Sound is Everywhere!

By Jillian Torres

**NGSS: 1-PS4-1.** Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials.

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

**SL.1.1a.** Participate in collaboration conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.

**Claim number 2:** Identifying the evidence to address the purpose of the investigation.

**Target letter a:** Students collaboratively develop an investigation plan and describe* the evidence that will result from the investigation, including:

1. Observations that sounds can cause materials to vibrate.

## Summary

This lesson was written using the 5E model, each E stands for a portion of the lesson: engage, explore, explain, extend, and evaluate. In the engage portion of the lesson, students take a Sound Walk on campus. During the Sound Walk students listen for various sounds and prepare to share when they return to class. Back in the classroom students share the sounds they heard on campus and interactively write their observations on chart paper. In the explore portion of the lesson, a bowl is covered with plastic wrap and a tablespoon of salt is placed on top of the plastic wrap. Students then yell at the salt and observe how it moves depending on how loud or soft they yell. In the explain portion of the lesson, the students close read the Scholastic article on sound. Through this article students learn the vocabulary words, sound waves and vibrate. Students then record the words, definitions and pictures in their science notebook. In the extend portion of the lesson students built and tested kazoos and cups on a string. The evaluate portion of the 5E lesson plan is done throughout the lesson when students are assessed on their classroom discussions and scientific models.

## Overview of the Formative Assessment Process in This Resource

Clarifying Intended Learning

**Learning Goal:**
• Students will investigate whether sound waves can cause materials to move. They will carry out an investigation and will be looking at causes and effects.

Success Criteria:
• I can make sense of light and sound waves (1.PS4)
• I can recognize that sound can make matter vibrate and vibrating matter can make sound (1.PS4.1)
• I can understand that people communicate over long distances (1.PS4.4)

Elicit Evidence:
Evidence is elicited throughout the lesson via classroom discussions and questioning. Students explained why the salt moved in their science investigation using appropriate vocabulary terms. Finally, students draw a scientific model of what they thought was causing the salt to move.

Interpret Evidence:
The teacher interprets evidence during the lesson to determine if students understand that sound travels in waves, can draw sound waves correctly, and that sound can cause an object to vibrate. Teachers interpret evidence to determine if students are using the vocabulary words vibrate and sound waves correctly.

Act on Evidence:
The teacher will act on evidence by reteaching vocabulary if necessary or having students reread the Scholastic article on sound if students don’t understand that sound travels in waves.

Feedback:
Give actionable feedback to students:
During the salt investigation ask students the following questions: what is causing the salt to move? Will the salt move more or less when your voice is louder? How does sound travel to the salt? As you are listening to students’ responses make notes on where the students need more instruction.

After the salt investigation, ask the students to draw a scientific model of what happened, including what caused the salt to move. The model should include the bowl, salt showing movement, the student, and sound traveling from the student to the salt in waves.

Instructional Moves:
When transitioning to the Next Generation Science Standards it is important for students to construct their understanding of science phenomenon. In this lesson the
science phenomenon was the sounds they heard on campus. Once they record their observations of the phenomenon it is important for students to investigate it, without too many directions, the students should be free to explore. Provide the students with the plastic-covered bowls and salt and prompt them to yell at the salt but after that allow the students to make changes and investigate variables as they wish. Some things students may want to investigate: what happens when they make their voice louder, what happens when their voice is softer, what happens if they add more salt, or what happens if there is less salt. Students may even want to investigate with items other than salt. All of this student-driven investigation is helping them build their understanding of sound independently. After they have a chance to investigate sound, discuss their findings and draw a model of what they think is happening, the students read the Scholastic Sound article so they can apply the scientific vocabulary and concepts to the understanding they have built. After reading the article students will revise their models to include their new understanding of sound. At this point other sound activities will extend the students’ thinking.

**Instructional Task Description**

5E Lesson Structure located at https://bscs.org/bscs-5e-instructional-model/

**Differentiation**

**For English Learners** – Visuals are used throughout to support EL students. Add pictures to the initial sound chart from the engage portion of the lesson. When students are sharing their sounds from the Sound Walk use the sentence starters: “I heard ______.” Students engage in think-pair-share before sharing their observations and conclusions with the class. Wait time is provided during one-on-one and classroom discussions. Link hand motions to the scientific vocabulary sound waves and vibrations.

**For Students with Disabilities** – Provide students with visuals and sentence starters when sharing their observations or models such as “I heard ______.” For nonverbal students print picture cards of necessary vocabulary. The scientific model also allows students to show what they understand without verbally explaining. Link hand motions to the scientific vocabulary sound waves and vibrations. Scientific language can be added to the AAC devices so they can communicate about the concepts. The AAC devices are a way for nonverbal students to make the salt move.

**For Other General Education Students** – Extension sound activities include building a kazoo and investigating the best way to build a cup telephone. Students draw a model of either sound device to push them to explain what is happening in regards to the sound waves. To incorporate technology have students use Flipgrid or SeeSaw to verbally explain their scientific models. SeeSaw videos can then be shared with parents.
Additional Comments and Considerations from the Author(s)

This lesson was planned and implemented in a 1st/2nd Autism Focus classroom. Due to the number of students and based on their needs the lesson was conducted one-on-one with each student. However, the lesson can also be taught whole class with the students working in small groups to complete the salt investigation. While the students are investigating the teacher monitors progress and questions the students. The investigation can also be implemented as a center if there is an adult managing the center.

Student Materials and Additional Resources Links

Scholastic article - "Science of Sound"

Paper bowl

Plastic wrap

Salt

"Predrawn model"

Colored pencils or crayons

Science notebook

Vocabulary picture cards

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