

TARWATER ELEMENTARY SCHOOL STEM LAB

Activity ID: **K-3**

Activity Name: **Sound Vibrations**

MATERIALS:

Materials Provided in Bin:

Item:	Quantity:	Notes:
Lesson Plan	1	
Glass Bottles	8	
Plastic spoons - box	1	

Materials In STEM Lab or Classroom (Common Items):

Item:	Quantity:	Notes:
None		

Materials Teacher/Parents Need to Provide:

Item:	Quantity:	Notes:
Blackboard/whiteboard	1	
Chalk/marker	1	
Water		

WHAT ARE WE DOING?

Using two different media (air and water) in glass bottles shows how the speed of vibrations affect pitch. Students will determine which results in a higher pitch: a full bottle or an empty bottle.

Objectives:

- Describe the properties of sound.
- Describe pitch and how it varies.

VIDEOS / LINKS:

Science World Resources, Full Unit, Sound
Engaging Science, Online Games, Science World,
Make a Note

SAFETY NOTES:

This experiment involves glass. Please ensure adult supervision.

SCIENCE TERMS:

Pitch - the way your ear and brain order sounds based on their frequency (vibrations per second).

Rapid vibrations (high frequency) that reach your ear are categorized as a "higher" pitch.

Slower vibrations (low frequency) are categorized as "lower pitch." Musicians label pitches with the letters A through G.

STEPS:

1. Fill the glass bottles with different amounts of water.
2. At one end of the blackboard/whiteboard, write "Highest pitch". At the other end write "Lowest pitch".
3. Continue with PART 1 and PART 2 below

PART 1: Tapping bottles

1. Each student taps their bottle with their spoon and compares pitch with those of their classmates.
2. The students put themselves in order along the blackboard from the highest pitch to the lowest pitch.
3. Once the students are in order, ask each student to tap their bottles to compare the various pitches.

PART 2: Blowing across the bottles

1. Each student blows across the top of their bottle and compares their pitch with those of their classmates.
2. The students put themselves in order along the blackboard from the highest pitch to the lowest pitch.

3. Once the students are in order, ask each student to blow across the top of their bottle to compare various pitches.

EXTENSIONS:

- a. Play the bottles to interpret a children's song such as "Mary Had A Little Lamb" or "Twinkle Twinkle Little Star". First separate into teams of 6-7 students, with a "conductor" for each team. Decide as a team whether you will blow across the bottles or tap the bottles to produce your notes. You'll need some time to fiddle with the amounts of water in other bottles if you want the song to be musical.

QUESTIONS TO ASK STUDENTS:

- What would happen to the sound if there was no water in the bottle?
- Is the pitch higher or lower with more water?
- Is the pitch higher or lower with less water?

CLEAN-UP:

Empty and dry the water bottles

Place instructions, spoons and water bottles into bin

**IF RUNNING OUT OF A SUPPLY IN THE BIN, PLEASE
CONTACT LAURIE JONES IN THE OFFICE (X4307)**

JONES.LAURIE@CUSD80.COM