Unit 1

Week 4

STEM Investigation 3: Listening Closely

Description: Children will pay close attention to the sounds of their classroom as they use their sense of hearing to investigate and then describe what they learn. Throughout the activity, children and teachers will work together to build a common understanding and vocabulary to describe the sounds they hear in their classroom.

Standards Addressed:
K-ESS3-2
Science Practice Standard: Obtaining, evaluating, and communicating information

Enduring Understanding:

- Communities are affected by their environments. People use their senses to observe the environment and materials in their community, and may describe and label materials according to their observable properties.

Essential Question:

- Where do you find what you need in your community, including information, help, and companionship?

Materials:

- 10 small containers of similar size,such as plastic containers with lids, small boxes that can close, travel containers for shampoo
- cotton balls
- paper clips
- aluminum foil
- duct tape or masking tape
- chart paper
- marker
- various objects from the classroom such as a hardcover book, pencil, paper, pencil sharpener, marker, toy car, dish, math cube
- large bin

Vocabulary:

- data
- describe
- objects
- sense
- hypothesis

Preparation:
Make two sets of five different "sound containers" with the plastic containers and cotton balls, paper clips, aluminum foil balls, and other objects that make varying volumes of sound when shaken. Make the containers opaque (to hide contents) and tape them sealed. Number the containers 1 – 10 so that children can explain the matches they find ("I had #3 and it matched with Tito's container #6."). Place these sound containers in a bin or basket.

Create a chart on chart paper with three categories: **LOUD**, **quiet**, and **silent**, and draw simple picture clues for each: crayons for **LOUD**; one cotton ball for **quiet**; do not put any picture next to **silent**. Children will record on this chart with tally marks. See example in ***During Centers***.

Write the focus question on chart paper: ***"How can we observe and describe objects in our classroom using our sense of hearing?"***

Place other classroom materials (hardcover book, pencil, paper, pencil sharpener, marker, toy car, dish, math cube, etc.) in a large bin. These will be used during Centers for a sound identification game.

Intro to Centers:

"As scientists this week you will investigate the focus question that is written here, on this chart paper: ***"How can we observe and describe objects in our classroom with our ears and describe what we hear?"*** You are going to investigate sounds in the classroom."	*Indicate and read the focus question.*
"What are some important words that we need to understand as scientists in order to answer this focus question?"	*Circle, discuss and annotate key words (**observe**, **describe**, **classroom**, **hearing**).*
"What senses have you used already to investigate our classroom community?"	
"What body part do we use for hearing?"	
"Can you hear when your ears are covered?"	*Draw an ear on top of the word **hearing** on the focus question and write the word **ears**.*
"I made these sound containers for our class. Listen carefully when I shake it."	*Give children a moment to explore what happens when they cover their ears.*
"Describe that sound: is it loud? Quiet?"	*Show children one of the sound containers you made in advance. Shake the container.*
"Based on what you heard, what do you think might be inside this container? Is it something soft? Hard?"	*Give children an opportunity to think and respond.*
"In the STEM Center you will find more sound containers. You will also find this chart to record your data. The chart has three columns: loud, quiet and silent."	*Hold up the chart and show the words and symbols for LOUD, quiet and silent. Check for understanding of these words. Give the children an opportunity to articulate how the manner in which the words are written indicates their meaning.*
"Some containers have crayons in them; Others have one cotton ball in them; And some contain only air. You are going to shake the containers and record which ones make loud sounds, quiet sounds, or no sounds at all."	*Indicate the drawing of crayons with the word **LOUD**; indicate the drawing of a cotton ball with the word **quiet**; indicate the lack of a picture with the word* silent. ***Do not shake the sound containers** at this point.*
"When you shake a container and listen carefully, find a friend who has another container with a matching sound. Record the numbers of your containers in the appropriate space on this chart."	*Demonstrate how to record the data on the chart.*

During Centers:

Children will work together in the STEM Center. Each child chooses one container, shakes it, listens to it, and then finds the friend who has the matching sound. Once they find the match, they can work together to describe the sound they've heard. Is it loud? Quiet? Silent? Encourage children to make predictions about what might be inside the containers.

On the chart in the STEM center children write the numbers of their containers under the correct category heading.

Sample Chart:

LOUD	Quiet	*Silent*

After children record their data on the chart, they can work in pairs to play a sound identification game. For this, children move to the larger in containing various objects from the classroom. One child closes her eyes and uses only her ears to determine what her partner is doing with objects from the bin. The sound maker uses one or more objects to make a sound. The child with eyes closed listens carefully and then guesses what materials her partner is using and what he is doing with them. Then she opens her eyes to find out.

Guiding Questions during Center Time:

- What do you notice about an object from listening to it?
- What can you *not* tell about an object by only listening?
- Why do you think some objects make loud sounds and some make quiet sounds?
- Are there other words you can use to describe the sounds you hear?

Sharing Our Research:

What did you do this week as scientists in the STEM center?

Revisit the focus question, ***"How can we observe and describe objects in our classroom using our sense of hearing?"***

Looking at the data we collected on the chart, what did we find out about the sounds objects make when we shake them in containers?

Shake each container one at a time and ask children to make a hypothesis (an educated guess) about what might be in each container. Open each container to reveal what is inside. Ask, "What do you notice about the items that made loud sounds?" "What do you notice about the items that made quiet sounds?"
Ask, "Even when there are no objects inside the containers, what is still inside?" (Air!)

What other questions do children have about the sounds in the classroom, or about how we use our ears to investigate the classroom? For example, how do people understand and describe their classrooms or other communities if their ears don't hear well?

Documentation:

Pictures of the activity in progress can be shown to children later to reinforce the key concepts. Also, these pictures can be put together in a display with pictures from Investigations 1, 2 and 4 to show all the senses we use to explore, observe, and learn about our environment.

Using this as a Provocation:

Ask children to think about the differences and similarities among sounds they hear in the classroom and sounds they might hear outside of the classroom (e.g., on the playground, at home, on a busy street, at a farm). Suggest that children find ways to record the sounds they are hearing around and outside of the classroom (and provide a template as a scaffold to do so).