

## STEAM Recipe

<b>Theme</b>	<b>The sound in wind instruments</b>
<b>Target Age Group</b>	10 year olds
<b>Duration of Activity</b>	Minimum of 30 minutes
<b>Resources/Materials Needed (exact details required)</b>	<ul style="list-style-type: none"> <li>• wineglass</li> <li>• plastic pearl (with a hole for a piece of rope)</li> <li>• a cork</li> <li>• yarn thread or rope</li> <li>• water</li> <li>• tape</li> </ul>
<b>STEAM Components</b>	Science, Arts

<b>WHY</b>	<b>Goals/Objectives/Targets/Aims</b>	<ol style="list-style-type: none"> <li>1. The children discover what standing waves are.</li> <li>2. The children can work in groups.</li> <li>3. The children can combine the science with the arts.</li> </ol>
<b>HOW</b>	<b>Method/Activities (i.e step by step instructions for teacher)</b>	<p><b>Pretalk</b></p> <p>The teacher talks about instruments and especially wind instruments. Who is playing an instrument? What do you know about an instrument?</p> <p>The teacher can also show some instruments. Possibly the teacher puts pictures of instruments on the blackboard. The children have to search for similarities. They will find wind instruments, string instruments, plucked string instruments, percussion instruments ...</p> <p><b>Experiment</b></p> <p>The children works in groups of 3 – 4:</p> <ol style="list-style-type: none"> <li>1. Cut a piece of 10cm of the yarn thread.</li> <li>2. Attach the yarn thread to the pearl.</li> <li>3. Attach the yarn thread with the pearl to the wineglass with tape. The pearl has to be attached to the outside of the glass.</li> <li>4. Fill the wineglass with water.</li> <li>5. Hold the wineglass with one hand at the bottom of the glass (the foot of the glass). Make circles with a wet finger (other hand) at the edge of the glass. What do you hear? What do you see?</li> </ol>

# space

STRATEGIC PARTNERSHIP

AGENTS OF CHANGE IN EDUCATION

You will see that the pearl taps on the glass. So there are some vibrations. You created a sound.

The glass moves (up and down), without us seeing that. Children will feel it when they are holding the glass or put their fingers on it.

The vibrations in the glass make a standing wave. These wave makes the sound. The vibration is also in the air. It makes your eardrum vibrate in your ear. So you can hear a sound.

6. Put a piece of the cork in the wineglass.
7. Make again circles with a wet finger. What do you hear? What do you see?



The children will see that the cork stays in the middle of the glass (where you have put it).

You placed the cork in the middle. A standing wave is a combination from two running waves. On the image below you can see two running waves. If the waves fit nearly together, the wave crests and wave valleys keep going up and down on that place. So the cork stays in one place. You don't have a running wave at the moment and that's the reason why we talk about a standing wave.

Modifications:

You could try moving the cork to a different place in the wine glass and see what happens.

You could try using a different type of glass and see what happens.

You can also make a comparison with running waves. You can make a running wave using a rope held between two people.

<p><b>DID IT WORK</b></p>	<p><b>Reflection/Evaluation (where applicable)</b></p>	<p>The children can check each other's work to see if everyone has done it right. They can explain to each other what they have found.</p> <p>The comparison can also been done as a evaluation.</p>