SASTA OLIPHANT SCIENCE AWARDS

SOUTH AUSTRALIAN SCIENCE TEACHERS ASSOCIATION

Prize Winner

Scientific Inquiry

Year R-2

Eden Owen

Belair Primary School

Clicking Experiment

By Eden Owen

Question

How loud are fingers when they are clicking? Do dry fingers click louder than wet fingers?

Predicting

I think a click with dry fingers will be 90dB. If your fingers are just a little bit wet and a little bit dry, I think it will be less, maybe 80dB. A click with wet fingers will be quiet, 20dB. The more wet your fingers are, the quieter it will be.

Change and Measure

I will change if my fingers are wet or dry.

I will measure the loudness of the click using my ears to hear if it is quiet or loud.

I will also use a sound measurement app on my mum's phone to measure the loudness in numbers (decibels).

To make it fair

- Don't talk so that you can hear what is going on.
- Each person has a turn in a pattern.
- You should click in the same spot, otherwise it is not fair if you clicked *here* (gestured close to ear) and *over there* (far from ear).
- We should click with the same hand each time, because one hand might be better at clicking than the other hand. I will use my right hand.

Equipment and materials

Method

1. Start with wet hands by putting them under the tap. Take them out of the water but don't dry them until you've clicked.
2. Click with your wet hand – make sure you use your right hand.
3. Listen to the sound to see if makes a sound or if it doesn't make a sound. If you don't listen, and you are busy talking, you won't know if it is loud or not.
4. Also record the sound on a phone and use a sound measurement app to find out how loud it is in decibels. Do 5 clicks to find the loudest because sometimes clicks don't always work. Write down how loud it is.
5. Then it is the next person's turn. They do the same thing so it is fair.
6. Next do that dry hand test. Do it the same as the wet hand test except your hands are dry. Make sure you click in the same spot.
7. The last test is the little bit wet and a little bit dry test. Wet your hands under the tap then dry them off a little bit but also leave them a little bit wet, then click and measure the loudness just like for the dry hands and wet hands.

Equipment

- Hands to click
- Water
- Ears to listen to how loud it is or how quiet it is
- A phone to measure the sound.

processing and analysing data

Results

Using my ears

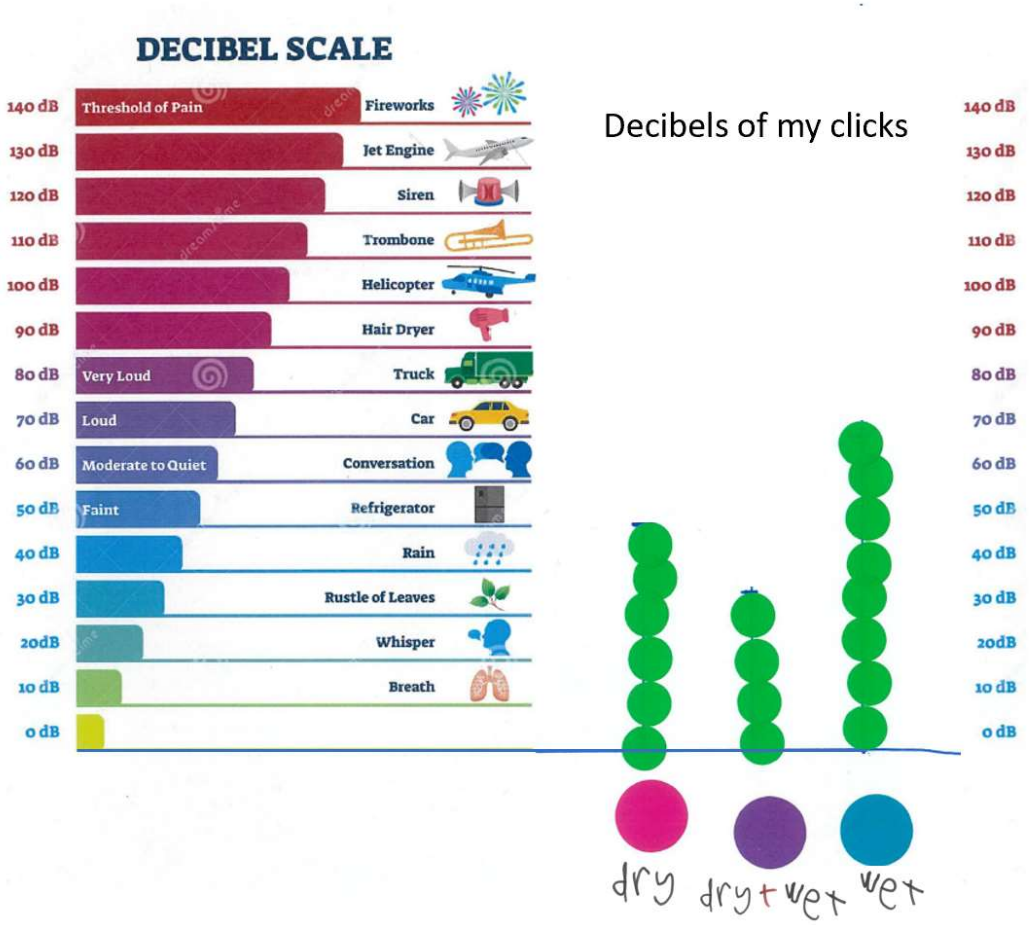
My Hands	How loud does it sound?
Wet hands	It's loud
Little bit wet, little bit dry	It's quieter
Dry hands	It sounds loud

Using the sound measurer

Decibels of Clicks

Eden	43	34	68
Emma	47	39	74
Sally	90	81	56
Piper	48	53	72
Chris	72	73	61

Graph



Analysis

My Clicks

Clicking with dry hands is a bit louder than rain. It looks like the line is near the rain, but there is one sticker above the rain line, so it is almost as loud as a fridge.

The wet hands line of stickers is longer; it's like people talking. This is above the fridge so clicking with wet hands is louder than clicking with dry hands.

The wet-and-dry hands line goes up to swaying leaves. It is the quietest. I don't know why it is the quietest.

Everyone's clicks

Me, Mummy (Emma) and Piper all had wet hands as the loudest. When your hands are wet, they are slippery-er, so they can move faster. But we must have had a good grip to get such a loud click!

But Chris and Sally had wet hands the quietest. Chris had 'little bit wet, little bit dry' as the loudest. Sally had dry hands as the loudest.

How could my investigation be improved?

My experiment is a great one. But some people might have clicked a little bit further or closer to the phone. If you click further away it will be quieter because it has further to travel. And your hands move a bit when you click. We should have measured how far away the click was using the numbers on a ruler. We would hold the ruler next to the phone and click from '1', and check how far away your hand moves when you click. It might end up at '8' or '15'. The more you practice the better you get, so then you can make sure it is the same every time.

We also did some experiments at home and some at my Grandpa's house. We should do it at the same house to make it more fair.

Why is this information useful?

This information is useful because than you can teach it to another kid who is little. And now I know that if I want to click really loud, I need wet hands.

What other related questions could be investigated further?

Would it be louder if you clicked into a trumpet? Would it be louder to click with cold hands? Or hot hands? Right now my hands are not cold and not hot.

OSA RISK ASSESSMENT FORM

for all entries in (✓) ☐ Models & Inventions and ☑ Scientific Inquiry

This must be included with your report, log book or entry. One form per entry.

STUDENT(S) NAME: Eden Owen ID: 0040

SCHOOL: Belair Primary School

Activity: Give a brief outline of what you are planning to do.

I will change if my fingers are wet or dry. Then I will click.
I will measure the loudness of the click using my ears to hear if it is quiet or loud, and also with a sound measurement app on my mum's phone.

Are there possible risks? Consider the following:

- Chemical risks: Are you using chemicals? If so, check with your teacher that any chemicals to be used are on the approved list for schools. Check the safety requirements for their use, such as eye protection and eyewash facilities, availability of running water, use of gloves, a well-ventilated area or fume cupboard.
- Thermal risks: Are you heating things? Could you be burnt?
- Biological risks: Are you working with micro-organisms such as mould and bacteria?
- Sharps risks: Are you cutting things, and is there a risk of injury from sharp objects?
- Electrical risks: Are you using mains (240 volt) electricity? How will you make sure that this is safe? Could you use a battery instead?
- Radiation risks: Does your entry use potentially harmful radiation such as UV or lasers?
- Other hazards.

Also, if you are using other people as subjects in an investigation you must get them to sign a note consenting to be part of your experiment.

Risks	How I will control/manage the risk
If I spill some water on the floor then people might slip.	I will use paper towel to wipe it up. I will clean it up straight away

(Attach another sheet if needed.)

Risk Assessment indicates that this activity can be safely carried out

RISK ASSESSMENT COMPLETED BY (student name(s)): Eden Owen

SIGNATURE(S): Eden Owen

☑ By ticking this box, I/we state that my/our project adheres to the listed criteria for this Category.

TEACHER'S NAME: Tim Verry

SIGNATURE: _____ DATE: 29/6/23

21 February

My science teacher's name is Tim. My mum got an email from Tim about the Oliphant Science Awards and she told me about it.

I want to do an experiment. I think I can do an experiment with food colouring in water and mix different colours together like I did one time at kindy last year. Mummy said it was a good suggestion but maybe we should keep thinking to see what other ideas I have.

18 March

We were driving to swimming and I was listening to a song and clicking my fingers. I was wondering if clicks are louder or quieter if your hands are wet. I think that when your hands are wet, it would be like a slippery dip and your finger would slide down your thumb like 'weeeeee!' which would make it hard to click. Mummy said 'that's an interesting question. Maybe we could do an experiment!' But I'm going to see if I have any other ideas.

15 April

I watched some videos on Mummy's laptop to learn about sound and how it can be measured. I learnt:

- Sound can be measured using a sound measurement on a phone. The loudness can be measured in decibels
- Car horns are loud – 90dB
- Aeroplanes when they are about to go in the sky are even louder – 120dB.
- Jackhammers are also loud.
- A buzzing bee is quiet.
- Sound travels faster in water, because in the sky it has no things to push it.

16 April

Mummy helped me do my Risk Assessment.

17 April

I started my experiment today.

To click you have to start with your fingers like a beak and slide the top of the beak to your palm. And slide your thumb the other way at the same time. The sound is made when your finger hits your palm.

Mummy read me the rules on the Oliphant website and I answered the questions. Mummy typed the words I said as I am still learning how to read and spell.

Mummy and me did our clicks to get our results.

20 April

At family dinner I got Grandma, Aunty Sally and Piper (my sister) to do the experiment too. I wrote down their numbers on some stickers. Pink means dry hands, purple is 'little bit wet, little bit dry' and blue is wet hands.

26 April

Mummy helped me find a picture of the decibel scale and I used some stickers to make a graph to show the decibels of my clicks.

I finished my experiment. I want to do another one!

References

Video: 'Sound for kids - Loudness, pitch and timbre'
https://www.youtube.com/watch?v=9QSwD73ujPI

Video: 'Measuring Sound with a decibel meter'
https://www.youtube.com/watch?v=C4PDTkvZSW8

Website: 'Where is the noise?' https://www.noisyplanet.nidcd.nih.gov/kids-preteens/where-is-the-noise

Image: 'Decibel Scale illustration'
https://www.dreamstime.com/illustration/decibel-scale.html

App used to measure how loud the clicks were: 'Sound Meter dB' Coocent Ltd