

# My Straw Oboe

## Simple STEM Activities You Can Do at Home

<b>Purpose:</b>	The purpose of this activity is to construct a simple straw oboe that vibrates to produces sounds of different pitches (frequencies).
<b>Standard:</b>	<p><b>S4P2. Obtain, evaluate, and communicate information about how sound is produced and changed and how sound and/or light can be used to communicate.</b></p> <p>a. Plan and carry out an investigation utilizing everyday objects to produce sound and predict the effects of changing the strength of vibrations.</p> <p><b>S8P4. Obtain, evaluate, and communicate information to support the claim that electromagnetic (light) waves behave differently than mechanical (sound) waves.</b></p> <p>d. Develop and use a model to compare how light and sound waves are reflected, refracted, absorbed or transmitted through various materials.</p>
<b>Materials:</b>	2-3 straws, scissors, ruler.
<b>Procedures:</b>	<ol style="list-style-type: none"> <li>Using a scissors or ruler, push down on one end of the straw to flatten.</li> <li>Carefully cut the same end of a straw into a long narrow triangle about 1 inch long. The two triangles will serve as reeds for your oboe.</li> <li>Blow into the straw and try to get it to vibrate. Try different positions as needed. If the oboe won't vibrate, try cutting a second straw.</li> <li>To modify the pitch, add another skinnier straw into your straw oboe to lengthen it. Blow into the now longer oboe and compare the pitch.</li> <li><b>Optional: With parental supervision</b>, while blowing into the oboe, use a scissors to cut some pieces off the straw and observe the changes in pitch.</li> </ol>
<b>Science Behind It:</b>	<p>When objects vibrate, they produce waves that travel through the air. When these waves enter the ear of the listener, they can be interpreted as sounds. Musical instruments vibrate in different ways to produce a variety of appealing sounds. The faster they vibrate, the more waves per second the instrument produces and the higher the pitch (frequency) of the sound. Some instruments like a flute or piccolo can produce very high pitches while other instruments like a tuba or trombone can vibrate at much lower frequencies.</p> <p>With <b>reed</b> instruments the sounds are made when the air travels across a thin piece of wood called a <b>reed</b>. The <b>reed</b> vibrates making the sound. Some instruments like the clarinet have one <b>reed</b> while others like the oboe use two <b>reeds</b> to vibrate against each other.</p> <p>The pitch of our straw oboe will depend on the volume of air that is vibrating inside of it. A longer oboe with larger volume vibrates more slowly, producing a lower <b>pitch</b>. A shorter oboe with a smaller volume vibrates more quickly, producing a higher <b>pitch</b>. With real oboes, the player can also <b>change the pitch</b> by opening and closing holes along the instrument's length.</p>
<b>Questions to Ask:</b>	<ol style="list-style-type: none"> <li>Explain why your oboe was able to vibrate and produce sound.</li> <li>What happened to the pitch or your oboe as you made it longer?</li> </ol>