SUITE SCIENCE

Membranophone

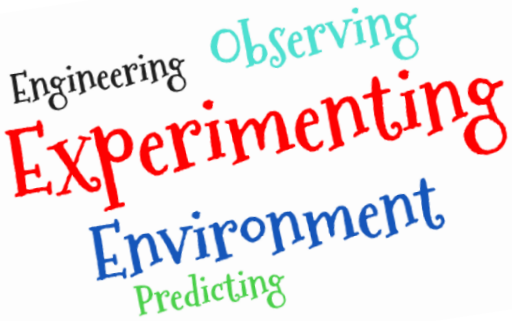
CLASS: 4th- 6th | Demonstration | SESE (SCIENCE)

Learning Objectives - WALT (We are learning to…)

1. Explore sound and harmonics
2. Design and construct your own musical instrument
3. Explore the different properties of materials

Curriculum links
Science

- Stand – Energy & Forces, Sound
- Explore how sound travels through materials



Teaching Methodologies

- **Talk and Discussion** - listening, questioning
- **Collaborative/Cooperative Learning** - group work
- **Active Learning** – Hands on learning experience with real life examples.
- **Skills through Content:** observing, predicting, describing, recording, classifying.

That's sound!

Sound is made up of vibrations. These are called sound waves and they are what we hear. These sound waves are formed by objects shaking back and forth. They travel through air, water, and solid objects as vibrations. When they reach our ears, these waves make our eardrums vibrate. This sends signals to the brian and it figures out what we're listening to.

Membranophones are musical instruments that make sound from the vibrations of stretched materials. Drums are a good example of a membranophone.

This experiment which was originally put together by Exploratium in San Francisco was brought to Ireland as part of the European Tinkering project. The idea of this project is that you build your own devices / inventions and then you keep messing with them in order to make new things.

For the membranophone Tinkering might mean changing the length of the straw, tube or even trying different materials entirely. Once you are producing vibrations you will be producing sound. Changing the types of materials or the length of things will change the shape of the vibrations produced and therefore change the sounds. For instance, if you shorten the pipe, the higher the pitch of the sound. You should muck about with you constructions and see what new inventions you can come up with.

How do you membranophone?

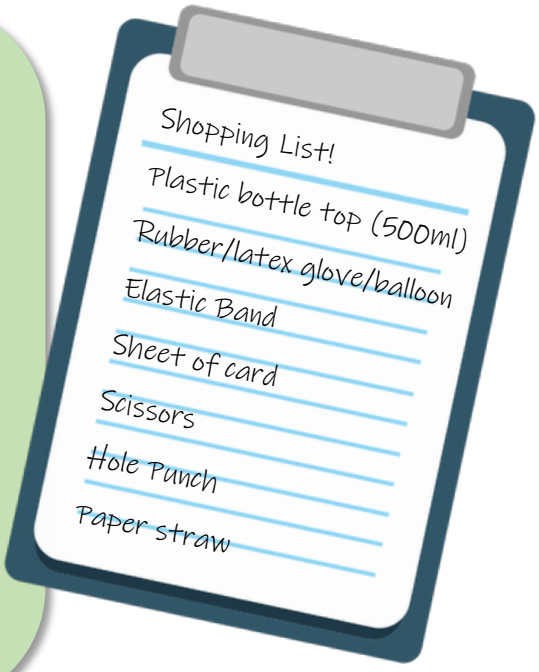
Cut the bottle in half using scissors, get help from an adult doing this. Be careful as the edges can be sharp

Take the top half of the bottle and use your hole punch to punch a hole as far from the cut edge as you can towards the mouth of the bottle. Put the straw through the hole to test it for size.

Cut the palm out of the glove - this is your membrane. Stretch it over the opening you cut on the bottle, making sure that the hole you punched in the side doesn't get hidden by excess material.

Secure the membrane to the bottle with an elastic band. Wrap the band around the bottle several times and make sure its springy.

Roll a piece of card into a tube, making it as tight and straight as possible. Let go of the paper tube when it barely touches the bottom of



REFER BACK TO YOUR **WALT** GOALS AND HAVE THE CHILDREN SHARE WHAT THEY LEARNED TODAY AS WELL AS RECAPPING ON ANYTHING THEY MISSED!

Fondúireacht Eolaíochta Éireann
Dá bhfuil romhainn
Science Foundation Ireland
For what's next
UCD DUBLIN
Insight
SFI RESEARCH CENTRE FOR DATA ANALYTICS
SIMPLY SCIENCE