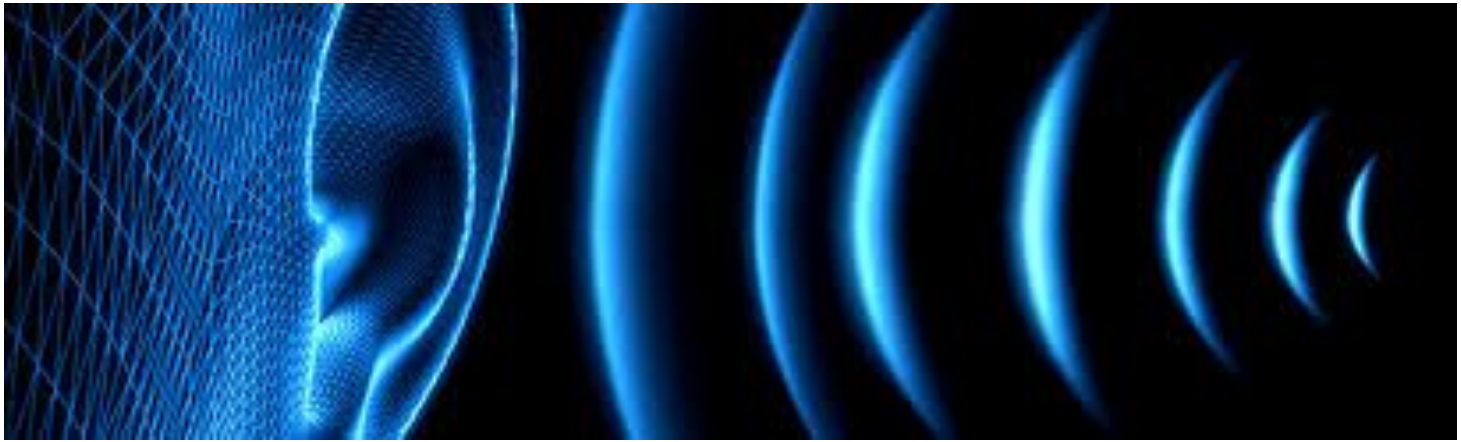
# Sound Waves: Can We See Them?

# Abstract

This project investigated the question “Can you see sound waves?” Using the controlled variables of a speaker, bucket and plastic wrap we tested different materials to see if we could observe them in many ways.

# Big Question

Can we see sound waves?



# Research: Source 1 Chrome Music Lab

- High notes make the particles move quickly and sound moves through them fast.
- Low notes make the particles move slower.
- Low pitch didn’t hurt our ears as much.
- High pitch hurt our ears a lot.

# Research: Source 2 Epic Book- The Science of Sound Waves

- Light is energy you can see, heat is energy you can feel, and sound is energy you can hear with your ears.
- Sounds are produced when materials vibrate.
- You cannot see sound waves but if you could they would ripple like throwing a stone in a pond.

# Research: Source 3 Nasa.gov

- You can hear them but not see them.
- Airplanes make sound and when they travel we can graph the sounds.
- Waves are created when energy is transferred through a medium like water or air.

# Hypothesis

No, we do not think that you can see sound waves. We think this because we can’t see our voices when we talk. We have also already learned some information about sound waves at the beginning of the school year.

# Materials

- Big bucket (big enough to place a speaker inside)
- Plastic wrap
- Tape
- Sprinkles
- Balloon
- Water
- Speaker
- Youtube video to play the sound.

# Procedures

1. Research
2. Put a wireless/ bluetooth speaker into a big bucket.
3. Tightly wrap plastic wrap over the bucket and tape it down so that there are no wrinkles.
4. Put the first variable down on the plastic.
5. Press play on the sound for the speaker.
6. Observe.
7. Repeat steps 4-6 for the rest of the variables (sprinkles, water, and balloon)

# Variables

Controlled Variables: The controlled variables were the bucket, plastic wrap, speaker and the youtube video.

Changing variable: The variables we used were sprinkles, a balloon, and water. These were the materials we put on top of the bucket.

# Observations

Sprinkles: The higher the volume the higher the sprinkles went.  Higher the pitch the quicker the vibrations (the sprinkles moved faster).

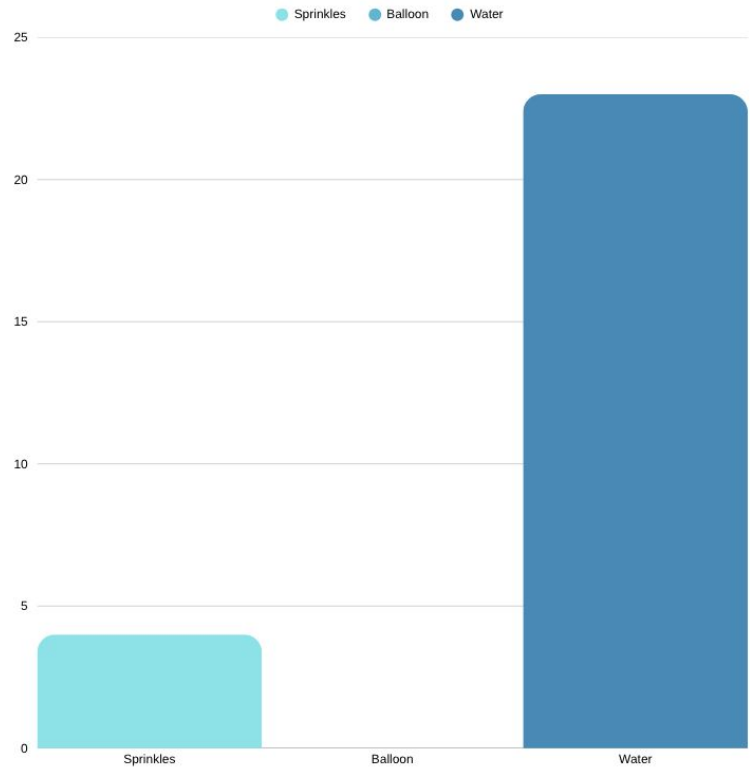
Balloon: The vibrations went through the balloon into our hands and we could feel it. We felt it in our hands and our arms.

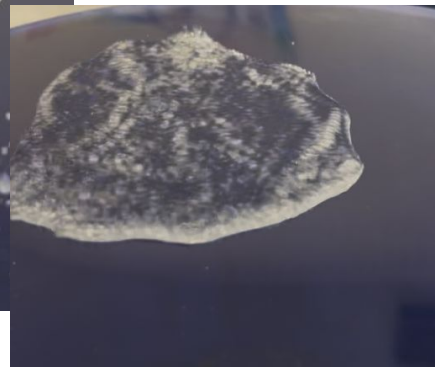
Water: It looked like we through a rock in a pond, we could see ripples in the water. More ripples with higher pitch. High volume it made the water jump higher.

# Graphs/Data

We voted to see who thought they could see sound waves with each of our variables. 4 students felt they could see sound waves with sprinkles, no one thought we could see sound waves with the balloon, and everyone thought they could see waves within the water.

## Could you see sound waves?



# Conclusions

We could see the sound waves in specific objects like liquid. We don’t see the sound waves in a way that you would expect. We see the effects of the vibrations on matter. If we were to do this experiment again we would make sure not to change change the volume of the speaker during the experiment. We would also like to test other materials like sand, soap, juice, and more. The balloon didn’t work out that well because it kept falling off the bucket.