can identify similarities and differences among plants of the same kind.

Assessment(s)

- Reviewing their creative journal entry



- Reviewing their animal matching worksheet
- Reviewing their plan drawing activity

Targeted Academic Language/ Key Vocabulary

Tier 1: parent

Tier 2: similar, different

Tier 3: offspring

Vocabulary Review:

The classroom teacher should review the word wall that has been created for this unit. Break the students up into smaller groups and give each group one word from the word wall. Give the students a few minutes to talk about the word. When everyone is done have the groups share with the class what the word means. If they can, ask them to provide an example.

RESOURCES AND MATERIALS

Quantity	Item	Source
1 per student	Science journal	Classroom Teacher
1 per student	Family photo of child with parent/parents/brother/sister	Elementary student/ Classroom Teacher
1 box per student	Crayons and or markers	Classroom Teacher
1 piece per student	Blank piece of white paper	Classroom Teacher
1 per student (½ the class)	Parent plant worksheet	Binder
1 per student (½ the class)	Offspring plant worksheet	Binder

class)		
1 per student	Colored construction paper	Classroom Teacher
1 per student	Scissors	Classroom Teacher
1 per student	Glue sticks	Classroom Teacher
1 per student	Animal matching worksheet 1	Binder
1 per student	Animal matching worksheet 2	Binder

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

LESSON DETAILS

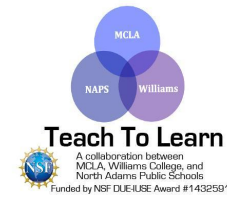
Lesson Opening/ Activator



Lesson Opening: (Science Talk: allow students to voice their ideas, while also being careful to guide the discussion towards the desired conclusion). How do you know that you belong to your parents? If we had a whole bunch of pictures of parents and their kids how could we tell who belongs to whom? If the students say something along the lines of they look the same, ask them to expand. What looks the same? Why do they look the same? Are there differences too? Make sure to emphasize that traits **DO NOT** include similarities in clothing, but instead focus on hair color, eye color, facial structure, etc... This is an important step to avoiding any possible confusion.

If the classroom teacher decides that student family dynamics do not lend themselves to effectively accomplishing the activity, instead try opening the lesson by asking how we could match the pictures of adult dogs of different breeds with their puppies.

During the Lesson



Activity 1: Match the babies to their parent worksheet

Match-the-Babies-to-Their-Parents worksheet

- a. Have students draw lines between the animals that go together.
- b. Ask the students to share some of their findings. Which animals went together? Which ones did not? Why?
- c. Once they are finished they may color the animals in if they choose. If there is time, have the students cut the animals out into squares, and play a matching game with a friend using all of the animals.

Activity 2: Matching Plants Worksheets

Give students a blank piece of paper, pencils, crayons, and markers. Give students one of the two plant worksheets located in the binder. Half the class will draw the parent plant and the other half will draw the offspring plant. Make sure to remind students that parents and offspring are not twins, they do not look exactly alike so some things should be different.

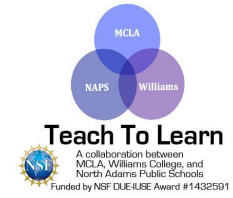
- a) Students should color and cut out both plants, each student should have one parent plant and one offspring plant.
- b) Give each student a piece of paper and have them glue both of the plants side by side on the construction paper.
- c) Label the plants “Offspring” and “Parent” and have the student write their name on the back of their paper.

Activity 3: Science Journaling

Give students the option to write or draw about anything science related in their journals. Let them create their own journal entry, as long as the information pertains to this unit.

Extended Activity: Science Journal—NOTE: Only complete this task if student family dynamics lend itself to effectively accomplishing this activity. The classroom teacher will need to decide if this activity is appropriate for the class. How do you look like your parents? Bring in a picture of you and your parents or brother/sister. Put the picture in your science journal and write down words that describe how you are all similar. For example, same hair color, eye color, nose, both tall/short etc.

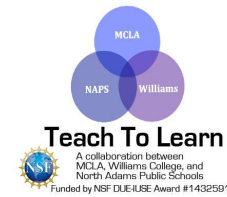
Lesson Closing



Bring the class together in a circle and have the students share their plants that they drew. Ask them to mention a few key features that make the offspring and parent plant similar and one key feature that make them different.

Assessment(s)

- Reviewing their creative journal entry
- Reviewing their animal matching worksheet
- Reviewing their plan drawing activity



Science Talk and Oracy in T2L Units

Science talk is much more than talking about science. In line with the science and engineering practices, students are expected to make a claim that can be supported by scientific evidence. The MA STE Standards (and the NGSS) value the importance of engaging in an argument from evidence. NGSS defines how this practice takes form in the real world: *“In science, reasoning and argument are essential for identifying the strengths and weaknesses of a line of reasoning and for finding the best explanation for a natural phenomenon. Scientists must defend their explanations, formulate evidence based on a solid foundation of data, examine their own understanding in light of the evidence and comments offered by others, and collaborate with peers in searching for the best explanation for the phenomenon being investigated.”*

Students are asked to participate in articulate and sensible conversations in which they are able to communicate their ideas effectively, listen to others to understand, clarify and elaborate ideas, and reflect upon their understanding. These forms of talk can be developed using scaffolds such as the A/B Talk protocol (below) and strategies for class discussions (from the Talk Science Primer, link below). Oracy is developed in the physical, linguistic, cognitive, and social-emotional realms; each of these realms can be expanded upon over time in order to develop a thoughtful speaker. Being able to display appropriate body language, use proper tone and grammar, be thoughtful and considerate thinkers, and allow space for others thoughts and opinions are all important facets of oracy to work on and through with students. Incorporating the appropriate scaffolding is an important aspect of fostering these skills. Techniques for teaching effective science talk often include modeling, discussion guidelines, sentence-starters, and generating roles, while gradually putting more responsibility on students to own their thinking and learning.






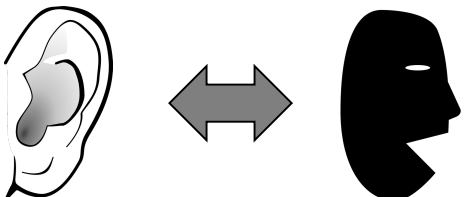
Part of creating a safe school environment for students is allowing them a space that is comfortable enough for them to express ideas and ask questions, while being validated for their thoughts and questions; students should be feel comfortable and confident when speaking and listening for understanding. Effective talk is an important part of being an active, intelligent member of a community and society. Successful development in oracy is important for future employability and general well-being of adults.

The following resources should be helpful examples of how to employ effective use of progressive oracy and science talk in your classrooms.

- Oracy in the Classroom: <https://www.edutopia.org/practice/oracy-classroom-strategies-effective-talk>
- Science Talk Primer: https://inquiryproject.terc.edu/shared/pd/TalkScience_Primer.pdf

A/B Talk Protocol

Adapted from <https://ambitiousscience Teaching.org/ab-partner-talk-protocol/>

<p>1. Share your ideas</p>  <p>Partner A</p> <ul style="list-style-type: none"> • I think ____ happened because... • Evidence that supports my idea is... • The activity we did with ____ helps me know more about ____ because... • One thing I'm wondering about is... 	<p>2. Listen to Understand</p>  <p>Partner B</p> <ul style="list-style-type: none"> • I heard you say _____. What makes you think that? • I heard you say _____. What if _____? • Can you explain the part about _____ again? • What do you mean when you say _____?
<p>3. Clarify and elaborate</p>  <p>Partner A</p> <p>Answer partner's questions or ask for clarification in order to understand a question.</p>	<p>4. Repeat steps 2 & 3 until all questions are answered</p>  
<p>5. Switch roles and repeat steps 1-4</p> 	<p>6. Reflect on your understanding in writing</p> <ul style="list-style-type: none"> • My idea about ____ changed when my partner said _____. • I will add ____ to my idea about ____ because... • I still have questions about... • I may be able to answer my question(s) if I could investigate _____.

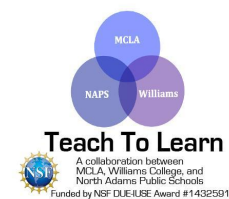
List of Unit Resources

Lesson 1

Quantity	Item	Source
1	<i>Swallows in the Birdhouse</i> by Stephen R Swinburne	Bin
1	My Spy Birdhouse/Nesting box with suction cups that attach to a window	Bin
Class set	Large drawing paper	Classroom Teacher
Class set	Crayons	Classroom Teacher
1	Compendium of Academic Language Techniques	Updated regularly on the NAPS Website
4 containers per class	Frosting	Bin
3 bags per class	Birdseed	Bin
1 10" piece per student	String or ribbon	Bin
1	Box	Classroom Teacher
	Newspaper	Classroom Teacher
Class Set	Pinecones	Bin/Classroom Teacher

Lesson 2

Quantity	Item	Source
1 per student	Science Journal	Classroom Teacher
1 box per student	Crayons, markers, pencils	Classroom Teacher
2 pieces	Chart paper (1 for word wall, and 1 for opening activity)	Classroom Teacher
	https://www.youtube.com/watch?v=gP2te1jF0y0 (Animal moves video)	CMC Website



1 per student	Animal Movement Worksheet	Binder
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Lesson 3

Quantity	Item	Source
1 per student	Science journal	Classroom Teacher
3 sets per class	Animal Image worksheet (laminated color copies)	Bin
1	PowerPoint of animal classes	CMC Website
	Various Math Manipulatives	Classroom Teacher

Lesson 4

Quantity	Item	Source
1 per student	Science Journal	Classroom Teacher
1 per student	Scissors	Classroom Teacher
1 per pair	What do Animals Need Worksheet	Binder
1 per student	Glue stick	Classroom Teacher
1 per pair	Construction paper	Classroom Teacher
1 per class	Stapler	Classroom Teacher
1 per student	Things My Pet Needs Booklet (3 pages)	Binder
1 box per student	Crayons and or markers	Classroom Teacher
1 per student	Medium or large size pine cone	Classroom Teacher/ Bin

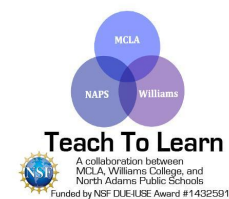
Lesson 5

Quantity	Item	Source
1	http://ccitonline.org/ceo/home/content_images/Needs_Bk2_s.pdf online version of <i>Tillena Lou's Day In the Sun</i> by Barbara Tharp	CMC Website
Optional	http://www.bioedonline.org/tasks/render/file/index.cfm?fileID=8E28B3AE-957F-2A75-00EF2F01812C503B	Online
1 per student	Piece of white paper	Classroom Teacher

Lesson 6

Quantity	Item	Source
1 per student	Science Journal	Classroom Teacher
1 box per student	Crayons and or markers	Classroom Teacher
1 per student	Scissors	Classroom Teacher
1 per student	Glue stick	Classroom Teacher
	Construction paper	Classroom Teacher
	PowerPoint on Animal Shelters	CMC Website
1 per student	Plastic Eggs	Bin
¼ cup per student	Sunflower seeds	Bin
1 per student	Items to decorate eggs with: googly eyes, Elmer's glue, colorful tape	Bin
1 copy for SF; 1 for CT	Puppet Show: "Camouflage" (Hands on Nature p. 232-233)	Binder
	Puppets	Bin

Lesson 7

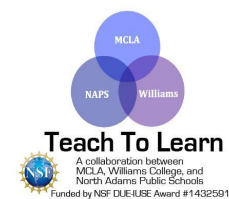


Quantity	Item	Source
1 per student	Science Journal	Classroom Teacher
1 per group	Animal baby and parent cards (laminated)	Bin
	Projector and Computer	Classroom Teacher
	Are you My Mother video: https://www.youtube.com/watch?v=x4Koi-RJATE	CMC Website
Optional	Are you My Mother by P.D Eastman	Library

Lesson 8

Quantity	Item	Source
1 per classroom	Projector and computer	Classroom Teacher
	"Plant Parts" video: http://www.schooltube.com/video/8b5cd92efbe9708a4a5a/Plant-Parts	CMC Website
1 per student	Large blank paper	Classroom Teacher
1 per student	Colored pencils	Classroom Teacher
	Textbook diagrams of plants	Library or Internet
5-10	Research resources/non-fiction books about plants	Library
1 per student	Life Cycle Reading and Questions (Plants from Seeds: 4 pages)	Binder
Enough for each child to have a few	Post-its	Bin

Lesson 9



Quantity	Item	Source
	Chart paper and markers	Classroom Teacher
1 per group	White paper	Classroom Teacher
	Markers, crayons, and or colored pencils	Classroom Teacher
1 per class	Clear front report cover (for binding the class book)	Bin
1 per student	Small plastic cup	Bin
1 cup per student	Potting soil	Bin
1 per student	Seeds	Bin
	Water	Classroom Teacher
1 per classroom	Projector and computer (optional)	Classroom Teacher

Lesson 10

Quantity	Item	Source
1	<i>Tops and Bottoms</i> by Janet Stevens	Bin
as many as needed	old magazines	Classroom Teacher
20	Paper plates	Classroom Teacher
Class set	Crayons, markers, colored pencils and/or scissors,	Classroom Teacher

Lesson 11

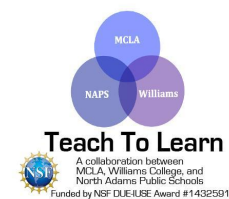
Quantity	Item	Source
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1 set per class	Fruits and vegetables sorting cards	Bin
	Chart paper and markers	Classroom Teacher
	Tape	Classroom Teacher
1 set per class	Apple, strawberries, potato, tomato	Sue Beauchamp
1 per student	Glue sticks	Classroom Teacher
1 per student	Scissors	Classroom Teacher
1 per student	Paper plates	Bin
	Magazines (with pictures of fruits and vegetables- cooking magazines suggested)	Bin
	Computer and Projector	Classroom Teacher
	Red, yellow, and green apples (enough for the whole class to try one slice of each color)	Sue Beauchamp

Lesson 12

Quantity	Item	Source
1 set per class	Puppets	Bin
1 per students	Dandelion puppet show script (Hands on Nature p.181)	Binder
2 sets per class	Puzzle pieces (laminated)	Bin
	Puzzle Key (for Teacher to reference)	Binder
1 per student	Paper, crayons, pencils, etc.	Classroom Teacher

Lesson 13



Quantity	Item	Source
1 per class	<i>"The Tiny Seed"</i> by Eric Carle	Bin
1 per class	Projector/ laptop	Classroom Teacher
	<i>"Seed Dispersal"</i> video: https://www.youtube.com/watch?v=3CCOWHa-qfc	CMC Website

Lesson 14

Quantity	Item	Source
1 per student	Science journal	Classroom Teacher
1 per student	Family photo of child with parent/parents/brother/sister	Elementary student/ Classroom Teacher
1 box per student	Crayons and or markers	Classroom Teacher
1 piece per student	Blank piece of white paper	Classroom Teacher
1 per student (½ the class)	Parent plant worksheet	Binder
1 per student (½ the class)	Offspring plant worksheet	Binder
1 per student	Colored construction paper	Classroom Teacher
1 per student	Scissors	Classroom Teacher
1 per student	Glue sticks	Classroom Teacher
1 per student	Animal matching worksheet 1	Binder
1 per student	Animal matching worksheet 2	Binder