

STEM Bites

TODAY'S CHALLENGE: Design and Build a Musical Instrument

Grades 1-4

Overview: Create sound by causing something to vibrate.

NGSS:

1-PS4 Waves and Their Applications in Technologies for Information Transfer

1-PS4-1. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.

4-PS4 Waves and Their Application in Technologies for Information Transfer

4-PS4-1 Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.

Materials:

Use materials you find around your school or home to create a musical instrument. These might include:

- String
- Rubber bands
- Fishing line
- Empty boxes
- Plastic bottles
- Balloons
- Tin cans
- Coffee can
- Metal bucket
- Dowel
- Optional: [Guided ideas for instruments](#)
- Optional: [What is sound video](#) on YouTube



Investigation:

- Materials vibrate in different ways, creating different sounds. Test several materials to see what sounds are made when they vibrate.
- Some types of instruments are easier to make than others. For younger students, try making percussion instruments like a drum. Older students should try a more difficult instrument like a string instrument.

- When working with strings, tighten or loosen them to find the point where a good note is made.
- Now that you have a working musical instrument, try modifying it to make more than one note.

Guiding Questions:

1. What types of materials make the most interesting sound?
2. How can you make your musical instrument louder?
3. What are you wondering about? What else would you like to explore?

Product or Artifact Possibilities:

1. Upon completion of this activity, you will have a working musical instrument!
2. Make a list of the different materials you tried and if they produced a sound.

What Are We Discovering?

Every musical instrument is different, but they all have one thing common: they convert energy from motion into sound by causing a part of the instrument to vibrate. These vibrations cause waves in the air that, when sensed by our ears, are interpreted as sound. Sound waves travel at different speeds depending on the source of the vibrations. The faster a sound wave moves, the higher the pitch of the sound.

Reading Connection:

Sound Waves: By Katie Marsico

Epic Books for Kids

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