ACTIVITY - Sound from a Straw

Sound can be produced by blowing into a straw in a variety of ways. Depending on the length of the straw, the sound may have a higher or lower pitch.

- A method of creating sound is to blow across the top opening of a straw while sealing the bottom opening. This can be done by placing the bottom of the straw in a container of water.
- As the air passes over the opening, changes in air pressure cause air to move in and out of the straw rapidly, creating vibrations or sound waves.
- Moving the straw up and down in the water changes the distance the air travels inside the straw. The shorter the distance, the higher the frequency.

ACTIVITY - You Reed to Hear This

Materials
- Straw
- Scissors

Instructions
- Squeeze one end of the straw between two fingers, making it flat.
- Using scissors, make a small cut on both of the corners of the straw to form a reed.
- Blow into the straw, moving the end in and out of the mouth while applying light pressure with the lips or teeth.
- It may take a few attempts, but you’ll soon hear a sound created as the reed begins to vibrate.
- Experiment by alternating blowing and sucking air into the straw.
- Cut straws to different lengths to produce high and low frequency sounds.

OBJECTIVE
To design an experiment to explore how size affects frequency

NEXT GENERATION SCIENCE STANDARDS

Grade 1
1-PS4-1

Grade 3
3-PS2-1, 3-PS2-2, 3-LS4-2

Grade 4
4-PS3-1, 4-PS3-2, 4-PS3-3, 4-PS4-1

Middle School
MS-PS2-2, MS-PS3-5, MS-PS4-2

KEY DEFINITIONS

Frequency: The number of waves, such as sound or electromagnetic energy, that pass a fixed point each second.

Pitch: Highness or lowness of sound.

Reed: A thin flexible strip fastened at one end to the mouthpiece of a musical instrument and set in vibration by an air current.

Sound Wave: The energy of vibration that causes the sensation of hearing.
You will create sound using straws. As the air passes over the opening, changes in air pressure cause air to move in and out of the straw rapidly, creating vibrations or sound waves. You will make different noises with different frequencies or pitch.

Instructions
- Squeeze one end of the straw between two fingers, making it flat.
- Using scissors, make a small cut on both of the corners of the straw to form a reed.
- Blow into the straw, moving the end in and out of your mouth while applying light pressure with your lips or teeth.

It may take a few attempts, but you’ll soon hear a sound as the reed begins to vibrate.

Experiment by alternating blowing and sucking air into the straw.

Make a hypothesis of what different sounds a long and short straw will make.
I hypothesize or predict that the shorter straw will produce a _____________ pitch sound while a longer straw will produce a _______________ pitch sound.

Test #1
Use the full length of your straw and blow on the straw until you make a sound. If you are not hearing a sound, change the pressure of your teeth and lips and move the straw around.

Results: The long straw made a _______________ pitch sound.

Test #2
Now cut the straw shorter and follow instructions above.

Results: The short straw made a _______________ pitch sound.

Other observations ________________________________________________________________
________________________________________________________

Was your hypothesis correct? What is your conclusion? _________________________________