[](https://www.exploratorium.edu/snacks/bee-hummer)Bee Hummer

Make a spinning device that creates a buzz-worthy vibration

Learn how instruments and insects create sound with this simple homemade noisemaker!

**Key Concepts**  
Vibration – Frequency - Sound  
   
**Introduction**  
Have you ever tried to make a whistle out of a blade of grass? Or spun around a wooden noisemaker? Making unique sound makers can be lots of fun—and demonstrate some cool science at the same time. This activity will have you buzzing like a bee—and is a perfect one for playing outdoors. Once you understand the basics of how this noisemaker works, you can make a few of different sizes, share them with your friends and form a band of buzzing bees.  
   
**Background**  
Have you ever played around with a rubber band, plucking it to make noise? The sound you heard comes from the rubber band's vibrations, which create waves in the air that we perceive as sound. Insects' wings also make tiny waves in the air as they beat. These waves create the buzzing noise we hear as a fly zips by our head or a bumblebee bobs between nearby flowers. In this activity you will make a vibrating instrument that will sound like a buzzing bee!  
   
**Materials**

* Popsicle stick or craft stick
* Cap erasers
* Index card
* String, about two or three feet long
* Scissors
* Stapler (It should be strong enough to staple the index card to the Popsicle stick.)
* Wide rubber band, about one quarter inch wide. (That's long enough to stretch the long way around your Popsicle stick—for example, a number 64 rubber band would work.)
* A wide-open space clear of nearby people and objects (It could be either outdoors or in a large room or garage.)

**Preparation**

1. Put a cap eraser on each end of the Popsicle stick.
2. Trim an index card so it fits in the space between the two erasers on the Popsicle stick.
3. Staple the card to the Popsicle stick.
4. Stretch rubber band lengthwise from end to end so that it covers the tips of both erasers.
5. Cut enough string, about two feet, to safely swing your creation.
6. Tie the string next to one eraser; make sure it's secure.

**Procedure**

* Do not stand too close to people or objects. When you swing the creation, what part(s) do you think will move?
* Hold the end of the string and swing your creation in a circle. What sound(s) did you hear when you swung the object around?
* Try swinging the object slower, then faster. Does the sound change at all? Why do you think that is? What do you think might change the sound you hear?
* Try changing the length of the string. Does that alter the pitch?
* Now try changing the shape of the index card. What happens when the card is slit, curved or folded?
* **Extra:** Use a rubber band that is a different size. How does it sound?
* **Extra:** Try the same activity scaled up: Use a tongue depressor with masking tape wrapped around the ends and a bigger rubber band.

### Going Further

Experiment by changing how the Bee Hummer is made and used. What happens when the index card is slit, curved, or folded? How does the sound change if you change the size of the rubber band? If you spin your Bee Hummer faster or slower? Use a longer or shorter length of string? You can also modify the materials: Try using balls of clay on each end instead of erasers, or several thin rubber bands instead of one thick one.

Success and preparation:

Have each kit pre made in a paper bag

Staple the paper for K-1’s

Tie string for K-1’s

