Sound Off!

Music is a form of communication. How so? Why is music such an important part of our human experience?
Make a fun sound contraption with simple materials found around your home!

This idea and some of the pictures came from Science Buddies. Used with permission.
https://www.sciencebuddies.org/

Materials:

- two large craft sticks (about six inches long)
- one wide rubber band
- two small rubber bands
- one plastic drinking straw *(different color straws will help in this activity)*
- ruler
- scissors
- paper for data collection
- pen or pencil

Let's Start!!

Procedure:

1. Use scissors to cut 4 pieces of straw 1-1½ inches. *(Different color straws may help with this activity)*
2. Wrap wide rubber band lengthwise around large craft stick and lay on table facing you lengthwise.

   a. Place one piece of straw **under** the rubber band perpendicular to the craft stick, about two inches from the left side of the craft stick.
   b. Place second straw **on** top of the rubber band to the right of first straw.
   c. Place the third straw about two inches from the right side of the craft stick, **under** the rubber band.
   d. Place the last straw to the right of Straw 3, **on** top of the rubber band.

(Straws 1 and 4 should be closest to the ends of the craft stick, while **Straws 2 and 3** should be in the middle.)

3. Hold the straws in place putting the second craft stick on top of the first one.
4. Using a small rubber band at one end, wrap it several times securing the two craft sticks together. Repeat with second rubber band at the other end.

Test It Out!!

Blow through the opening **between** the craft sticks and not into the straws directly.

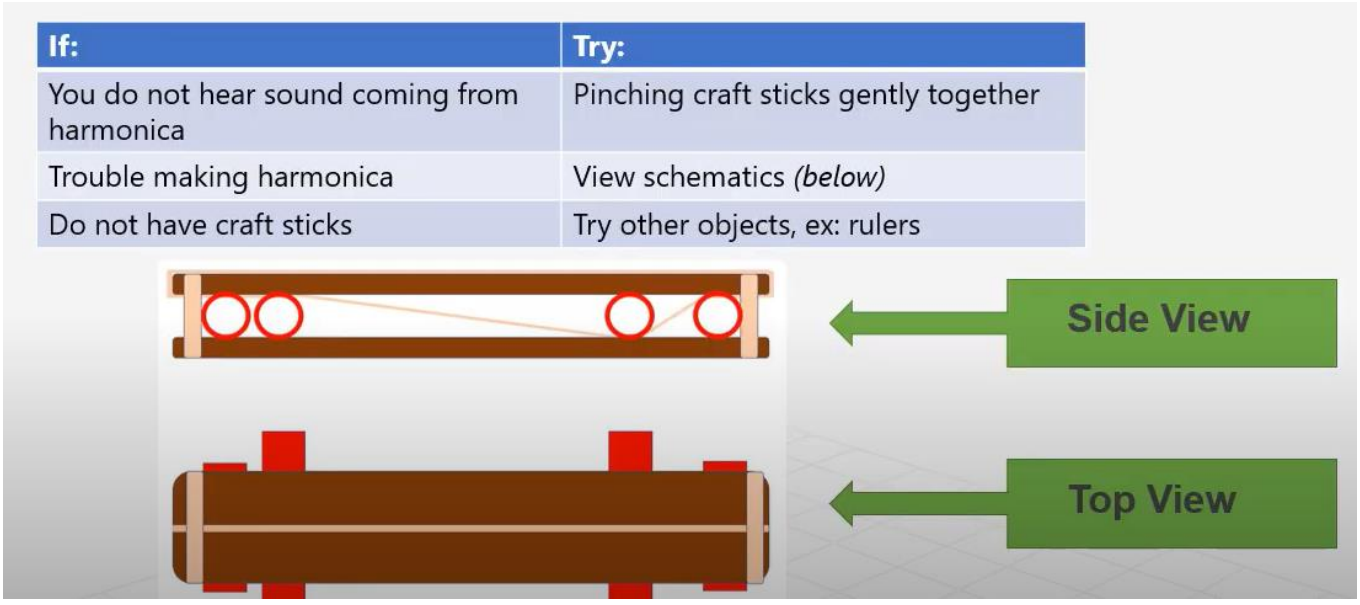
Measurements...

Move your inside straws closer together (about 2 inches between them). How does this sound differ if you move inside straws 1½ inches apart? 1 inch apart? How would you rate these pitches?
Create a table where you record your measurements. Score the lowest pitch as a 1 and the highest pitch as a 4.

Distance between inside straws	Rate of Pitch lowest pitch = 1, highest pitch = 4
2½ inches	
2 inches	
1½ inches	
1 inch	

Troubleshooting...

If:	Try:
You do not hear sound coming from harmonica	Pinching craft sticks gently together
Trouble making harmonica	View schematics *(below)*
Do not have craft sticks	Try other objects, ex: rulers



Think About It...

What sounds can you make? How do your fingers feel as you play your instrument? What happens to the sound as you move the straws back and forth? Is there a pattern to the tone of the sound?

What's Going On?

Sound is produced when something vibrates. The vibration causes the medium *(the material through which sound is transmitted, for example, air, water, wood)* around it to vibrate. Music is organized sound and a very personal experience. Acoustics is the **science of sound**. Someone who studies acoustics is called an acoustician.

If Time Allows...

- Remove all of the straws, except the first one. Blow through your instrument.
    - What happens? How does this sound different than the other times you played?
- Use two other craft sticks, small rubber bands and at least one piece of straw to build a harmonica without the central wide rubber band.
    - How does this differ from your first harmonica? When you move the straws, how does this change the tone of the sound?
- Make your own changes and design your own tests.

Did you enjoy this activity? Consider these career connections...

Sound Engineering Technician – Also called an audio engineer, he/she assembles and operates sound equipment. She may record, mix, edit, or reproduce music, voices, and sound effects for television, movies, podcasts, sports, and other events.

Audio Technician/Editor – This person might capture a recording of a live performance, balancing and adjusting the sound. Their work is on the technical parts of the recording.

Production Sound Mixer – captures audio on the set and location, mixes and balances the audio while it is being recorded. Works to fix background noise, echoes, distortions, etc.

Music Producer – works on the creative/administrative side of recording to produce soundtracks for musical artists.

Foley Artist – These musical artists create and record overexaggerated everyday sounds, such as footsteps, ice being stirred in a glass, and other sound effects.

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