

TRY THIS OUT!

INSULATING SOUND

Time: 10 Minutes
Difficulty: Easy

Sound is made of waves in the air that are caused by a vibration. In this activity, find out what happens if you make it harder for sound waves to reach your ears.

WHAT YOU NEED:

- Paper
- Pen or pencil
- Small box or container
- Something that produces sound at a steady volume (e.g., a phone playing music, a toy, a timer)
- Insulating materials (e.g., bubble wrap, tissue paper, newspaper, fabric, egg cartons)

MAKE IT:

1. Prepare an observation chart like the one below. In the left-hand column, write down a list of all the insulation materials you've collected. Include "empty" at the top of the list.

Material	Sound level (1-5)
Empty	5
Newspaper	

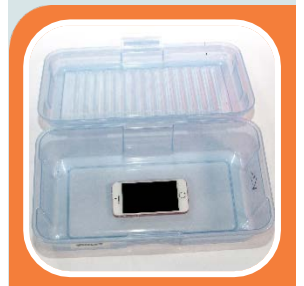
2. Before you begin testing, make some predictions! Which materials do you think will block the most sound? What material will block the least sound?

TEST IT:

1. Place the noisemaker inside the empty box or container, then close the lid. We're going to rate how loud each trial is on a scale of 1–5, from quietest to loudest. This round will be the loudest, so mark its loudness level as a 5. No sound at all would be a 1 on this scale.
2. Wrap the noisemaker in one of your insulation materials and close the lid. How loud does it sound in comparison to the empty box? Rate the sound level on the 1–5 scale.
3. Repeat step 2 for all of your materials, then take a look at your observations. Which trials were the loudest? Which were the quietest?

EXPLAIN IT:

Sound is caused by something vibrating and creating waves in the air. When we create a barrier around something that produces sound (insulating it), the sound must pass through the material to reach our ears. This changes the way the waves can move, causing the sound to be quieter. Certain materials – such as those that are thicker – are harder to pass through. Why do you think you got the results that you did for each of your materials?





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OBSERVE IT:

Loud noises can not only be annoying, but also damaging to the ear. Since they can't always be avoided, the earplug was invented using the principles of insulation! The foamy material of an earplug creates a barrier between you and the loud sound, quieting it before it reaches your sensitive eardrum. The next time you're at a loud event or trying to ignore someone's snoring, pop in earplugs and let them insulate the sound.

GO FURTHER:

Try combining different materials to see what happens. Can you completely block out the sound?

