

Use a tuning fork to observe how sound vibrations can displace (move) liquids, such as water. Record and discuss your observations.

Standards listed on next page

Supplies:

*Supplies Available, order [here](#)

- Large bowl with water
- Tuning fork*
- Science log
- Food coloring (optional)

Objective

Students will use the scientific method in order to conduct an observational experiment on the effects sound waves have on water.

Outline of Video

1. We have seen how sound can affect solids, such as the drum and the salt. Can sound waves also affect liquids? Is it possible to see the effects of sound on water?
 2. Using a tuning fork, we will be able to see how sound can physically affect a liquid, such as water.
3. We have talked about the three types of matter. Can you name all three?
 4. Solids, Liquids, and Gas!
 5. Is AIR a solid, liquid, or a gas? Pause to discuss (02:00).
6. Let's begin our experiment! Fill your bowl with water and add food coloring, if you would like. Food coloring will help you see the effects a little easier. Pause to complete (02:30).
7. Now take your tuning fork and strike it against your hand. Once it starts vibrating, bring it to your ear. You should hear a humming sound!
8. Let's form a hypothesis before we continue. What do you think will happen when we place the vibrating tuning fork into the water?
 9. In your science log, write the answer to this question.
10. After you have formed your hypothesis, continue on with the experiment.
 11. Strike the tuning fork and dip it into the bowl of water.
 12. What did you see? Repeat this procedure as many times as you would like, and be sure to write down your observations. Pause the complete (04:05).
 13. Why did the tuning fork displace the water? Write down what you think!
 14. The energy from the vibrating tuning fork is transferred into the water, causing it to splash up!
15. Let's try another water experiment!
 16. Can sound travel through water? Yes it can!

17. Ask an adult to cut off the bottom of the 2-liter bottle!
18. Take one of your metal kitchen utensils and place it in the bucket of water. It should be in a position where it can easily be tapped by the other kitchen utensil.
19. Let's form a hypothesis before we continue. If we hit the kitchen utensils together under water, while we listen through the bottle, will we be able to hear the sound? Pause to form your hypothesis (06:55).
20. With one hand, tap the utensils together under the water. With the other hand, hold the bottle up to your ear, with the wide opening facing the water.
21. After conducting your experiment, write down any observations or results in your science log.

DIY: The next time you go into a bathtub or swimming pool, bring two metal spoons with you. When you swim underwater, tap the spoons together and see how well you can hear the sound! Make sure to log your results so you can share your experience with your class!

Kentucky Standards:

K-PS2-1, K-PS2-2. Simple tests can be designed to gather evidence to support or refute student ideas about causes.

KPS2-1. Scientists use different ways to study the world.

2-PS1-4. Scientists search for cause and effect relationships to explain natural events.

3-LS1-1. Patterns of change can be used to make predictions.

3-LS2-1. Construct an argument with evidence, data, and/or a model.

3-LS3-2, 3-LS4-2. Cause and effect relationships are routinely identified and used to explain change.

4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

4-PS3-4. Science affects everyday life.

Ohio Standards:

K.PS.2: Some objects and materials can be made to vibrate and produce sound

3.PS.3: Heat, electrical energy, light, sound and magnetic energy are forms of energy.

5.PS.2 Light and sound are forms of energy that behave in predictable ways.