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Lesson 1
On Meadowview Street

Science Standards (NGSS)	ELA Standards (Common Core)
K-ESS3-1: Use a model to represent the relationship between the needs of plants and animals and the places they live.	ELA-CCSS-K: (Literature-1): With prompting and support, ask and answer questions about key details in a text. ELA-CCSS-K: (Literature-7): With prompting and support, describe the relationship between illustrations and the story in which they appear. *ELA-CCSS-K: (Listening & Speaking-1) Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.* ELA-CCSS-K: (Language-4; Vocabulary) Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on kindergarten reading and content (scientist, observe, preserve, pattern, interdependence).

Materials:

-Bee video
-*On Meadowview Street* book
-model picture
-picture of wren
-picture of maple tree
-markers (provided by teacher)
-chart paper (provided by teacher)

Before Teaching:

- Pre-watch bee video and pre-read *On Meadowview Street*
- Students will be working with partners throughout the unit. Think about creating science partners for the unit.
- Gather materials (model, maple tree picture, wren picture,)
- Create Question Anchor Chart (anchor chart paper with “Our Questions” heading
- Preview Questions for pages 1-12 of *On Meadowview Street*

Procedure

Before Reading

Today we're going to watch a video and see if we can **observe** to figure out what is happening!

- [show video: bee pollinating video]
- Now, turn to your partner and discuss: What did you **observe**? Why did the bees do that?

We are going to create a Question Board with all our questions about this video.

- I am going to give you one minute to talk to your partner and come up with at least two questions about what happened in the video.
    - Give time for partners to talk and ask questions.
- Teacher calls on pairs to share questions and writes them on chart paper.
    - Teacher should keep in mind that this is not a time to answer questions or redirect students misconceptions. Questions should be written exactly as students ask them.

Today we're going to read the book *On Meadowview Street*.

- While we read this book, we're going to be **scientists**.Do you know what scientists do?
    - listen for responses
    - Yes, that's right, one thing scientists do is ask questions about the world and use their senses - listening, looking, and touching.
- Scientists also **observe** and gather information, or notice what is happening, and then we look for **patterns**, or ways that things repeat.
- Do you think you can be a scientist while I read to you by **observing** what's happening in the book by looking and listening, and by seeing if you can find a **pattern**? (listen for responses) Great!

During Reading

P. 1 -2 - read;

- What do you think Caroline will do? (she will keep her dad from mowing over the flower)
- What is your **evidence**? Help children think through the clues to figure this out, as follows:
    - How does Caroline feel about the flower? (she thinks it's beautiful - in the text)

    - What is her dad doing? (mowing - in the illustration and text - “The mower was getting closer.”)
    - What will the mower do to the flower? (prior knowledge - build as needed - what does a mower do to grass? Why do people mow the lawn? What will it do to a flower?)
    - Then help them conclude that to save the flower she’d have to keep her dad from mowing over it.

P. 3-4 - read up to word “preserve”

- What do you think that word, **preserve,** means?
- What is she trying to do here? (save the flower; help children use clues - strings, sticks, barrier around flower, etc.)
    - What is your **evidence**?
- Was your prediction correct? (check prediction from p. 2)

P. 4-5 - continue reading after the word “preserve and p. 4 and all of p. 5

- Why did the butterfly like the **preserve**?
    - What is your **evidence**?
- What do you notice in the preserve? (point to illustration on p. 5)
- What are there lots of here? (flowers)

P. 6 (left side)

- Have you observed a **pattern**?
    - What is your **evidence**?
        - If children need support, start back at p. 2 and ask children to notice the size of the preserve on each page as you turn the books pages--what’s happening to the preserve?
        - Ask them to pay attention to its size, if needed.
    - (The **pattern** is that the **preserve** keeps getting bigger.)

P. 6 (right side)

- Why is her dad selling the lawn mower?
    - Help children think about the pattern as **evidence**, and what would happen if the preserve keeps spreading across the backyard (all the yard will be a preserve).
    - Help children think about whether or not the dad mowed the preserve area (turn back to previous illustrations, as needed).

    - Help children deduce that because the dad does not mow the preserve area, and all the yard is becoming a preserve, he doesn't need to mow anymore; which means he doesn't need the mower.

P. 7-8 - read

- Why would the wren (bird) come after Caroline planted the maple tree?
    - What is your **evidence**?
    - (Help build children's background knowledge, as needed) Where do birds live? (trees)
- Was there a tree in the yard before? (turn back to previous pages, as needed - there wasn't a tree)
- Help children deduce that the reason the wren/bird came after she planted the maple tree was because now there is a place for it to live.

P. 12

- What do you **observe** other people doing to their yards now? (adding trees, selling mower)
- Why do you think they are doing this? Why do you think so? (help children articulate their reasoning)
- So, what is the **pattern** happening in this neighborhood? (increasing number of **preserves**) [Use illustrations throughout the book to look at the yards in the neighborhood to **observe** what changes and find the **pattern**.]

P. 13-14 - read

After Reading

Now I have something very special to show you! Scientists use **models** to show their thinking about what is happening in the world around them. Some scientists created a model of what happened in the book we just read and they agreed to share it with us! Are you ready to see it?

Teacher shares model of the meadow Caroline created (Pre-pond). [project/doc. cam.]

- "What plants and animals do you see in this model?"
    - Teacher calls on students to share answers.
    - As students share the names of the plants and animals the teacher adds those words to the model as labels.
    - Teacher continues calling on students until all plants and animals are labeled (grass, wren, maple tree, bee, butterfly, flower).

Teacher holds up a picture of the maple tree.

- Where does this tree live?
    - Teacher calls on students to answer (in the yard, in the preserve, in the dirt).
- What are some things that this maple tree needs to live in this meadow?
    - Turn and talk to your partner about what the maple tree needs.
        - Allow a short time for students to discuss.
    - Teacher calls on a few partners to share their answers (water, air, sunlight).

Teacher holds up a picture of the wren.

- Where does this wren live?
    - Teacher calls on students to answer (tree).
- What are some things that this wren needs to live in this meadow?
    - Turn and talk to your partner about what the wren needs.
        - Allow a short time for students to discuss.
    - Teacher calls on a few partners to share their answers and redirects if answers are incorrect. (correct answers: food (insects), a place to live (birdhouse, tree), air, water).

Let's revisit our Question Board.

- What questions have we answered? (check question board)
- What new questions do you have? (Add these on to the question board on new post-it notes written in green marker.)
- We'll keep revisiting our question board during each of our discussions together.

Lesson 2
On Meadowview Street Model

Science Standards (NGSS)	ELA Standards (Common Core)
K-ESS3-1: Use a model to represent the relationship between the needs of plants and animals and the places they live.	ELA-CCSS-K: (Writing-2): Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic ELA-CCSS-K: (Listening & Speaking-1) Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups. ELA-CCSS-K: (Language-4; Vocabulary) Use words and phrases acquired through conversations, reading and being read to, and responding to texts (observe, preserve, pattern, interdependence, environment).

Materials:
-*On Meadowview Street* book
-Question Anchor Chart (from previous lesson)
-black and white models (class set)
-one red crayon and one blue crayon per student (provided by teacher)

Before Teaching:
- Teacher may want to put one red crayon and one blue crayon in a baggie for each student
- Preview questions for pages 11-14 of *On Meadowview Street*

Procedure

Yesterday we read a book and looked at a **model scientists** created about the living things in the meadow.
- Can anyone tell me some of the living things that were in our **model**?
    - Teacher calls on students to share (grass, maple tree, wren, butterfly, bee, flower).

Today, you are each going to get a **model** and we are going to think about how the living things in this model survive in the meadow.

- Teacher will pass out one model per student and 2 crayons (red, blue).
- Hold up your red crayon in the air! We are going to do this together so please do not go ahead. We are going to use our red crayon to show all the living things in our **model**.
    - What is one living thing in our **model**?
        - Teacher calls on one student to share (maple tree).
        - Good! Everyone circle the maple tree with the red crayon.
            - [Opportunity for differentiation: if students are ready to write "M" for maple tree or write "maple tree" teacher can allow that].
        - Teacher continues to call on students and circles living things in red until all are done (grass, maple tree, bee, butterfly, wren, flower).
- Put down your red crayon and hold up your blue crayon in the air! Now we are going to find the parts of our **model** that these living things need to survive.
    - Teacher does the first one as an example. "I know that trees need dirt to survive so I am going to color the dirt around the tree with blue crayon. You can do this with me."
    - What else is there in our **model** that the living things need to survive?
        - If students are struggling with this the teacher can pull out each living thing individually. What does the wren need to survive?, What does the bee need to survive?
    - Teacher continues to call on students and shade the parts living things need to survive until all are done (tree needs dirt, wren needs tree, bee needs flower, butterfly needs flower, grass/tree need sun).
    - **Note: It is developmentally appropriate for kindergarten students to think that bees/butterflies eat flowers.

Teacher directs students to put away crayons and calls them to the rug.

We are going to re-read some parts of this book. **Scientists** have to go back and read again all the time to check their answers.

Teacher flips through the beginning of the book and points out the living things we discussed in our model.

Teacher begins re-reading on the page "The wren needs to drink water…."

- Did we talk about the wren needing water? Do you think that is true?
    - If the students brought up water during the previous activity remind them
    - If the students did not bring up water during the previous activity ask them if that is something they think should be added to their model.

P. 9 - 10

- What kinds of new creatures do you think will come to the **preserve** now that there is a pond with water?
    - What is your **evidence**?
    - Help children think about what kinds of animals might like to live near or in a pond (fish, turtles, etc.)
    - Why do you think there weren't any turtles before?

P. 11

- Were your predictions correct?
    - check new animals that appeared in the illustration - turtles, snake, cardinal, rabbit

Let's revisit our Question Board.

- What questions have we answered? (check question board)
- What new questions do you have?
    - Add these on to the question board with a different colored marker
    - We'll keep revisiting our question board during each of our discussions together.

Lesson 3
Connections between Models

Science Standards (NGSS)	ELA Standards (Common Core)
K-ESS3-1: Use a model to represent the relationship between the needs of plants and animals and the places they live.	

Materials:
-Question Anchor Chart
-glue sticks (provided by teacher)
-cut and glue activity (Teacher may pre-cut the living things if they think that will work better for their students) [one sheet of the 8 living things, one sheet of a blank model]

Before Teaching:
- Decide whether or not to pre-cut the pictures for the cut and paste activity

Procedure

Good afternoon **scientists!** Today we are going to find **patterns** to understand why some living things live in different places.

Today we are going to think about the best place for living things to live.
- Some living things might survive better in grass or dirt and other living things might survive better in a pond.
- Teacher shows the blank model again using a projector or document camera (this time including a pond).
    - We are going to decide which environment is better for the living things in Caroline's meadow. We have to think about what they need to survive and if they should live in grass and dirt or in the pond.
- Teacher directs students to cut out the picture of the wren (or has students find the pre-cut picture).
    - Where on our model do you think the wren should live? Why?
        - Teacher calls on students to answer (tree because it has shelter there).
        - Ok let's glue our wren onto the tree.

- Teacher continues with all other 7 pictures. The teacher should direct students to think about what each living thing needs (shelter, food, protection) and where it would best meet those needs.
    - Butterfly (grass because that's where its food is)
    - Turtle (pond/rocks near pond)
    - Cattail (water plant) [teacher may need to build background knowledge of this plant]
    - Frog (pond. Needs water to swim, lay eggs)
    - Flower (needs dirt to grow)
    - Snake (grass, needs to hide in the grass, needs to find food)

Teacher calls students back to the rug.

- So now we know which living things live in the pond and which living things live in the grass and dirt.
- What do you think would happen to the living things in the meadow if someone came and took away the maple trees?
    - Call on students to answer (the wren wouldn't have a place to live, the wren would go away).
    - What do you think would happen if someone poured something dangerous into the water of the pond? (the turtles would get sick, the fish might die, the plants might die, the grass and tree might die too).

Let's think about our Question Board again!

- Can we answer any other questions?
- Sometimes scientists don't get the answers to all the questions they ask. It is ok if we still have some questions that are not answered!

Lesson 4
Follow the Moon (Introduce Action Project)

Science Standards (NGSS)	ELA Standards (Common Core)
K-ESS3-3: Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the environment. K-20-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change and define a simple problem that can be solved through…[humans changing the environment].	ELA-CCSS-K: (Informational Text-1 and 3): With prompting and support, (1) ask and answer questions about key details in a text AND (3) describe the connection between two individuals, events, ideas, or pieces of information in a text. ELA-CCSS-K: (Informational Text-4): Ask and answer questions about unknown words in a text (identify, problem, action) ELA-CCSS-K: (Language-4; Vocabulary) Use words and phrases acquired through conversations, reading and being read to, and responding to texts (observe, preserve). ELA-CCSS-K: (Writing-7 and 8): (7) Participate in shared research and writing projects AND (8) With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question (identify the problem, action, and impact in this informational text) *ELA-CCSS-K: (Listening & Speaking-1) Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.*

Materials:

-Turtle video
-*Follow Me Home* book
-Problem/action/impact anchor chart (chart paper provided by teacher)
-1 set problem/action/impact words and symbols
-1 set: On Meadowview Street problem/action/impact pictures (large)
-1 set Follow Me Home problem/action/impact pictures (large)
-1 set per partner group Follow Me Home problem/action/impact pictures (small)

Before Teaching:

- Gather materials for large class anchor chart

Procedure

Before Reading

Today we're going to watch a video and **observe** to see if we can figure out what is happening!

- [show video: https://www.youtube.com/watch?v=w82xpBR_Z4A from 0:54 - 1:16]
- Now, turn to your partner and discuss What did you observe? Why did they do that?

Sometimes **scientists** identify **problems**, think of **actions** to solve the problems, and **think about** the **impact** of their actions. (i.e., compare which are better).

- In the story we will read today, *Follow Me Home*, you will see how children can be **scientists.**
  - They (1) identify a **problem**
  - (2) make a **plan** (things to do) and take **action** (do those things)
  - and (3) make an **impact** (change things)
  - Show chart with symbols for each of these three steps and three columns after it to track the ideas in *Meadowview Street*, this story, and the story in the next lesson with *One Plastic Bag*.

During Reading

P. 1-7 - read;

- What did Viv **observe** about how humans (people) changed the sea turtles' **environment** in the beginning of the story?
  - to help elicit this response, go back to pp. 7 that shows all the lights on the beach at night
- How did that affect the baby sea turtles?
  - to help elicit this response, go to p. 6 and reread that the baby turtle was heading the wrong way - away from the sea
- So, what is the **problem** that Viv identified?
  - help children use the information about to deduce the following: The baby sea turtles followed the light in the wrong direction and then they don't get to the sea and die.
  - add this to the chart in the problem row for this book

P. 8-9

- What **plans** did the kids make and **actions** did they take to get people to turn off their lights at night?
    - Made posters, fact sheets (p. 9 elicit this via rereading and using the illustration)

P. 10

- What other **plans** did the kids make and **actions** did they take to get people to turn off their lights at night?
    - Newspaper article, Internet, press release/TV (p. 10 elicit this via rereading and using the illustration)

P. 11

- What other **plans** did the kids make and **actions** did they take to help the sea turtles?
    - Town meeting, mark nests, night patrols, help the turtles who get in trouble (p. 11 elicit this via rereading and using the illustration)

P. 12-15

- How did this **action** help the sea turtles at the end of the story?
    - to help elicit this response, go to p. 13 that shows most of the lights in the houses turned off)
    - How did that affect the baby sea turtles?
    - to help elicit this response, go to p. 15 that shows all the baby turtles heading out to sea

P. 16 - read

- Do you think it was fair to ask people to turn off their lights to help the sea turtles find the sea? Why or why not?
- help children articulate their reasoning-**What is your evidence?**
- Have you ever taken action to solve a problem? When? What was the problem? What did you do?

After Reading

Now we're going to practice organizing pictures that represent the **problem**, the **action**, and **impact** for a story on a story chart, and then using the story chart to help us recall and retell the story.

- First, let's practice together with *On Meadowview Street*. (Have pictures that represent problem, action, and impact from the illustrations in this story.)

    - Who remembers what the **problem** was in the story?
        - If children have difficulty recalling, show them the pictures.
        - Yes, Caroline did not want her father to mow the flower--that was the **problem**.
        - Put this picture on the chart-sized model story chart for this activity.
- Next, what **action** did Caroline take to solve the problem?
    - Call on students to answer. Answer: She started a **preserve**; if children need help, show them the picture choices.
    - Yes, she started a **preserve**--that was her action to solve the problem.
    - Put this picture on the chart-sized model story chart for this activity.
- Then, what **impact** did this have?
    - If children have difficulty recalling, show them the pictures.
    - Yes, the whole yard became a **preserve** and that invited a lot of different living things; and other neighbors started to turn their yards into **preserves** too--that was the **impact**.
    - Put this picture on the chart-sized model story chart for this activity.
- Now, I'll use my picture to retell the story: First, Caroline wants to protect her flower--that's the **problem**. Next, she starts a **preserve** to protect it--that was her **action**. Then, the whole yard turns into a **preserve** and the neighbors start to turn their yards into **preserves**--that's the **impac**t.

Now, you will use your story charts with your partner to organize the pictures from *Follow Me Home* to show the **problem**, **actions**, and **impact**. Then use the pictures to help you retell the story to your partner. Each of you should take a turn to retell the story.

- The teacher should circulate asking children about what pictures they've placed on their charts and why, and scaffolding their organization as needed--e.g., You have this picture under problem -- is this a problem? How so? Okay, so maybe it belongs somewhere else--is it an action or an impact? Etc. Likewise, the teacher should help the children to use the pictures to retell and use sequencing words--first, then, next; etc.

Teacher will bring all students back together as a whole group and call on partner groups to share what the problem was and agree as a class. Teacher will add that picture to the large class chart. Follow same procedure for action and impact. Teacher will call on 1-2 students to retell the story in front of the class.

Lesson 5
One Plastic Bag (Model of an Action Project)

Science Standards (NGSS)	ELA Standards (Common Core)
K-ESS3-3: Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the environment. K-20-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change and define a simple problem that can be solved.	ELA-CCSS-K: (Informational Text-1 and 3): With prompting and support, (1) ask and answer questions about key details in a text AND (3) describe the connection between two individuals, events, ideas, or pieces of information in a text. ELA-CCSS-K: (Language-4; Vocabulary) Use words and phrases acquired through conversations, reading and being read to, and responding to texts. ELA-CCSS-K: (Writing-7 and 8): (7) Participate in shared research and writing projects AND (8) With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. *ELA-CCSS-K: (Listening & Speaking-1) Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.*

Materials:
-Picture (phenomenon)
-*One Plastic Bag* Book
-Problem/Action/Impact Chart (from previous lesson)
-1 set of One Plastic Bag problem/action/impact cards large
-1 set per partner group One Plastic Bag problem/action/impact cards small

Before Teaching:
- Pre-read *One Plastic Bag* and questions

Procedure

Before Reading

- Show picture of bird tangled in plastic bag: https://www.wwf.org.au/news/blogs/how-many-birds-die-from-plastic-pollution#gs.xln8bu
    - Turn and talk with your partner about what is happening in this picture.
        - If students need more prompting ask them to discuss where the bag came from and how the bird got caught in it.
    - (to the whole class) Do you think the bird can meet its needs? Why or why not?

Do you remember in our last story the children were **scientists**?

- Do you remember what scientists do?
    - Ask questions and observe to identify patterns
    - If children need help, ask the following: What did you do while you were a scientist while we read *On Meadowview Street*?) (Find **patterns** in **models**, Identify problems, identify potential actions to solve the problem, and think about the impact of the actions [decide which action is best] --if children need help, ask the following: What did you do while you were a scientist while we read *Follow Me Home*?).

In the story we will read today, *One Plastic Bag*, you will see how another woman in Africa is a **scientist.**

- She (1) identifies a **problem**
- (2) makes a **plan** (things to do) and takes **action** (does those things)
- and (3) makes an **impact** (changes things)
- Show chart with symbols for each of these three steps - use column 3 to track the idea in *One Plastic Bag*.

During Reading

P. 1-7 - read;

- What problem did Isatou **observe**?
    - Plastic bags were all over the ground (go back to p. 5 & 7 to elicit this via rereading and using the illustration)
- How did the bags get there?
    - What is your **evidence**?
    - go back to p. 5 and use the clues that the bags are all along the walking path
    - go back to p. 1 to show that the bags are used to carry things along the walking path

- How did this affect the goats? (see p. 7 illustration)
- How did this affect humans? (inference)
    - What is your **evidence**?
    - To help elicit this response, look at Isatou's face in the illustration on p. 7
- So, what is the **problem** that Isatou identified?
    - Help children use the illustrations on pp. 5-7 to deduce the following:The plastic bags are ugly, dirty, and make the animals sick
- Should the plastic bags be in the animals' environment? Why or why not?
    - Help children articulate their reasoning for their response - e.g., why do you think that?

P. 11

- What **actions** did they take with the plastic bags?
    - Washed them (p. 8 elicit this via rereading and using the illustration)
    - Cut them into thread (p. 9 elicit this via rereading and using the illustration)
    - Crochet the plastic bags into purses (p. 10-11 elicit this via rereading and using the illustration)

P. 12-13

- What was the **impact** (how they changed things) on the amount of plastic bags?
    - There was a smaller garbage pile of them, and then they were gone - elicit this via rereading and using the illustrations p. 12-13).
    - Ensure children consider the impact for animals and humans:
- How did the humans' solution affect the animals?
    - To help elicit this response, compare goats on p. 7 and 13)
- How did this affect humans?
    - To help elicit this response, compare p. 7 to p. 13, focusing on Isatou's face in each illustration
- Do you think children could make a positive impact, like Isatou did?
    - Why or why not?
    - Help children articulate their reasoning
- What do you do with your plastic bags?
    - Will you do anything differently after reading this story?

After Reading

Now we're going to practice organizing pictures that represent the **problem**, the **action**, and **impact** for this story on a story chart, and then use the story chart to help us recall

and retell the story, just like we did with our story, *Follow Me Home*, last time (point to story chart from *Follow Me Home*).

- You will use your story charts with your partner to organize the pictures from *One Plastic Bag* to show the **problem**, **actions**, and **impact**. Then use the pictures to help you retell the story to your partner.
    - Each of you should take a turn to retell the story.
        - The teacher should circulate asking children about what pictures they've placed on their charts and why, and scaffolding their organization as needed--e.g., You have this picture under problem -- is this a problem? How so? Okay, so maybe it belongs somewhere else--is it an action or an impact?
        - Etc. Likewise, the teacher should help the children to use the pictures to retell and use sequencing words--first, then, next; etc.

[We will not use the Question Board again until lesson 12, unless a child requests to ask/answer a question.]

Lesson 6
Walk and Talk

Science Standards (NGSS)	ELA Standards (Common Core)
K-ESS3-3: Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the environment. K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change and define a simple problem that can be solved through … [humans changing the environment].	ELA-CCSS-K: (Writing-7 and 8): (7) Participate in shared research and writing projects AND (8) With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question (identify the problem and potential action) *ELA-CCSS-K: (Listening & Speaking-1) Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.* ELA-CCSS-K: (Language-4; Vocabulary) Use words and phrases acquired through conversations, reading and being read to, and responding to texts (problem, observe, pattern).

Materials:
-ipads (one per partner group for picture taking)
-Problem/Action/Impact Chart (from previous lessons)

Before Teaching:

- Practice taking pictures with the ipads

Procedure

Remember when we read *Follow Me Home* about how Viv and her classmates helped the sea turtles and Isatou and how she helped solve the problem about the plastic bags?

- Do you remember the steps they took to be **scientists**?
    - help them recall by referring to the chart made in lesson 4
        - identify a **problem**
        - identify potential **actions**
        - analyze the **impacts** of each action [decide which action is best]).

- Today we are going to start our own **action** project, and each of you will get to be a **scientist**. We are also going to be **scientists** because we will observe and look for **patterns** in nature, and use what we know about nature to help us identify our **problem**.
- We will take a walk in the school yard and look for **patterns** and **problems** that we might take **action** to improve or **preserve** our **environment** for ourselves or the plants and animals.

As you walk around the school yard, you and your partner will **observe** ...

- What do you see in our schoolyard that you like?
- What do you see in our schoolyard that you don't like?
- Do you think anything is missing in our schoolyard?

When you and your partner see something you like or something you don't like, you will take a picture with your ipad.

- Teacher will model how to take a picture with the ipad and go over expectations for walking outside and using technology.

Spend the rest of the session outside with the kids, letting them take their photographs. Teacher should also confer with children as follows:

- Do you notice any **patterns**? What photos have you taken to represent this?
- Do you notice any **problems**? What photos have you taken to represent this?

Lesson 7
Analyze Data from Walk and Talk

Science Standards (NGSS)	ELA Standards (Common Core)
K-ESS3-3: Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the environment. K-2-ETS1-2. Develop a … physical model [using photos from the walk and talk] to illustrate … the problem.	ELA-CCSS-K: (Writing-2): Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic (compose a model of the problem and potential solution). ELA-CCSS-K: (Listening & Speaking-1) Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups. ELA-CCSS-K: (Language-4; Vocabulary) Use words and phrases acquired through conversations, reading and being read to, and responding to texts (observe, identify, problem, action).

Materials:
-Videos of experts
-Printed pictures from the previous day

Before Teaching:
- Pre-watch videos
- Create one anchor chart with title “Butterfly Garden” and one with the title “Bird Garden”

Procedure

Today we are going to be **scientists** and **look at** our photographs to identify patterns of problems.

- One problem I noticed is that there are no/few butterflies in our schoolyard. Now, we are going to look at our pictures and see if we can find evidence to support my problem.
    - Can anyone see a picture that we could use as evidence?

    - Have a student come and choose a photo and explain why they chose it. E.g. I chose this photo because it shows grass with no butterflies.
    - Continue until students find 3-4 photos as evidence.
- Another problem I noticed is that there are no/few birds in our schoolyard. Now, we are going to look at our pictures and see if we can find evidence to support this problem.
    - Can anyone see a picture that we could use as evidence?
    - Have a student come and choose a photo and explain why they chose it. E.g. I chose this photo because it shows a tree with no birds.
    - Continue until students find 3-4 photos as evidence.

Now that we have evidence of no/few butterflies and birds in our schoolyard, we are going to watch videos that teach us about how we could take **action** to solve these problems. We will learn more about this problem from experts. Then, we'll be scientists and brainstorm how to take action to solve this problem.

Watch Videos

Discussion Questions for after video:

- What did we learn about butterfly gardens?
- What types of plants do butterflies gardens need?
- Why do these plants help butterflies meet their needs?
- What did we learn about bird gardens?
- What types of plants do bird gardens need?
- Why do these plants help birds meet their needs?

Teacher creates one anchor chart for butterfly gardens and one for bird gardens and records the answer to these questions on the corresponding chart.

Now, we need to decide which **problem** we will choose to make a **plan** and take **action**. Each of you will get to vote for one problem that you want to take action to address.

- Raise your hand if you want to make a butterfly garden (count responses).
- Raise your hand if you want to make a bird garden (count responses).
- Announce the selected problem and circle it on the chart.

Lesson 8
Plan the Action

Science Standards (NGSS)	ELA Standards (Common Core)
K-ESS3-3: Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the environment. K-2-ETS1-3. Analyze [problem] data from …[to decide how] to solve the same problem to compare the strengths and weaknesses of [the impact of each possible solution]. K-2-ETS1-1: Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. K-2-ETS1-3: Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs. 3-5-ETS-1-2: Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	ELA-CCSS-K: (Writing-7 and 8): (7) Participate in shared research and writing projects AND (8) With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question (identify the action and impact) ELA-CCSS-K: (Listening & Speaking-1) Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups. ELA-CCSS-K: (Language-4; Vocabulary) Use words and phrases acquired through conversations, reading and being read to, and responding to texts (action, impact).

Materials:

-One sheet of white computer paper per partner group (provided by teacher)
-Crayons or markers or colored pencils (provided by teacher)
-chart paper and markers (provided by teacher)
-Anchor chart about butterfly/bird garden (from previous lesson)

Before Lesson:

- Gather materials for creating models

Procedure

Remember how we voted last time for which **problem** we would address?

- Does anyone remember what the problem we chose was?
    - Affirm or clarify, as needed.

With your partner, draw an idea for your **action** that shows what the schoolyard would look like with a butterfly/songbird garden.

- Before sending students off, review the anchor chart (for the chosen garden) from the previous lesson
- Teacher will circulate to support children, and help label their pictures.
- Teacher may ask leading questions such as:
    - where should we put the butterfly/songbird plants?
    - how many plants should we use?
    - do you remember what the plants look like from the video?
- After most pairs have completed a drawing, have them stand up to share their idea

What are some of your ideas for what our **action** might look like?

- Have children compare their ideas against others and move next to other groups that had similar ideas.
- Record on chart paper what the possible ideas were from each group and put the children's pictures of these solutions next to the written idea with tape.

As a whole group help children think about the **action** plan in detail.

- Where should we plant our garden?
- Why is this a good/better location than another idea? (If we plant it near the entrance, many people will see the plants and butterflies/birds. But if we plant it near the parking lot, cars might bother the butterflies/birds.)
- Help children think about the **impact** of our solution. Teacher could ask:
    - Do you think this will change our schoolyard? How?
    - Do you think this garden will still be there next year when you are in first grade?

Lesson 9
Take Action

Science Standards (NGSS)	ELA Standards (Common Core)
K-ESS3-3: Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the environment. K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change and define a simple problem that can be solved through … [humans changing the environment].	

Materials:
-Gardening tools
-Specific plants for project
-Camera for documenting

Before Teaching:

- Talk to your school administration and get permission to plant the garden
- Gather materials and think about how to group students in the project
    - You may want to have half the students documenting the project by drawing pictures while half get the change to plant and then switch halfway through

Procedure

Today we will be **scientists** and implement our plan to make the world a better place.

- Children will implement their planned action [e.g., plant plants for butterfly garden or plant plants for bird garden].
- Be sure to record this - video, photos, etc. so children can use these in their compositions about their action project.

Lesson 10 and 11
Tell the Story about Your Action Project

Science Standards (NGSS)	ELA Standards (Common Core
K-ESS3-3: Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the environment.	ELA-CCSS-K: (Writing-2): Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic. ELA-CCSS-K: (Writing-5): With guidance and support from adults, respond to questions and suggestions from peers and add details to strengthen writing as needed. ELA-CCSS-K: (Writing-6): With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including in collaboration with peers. ELA-CCSS-K: (Writing-7 and 8): (7) Participate in shared research and writing projects AND (8) With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question (identify the problem, action, and impact of the action project) *ELA-CCSS-K: (Listening & Speaking-1) Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.* ELA-CCSS-K: (Language-4; Vocabulary) Use words and phrases acquired through conversations, reading and being read to, and responding to texts (observe, identify, action, impact).

Materials:

-Problem/Action/Impact chart (from previous lessons)

-Doodlecast videos
-iPads with Doodlecast loaded on

Before Teaching:

- Practice using Doodlecast
- Break students into groups of 5

Procedure

Students will be broken into groups of 5. The teacher will see each group of 5 for 15 minutes over Lessons 10 and 11. There will also be two graduate assistants (and possibly the science coordinator) who will come and assist during these lessons (divided among both classrooms).
As a whole group:

- Today we are going to start to compose the story of how we were **scientists**.
- On your classroom chart, you will record
    - (1) the **problem** we identified
    - (2) our **action plan** for addressing the **problem**
    - (3) the **impact**.
    - Remember how we tracked these steps with pictures for *Follow the Moon* and *One Plastic Bag*?
        - Show chart with pictures from those lessons - leave visible for reference.
- Today, you will either draw pictures or use photos, and either label or dictate each step of our **action** project.
- I'm going to show you how you can use an app called Doodlecast to compose this.
- Show videos of how to
    - (a) draw the **problem** from *Follow Me Home* using Doodlecast and use dictation provide audio narration for the drawing
    - (b) take photos of the **actions** from the book and upload and label these in Doodlecast
    - (c) draw and label the **impact** in Doodlecast, (d) playback your draft version.
- Now, your group will choose how you want to represent each step of the action plan we did in our schoolyard (**problem, action, impact**), and draft it using Doodlecast Pro.
- Teacher (and assistant and graduate assistants from UB) will circulate while they do this.

- Provide help with digital features and ask questions to guide content
  - is that your **problem**?
  - Have you included the **actions** yet?
  - How did you show the **impact**?
  - Can you use voice over to label that?
  - Can you type some letters that represent that to label it? Etc.
  - At the end of the session, save each draft version as a data source

Lesson 12
Share Final Products

Science Standards (NGSS)	ELA Standards (Common Core)
K-ESS3-3 (obtaining, evaluating, and communicating information subsection): Communicate solutions with others in oral and/or written forms using models and/or drawings that provide detail about scientific ideas.	ELA-CCSS-K: (Listening & Speaking-1) Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups. ELA-CCSS-K: (Listening & Speaking-4) Describe familiar people, places, things, and events and, with prompting and support, provide additional detail. ELA-CCSS-K: (Listening & Speaking-5) Add drawings or other visual displays to descriptions as desired to provide additional detail. ELA-CCSS-K: (Listening & Speaking-6) Speak audibly and express thoughts, feelings, and ideas clearly. ELA-CCSS-K: (Language-4; Vocabulary) Use words and phrases acquired through conversations, reading and being read to, and responding to texts (observe, identify, action, impact).

Materials:
-iPads with Doodlecast compositions

Before Teaching:

- Invite administrators, building staff and/or parents to come and see the students present their action plans

Procedure

Share final products (about 15 minutes):

- Have children set up tables or desks in a U-shape around the outside of the classroom.
- Have each pair stand at a desk or place at the table with their iPad so they can share and discuss their composition as people approach their station.
- Have audience (parents, upper grade students, teachers, ect.) move around to stations to hear mini-presentations from different children
    - researchers will video-record these as a data source

After the presentations are done and the audience has left (about 15 minutes)

- The classroom teacher will guide the following discussion, and researchers may join in with follow up and additional questions:
    - What did you learn? (go back to the question board - review some of the questions answered)
    - What questions do you still have (add to the question board on post-its in red marker)
    - What might you do next?
    - Why do you think our garden is important for us?
    - Why do you think our garden is important for the butterflies/birds?

Lesson 7 Video Links:

Bluejay Video:
https://drive.google.com/file/d/1v7xmzn_LRglXYekzjPhDo6ls5yptOVhu/view?usp=sharing

Monarch Butterfly Video:
https://drive.google.com/file/d/10thFKoLNzNBnj-era9QTI_Otlc3fFG7B/view?usp=sharing

Lesson 11:

Rubric for Final Model and Interview

	0 points	**1 point**	**2 points**
Model	Does not develop a model or develops a model that does not include any of the living things in the courtyard.	Develop and explain a model that shows the living things in the courtyard and their needs, but does not explain the relationship between them.	Develop a model to represent relationships, and/or patterns in between the needs of the living organisms and the courtyard in which they live.

Lesson 2 Materials





Maple Tree

Wren







Lesson 3 Materials






















