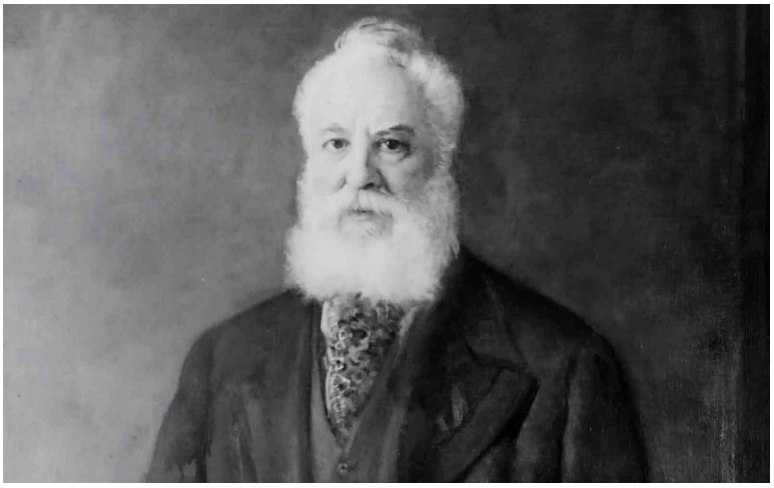
Alexander Graham Bell

We would like you to research the famous scientist Alexander Graham Bell.

Could you find out:

- When he was born and when he died
- What he invented
- Where he lived
- Any other interesting facts.

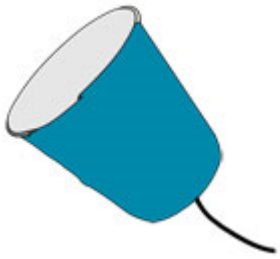


You can present your project however you wish. You could do a PPT, poster or anything else you wish to do.

We can't wait to see all of your completed projects about Alexander Graham Bell!

Making your own phone!

String Phone Project



Step back in time and use some old fashioned technology to make a string phone while learning about sound waves with this fun science project.

All you need is some string, a sharpened pencil and a few paper cups to get started.

Make a String Telephone

What you'll need:

- 2 paper cups
- A sharp pencil or sewing needle to help poke holes
- String (kite string and fishing lines work well)

Instructions:

1. Cut a long piece of string, you can experiment with different lengths but perhaps 20 metres (66 feet) is a good place to start.
2. Poke a small hole in the bottom of each cup.
3. Thread the string through each cup and tie knots at each end to stop it pulling through the cup (alternatively you can use a paper clip, washer or similar small object to hold the string in place).
4. Move into position with you and a friend holding the cups at a distance that makes the string tight (making sure the string isn't touching anything else).
5. One person talks into the cup while the other puts the cup to their ear and listens, can you hear each other?

The Science behind the string telephone

What's happening?

Speaking into the cup creates sound waves which are converted into vibrations at the bottom of the cup. The vibrations travel along the string and are converted back into sound waves at the other end so your friend can hear what you said. Sound travels through the air but it travels even better through solids such as your cup and string, allowing you to hear sounds that might be too far away when traveling through the air.

More about phones:

Landline telephones feature microphones that convert sound waves into electric currents that are then sent through wires and converted back into sound waves by an earphone inside the telephone at the other end. Modern mobile phones use radio waves (part of the electromagnetic spectrum that includes microwaves, infrared, visible light, X-rays and others) to communicate with base stations located throughout telephone networks.

Phones have come a long way since Alexander Graham Bell was awarded the first electric telephone patent by the United States Patent and Trademark Office back in 1876. Today's cell phones are a marvel of modern technology, featuring not only the ability to make phone calls but to also surf the web, play music, view documents and much more.

Follow up experiments/activities

1. What else could you use to make your telephone? Could you try empty and clean tins, funnel and tubing, plastic rather than paper cup? Which carries the sound the best?
2. Now, investigate how to soundproof a room. Imagine you are in a band and have had complaints from neighbours that it is too noisy. You will need to play some music and place the music player in a box. Record how loud the sound is when the music is playing but with no sound proofing. Now try the different materials. Choose a material and wrap the box in a single layer of the material. Measure the volume of the music now. Continue testing all the materials and measuring or listening to how loud the sound is with each one.

3. Make a straw pan flute. This will teach you all about how length can affect pitch. It is also a fun instrument to make.

You will need: at least 9/10 straws, scissors and clear tape.

What to do:

1. Take the straws and line them up side-by-side and cut them at an angle at the top.

2. Tape the straws together to make a pan flute.

3. Instruct your child to blow through the straws. Which straws make higher and lower pitches? Why?

Feel free to use more straws and experiment with different lengths to produce different pitches and sounds! Ask your child to explain what happens to the sound the shorter a straw is cut, and create double pan flutes to make harmonies to further explore how length alters the pitch.

More ideas

4. Listen to Sounds Travel Underwater

Sound travels well through air, but it travels even better through water!

You will need a bucket filled with water, a large plastic bottle, 2 knives and scissors or sharp knife to cut the bottle.

What to Do:

1. After filling the bucket with water, take a sharp knife or scissors and carefully cut off the bottom of the plastic water bottle. Please ask an adult to help you with this. Be sure that the cap is taken off of the bottle.

2. Place the bottle in the water so that the cut bottom is in the water. Now put your ear to the top of the bottle to listen.

3. Using the knives, clang them together to make a sound, but do this in the bucket as you're listening. What do you hear? You might need a friend or grown up to do this while you listen.

You may have noticed that the sound of the clanging is loud and clear. Sound travels faster through water than in the air, and animals that live underwater are able to hear sound clearly.

5. See the Sound

Sound vibrations travel through air, water, and even solid objects, but it's not possible to see the waves. What if we could see the waves in another way? This science of sound experiment makes sound more visible by forcing objects to react to the sound vibrations.

You will need: an empty clear mixing bowl, clingfilm, a large rubber band and sugar crystals- Sugar in the Raw works great, or make sugar crystals in another science experiment!

What to Do:

1. Wrap a sheet of cling film over the mixing bowl so that it's taut, and secure with the large rubber band. Be sure that the cling film is tight and does not sag.

More ideas continued

2. Place a few of the sugar crystals on the top of the plastic wrap, placing them in the middle of the wrap.

3. Get close to the sugar crystal and say something loudly! What happens to the crystals? Do they move?

4. Experiment with louder and softer words or sentences to watch the sugar crystals react to the sound vibrations!

While your child might think it's his or her breath making the crystals jump and move, but it's actually the sound vibrations. Try different sounds besides ordinary speech and see how the crystals come to life!

We hope you have lots of fun conducting some of these sound Science experiments. Remember to share what you have been up to on the Year 5 email address - year5team@stgeorgesschool.org.uk.