

Dharma Mowatt

1. **Topic of the Lesson and Grade Level:** First Grade: Sound Vibrations
2. **Lesson Essential Question:** How are sounds and vibrations related?
3. **Standards:** 1-PS4-1: Plan and conduct investigations to provide evidence that vibrating materials can make sound and vice versa.
4. **Learning Objectives & Assessments:**

Learning Objective	Corresponding Assessment
SWBAT...	
Recognize that sound waves are able to cause strong vibrations	Whole class discussion will be informally assessed during the closure
Use different materials to visualize and conceptualize the effects of sound on vibration and vice versa	Performance tasks- giving students a worksheet to bring around to different stations to collect their data Worksheets will be assessed for accuracy

6. **Materials:**

- String
- Paper cups
- Rulers
- Thin and thick rubber bands
- Sprinkles
- Speaker
- Worksheet
- Thin paper such as a receipt material

7. **Pre-Lesson Assignments and or prior knowledge:** Students have an already developed background knowledge of the fact that sound can cause vibration. Our experiment's purpose is to allow them to experiment with the different ways sound can cause vibrations and the different severities.
8. **Lesson Beginning:** To begin our lesson, I will call the students to the carpet and have them test out sound vibrations with their own body. I will first ask them, "Can anyone tell me how sound travels from one place to another?" I will get 1-2 students to answer. I will then tell the students that I are going to test sound vibrations on our bodies. I will have the students place three fingers on their

throats and have them say a sentence. After, we will ask them, “What did you feel with your fingers when you were talking? Do you know what is vibrating inside your throat that is making that sound?” I will get a response from a student. I will then introduce and explain the station activities.

9. Instructional Plan:

15-20 minutes: After the introduction to the lesson, we will assign students “randomly” into 4 groups of 5 each. Students will go along through 4 stations (noted below) in order, which will be set up throughout the classroom. Students will be given a worksheet to walk around with all of the stations to and are expected to keep track of their observations at each station on the paper, which will have different factors to observe on it from rating the level of sound they produced to description words for the sounds themselves. They will be given about 5 minutes at each station, and as I tell them to travel to the different stations I will also instruct them to switch. Below are descriptions of what students will be doing at each station:

Station 1: Paper cup/string telephone

This station will have a paper cup and string “telephone.” Students will take turns talking into one end and listening out the opposite end.

Station 2: Speaker with sprinkles

This station will test speaker vibrations. A speaker will be set up with a piece of paper over the top, where the sound comes out. A small pile of sprinkles will be placed on top of the paper and students will play a song, one at a lower sound and one at a higher sound, observing how the sprinkles move differently depending on the volume.

Station 3: Rubber bands

At this station there will be two different rubber bands, thick ones and thin ones. Two students will hold each rubber band in between their fingers. The other students will flick each rubber band, noting the different sound each one makes.

Station 4: Rulers

This station will test sound and vibrations using rulers. Each student will get their own ruler and first test the sound they make when only a little part is hanging off of the desk. They will test the sound by hitting the ruler down. They will then move the ruler up so most of it is hanging off of the desk. They will test it again by hitting it and seeing how the sound changes.

10-15 Minutes: After students have returned from their stations, I will then ask different questions regarding the experiment they just performed. I will ask students to each come up as a group and describe one of the 4 stations they just observed, and tell us about their observations. After each group goes, I will ask students why they think they had witnessed stronger vibrations at some stations and softer vibrations and noises at others. I will then explain to the class that the louder the sound, the stronger the vibration and waves.

10. Differentiation:

I will set up the groups so there is variation among the skill level of students. On the worksheet, there will be instructions for each station for students to refer back to if they were unclear or if they had a difficult time paying attention while I was explaining them to the whole class. For students who have a struggle writing I will come up to them and ask them the questions verbally, listening for their understanding of what was going on at each station.

Questions:

- a. Can anyone tell me how sound travels from one place to another?
- b. What do you feel when you pronounce different letters? (ask during introduction when students have hands placed on throat)
- c. Do you think every sound causes the same vibrations?
 - i. Follow up: What do you think makes a difference in the vibrations? Does how loud the sound affects it?
 - ii. Will be asked before students go from station to station and then asked again when students return from stations
- d. What stations did you notice the sound was louder?
- e. With the louder sounds were the vibrations stronger or softer?
- f. So when we make sound... what causes the vibrations? What do these vibrations create (sound)?

12. Classroom Management:

- a. Having students in small, randomized groups to work through the lesson with

- b. Allowing students to talk amongst themselves and with groups during their rotations
- c. Allowing students to speak as a group to make all students feel equally involved
- d. Call and response ideas: clap sequence : whisper “Clap your hands once if you can hear me”, then say in same tone “Clap your hands two times if you can hear me” students should be focused on us by now, if not I will call on them, second idea is to say “Marco...” and wait for students to say “Polo”

13. Transitions:

I will begin our lesson by asking students to recall their previous knowledge on sound vibrations and what causes sound to travel. I will then explain the different stations they will be visiting and how each station tests different everyday objects to transmit sound. When it is time for students to move to the next station, I will ring a bell that the teacher uses in the classroom. After the final station for each group, I will ring the bell again and call them to the carpet to go through our questions and closure.

- 14. Closure:** I will wrap up the lesson by explaining the cause and effect of the situation and draw students' attention back to the introduction of our lesson by having students put their hands on their throats and make a series of noises at different volumes. I will then ask the class, knowing what they know now, if they notice anything different than the first time. I will intertwine their answers with what I had learned in class by expressing how different noises come from different sound waves, therefore creating different vibrations.