

Dancing rice

Materials

- Bowl
- Plastic wrap
- Rice
- Baking tray
- Wooden spoon



Instructions

1. Tear off a large piece of plastic wrap and place it on the bowl, stretching the plastic wrap tight.
2. Sprinkle a few grains of rice onto the plastic wrap.
3. Hold the baking tray in the air close to the rice (without it touching the bowl, the rice or the table) and hit it with the wooden spoon to make a loud sound. You should see the rice moving.

What happens?

Hitting the baking tray with the wooden spoon causes the tray to vibrate and make a sound. When the baking tray vibrates, the air around the tray vibrates and creates a sound wave. A sound wave is a form of energy that can travel through air. Sound waves from the baking tray travel through the air in all directions and some of the sound energy reaches the bowl, causing the plastic wrap and the rice to vibrate. The rice moves and looks like it is dancing. It works best when the plastic wrap is tightly stretched so the vibrations in the plastic wrap are large enough to make the rice move. If the plastic is not tightly stretched, the sound waves will be quickly absorbed and you won't see much movement.

Why does it matter?

Sound waves travel through air at over 1,000 kilometres per hour. That seems pretty fast, but light travels much faster, at more than 1,000 MILLION kilometres per hour. When a sound wave travels through air, the tiny molecules of gas in the air move back and forth as the sound wave passes. A sound wave carries energy, but it doesn't carry matter. In other words, after a sound wave passes, the molecules of gas in the air go back to where they were before the sound came along.

When a sound wave reaches your ear, the energy in the sound wave causes the ear drum (tympanic membrane) to move back and forth. The ear drum vibrates in response to a sound wave, just as we saw the plastic wrap vibrating in this activity.

The ear drum is connected to a tiny bone called the hammer bone (malleus). When the ear drum vibrates, the hammer bone vibrates and it passes the vibrations to a second bone called the anvil (incus) which in turn passes the vibrations to a third bone called the stirrup (stapes). The stirrup bone is connected to the cochlea which converts the mechanical vibrations into electrical signals that are sent to the brain where the sound is perceived.

Related activities

Use the dancing rice to see vibrations from a range of different sounds. Low pitched, loud sounds will work best. Try a drum, clapping hands or a stereo playing music with a lot of bass.

If you have access to a large speaker or subwoofer, try this: Lay the speaker down so it is facing up. Place a Styrofoam tray over the speaker and sprinkle some Rice Bubbles on the tray. Play loud music with lots of bass through the speaker and you should see the rice bubbles 'dancing'.

Health and safety considerations

- Choking hazards for young children (plastic film, uncooked rice)