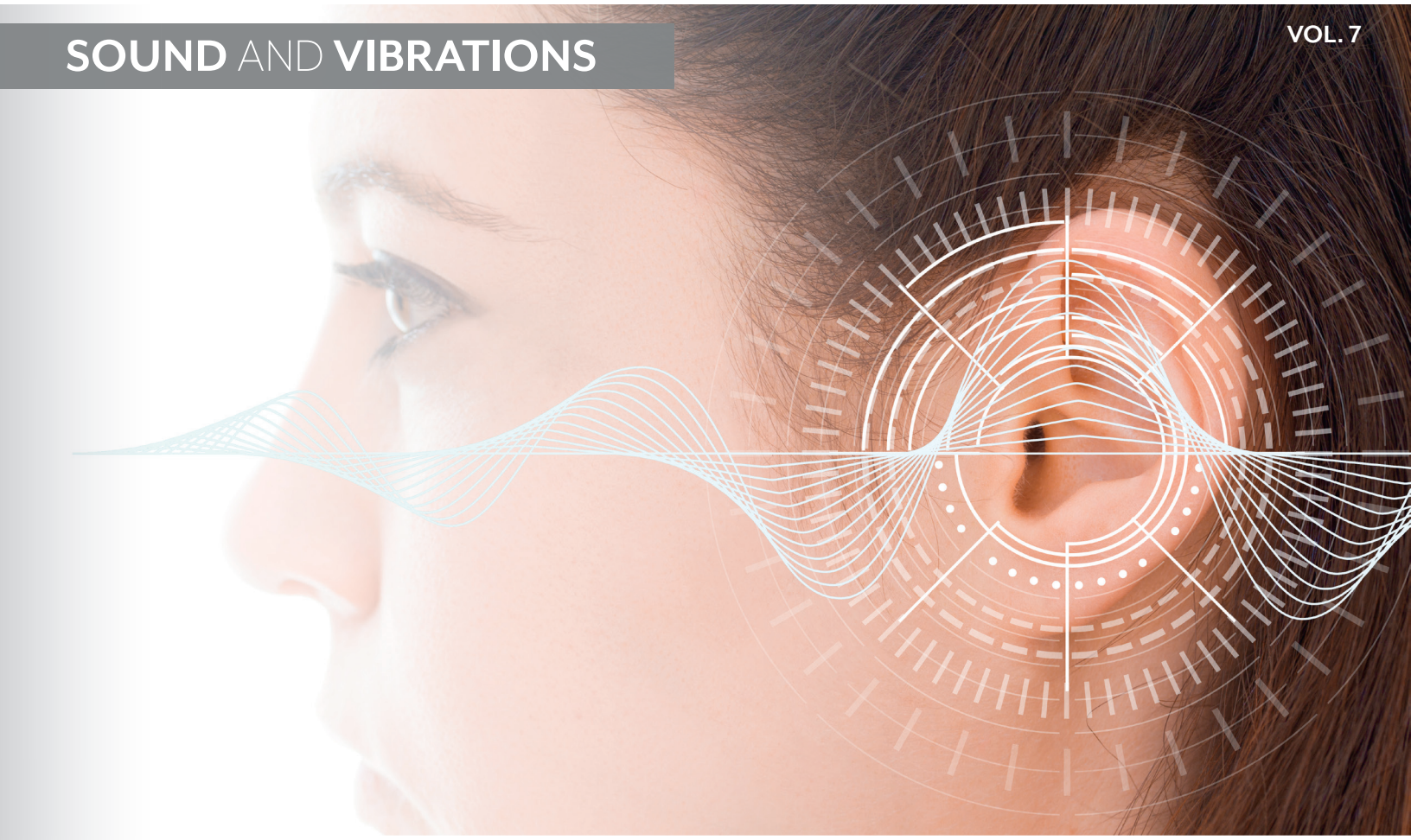
Nasco education LESSON PLAN

K TO Career solutions

stemworks

SOUND AND VIBRATIONS

VOL. 7



Developed by Linda Roberts
Grades 3-7

Objectives

Students will…

- Demonstrate the movement of sound vibrations in solids, liquids, and gases.
- Discover that sound travels fastest in solids, and slower in liquids and gases.

Materials

- Tuning Forks, Set of 13 (Cat. No. SB29986M)
- Rubber Mallet (Cat. No. SA01602M)
- Canning Jar Ring on a String
- Glass or Beaker of Water
- SciQuest® Sound Demonstration Kit (Cat. No. SB19239M)

TEACHER DEMONSTRATION

- Strike the longest tuning fork with the mallet. Ask students if they can see or hear the vibrations. Ask for a student volunteer to come up to the teacher's table to observe the vibrations more closely. Have the student look closely at a full glass or beaker of water. Strike the tuning fork again and put the vibrating end into the glass of water. The student will probably be surprised when the water splashes out of the glass.
- Suspend the metal jar ring from a piece of string. Strike the tuning fork again and place it where it will hit the jar ring. The vibrations will make the ring sound like an alarm bell or telephone ringing.
- Tell students to listen carefully while you quietly scratch the top of their table or desk with your fingernail. They may be able to hear the sound faintly. Have the students put their ear down on the table or desk and scratch it as you did previously. Students should notice that the sound is much easier to hear. Explain that sound travels faster in solids than in air (gases).

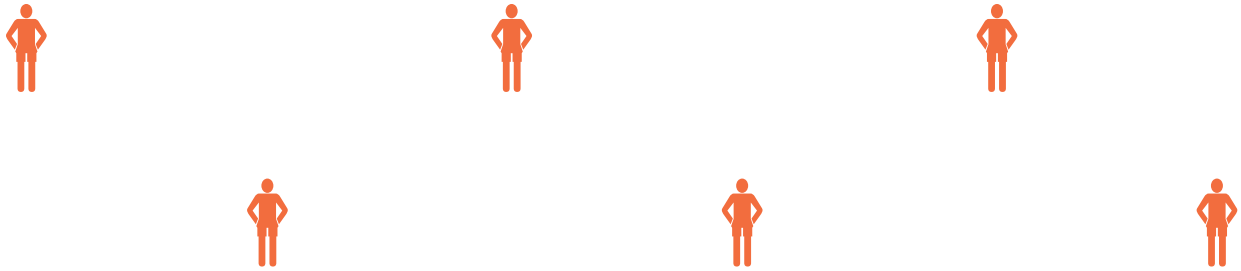
(over)

STUDENT DEMONSTRATION

(Before beginning the activity, remind students to follow directions and not bump other students too hard.)

- Place about 6 students randomly around the room, far apart from each other. Tell them this represents the particles in a gas. Have one student gently bump in to one of the particles. The second particle will walk slowly to another student and gently bump into them. The third student will do the same thing. Ask the class to tell why it takes so long for each particle to bump into the next one. (They are far apart).

Gas:



- Next, line up about 6 students so they have about a 3 foot gap between each of them. Gently bump into the first student, then have them bump into the second student.
- Have the class explain why it took less time for the particles to bump into each other. (They are closer together). Tell them this represent vibrations traveling through a liquid.

Liquid:

- Line up about 10 students right next to each other. Bump the first student, and each student in turn will bump the one in front of them.
- Have the class explain how this represents sound traveling through a solid. (Solid particles are close together so the sound will travel quickly). Have the students demonstrate their understanding by comparing the demonstration with the table scratching and metal lid vibrating.

Solid:

Assessment

Teacher observation, participation in activities, cooperation, handling materials, participation in oral discussions.

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