



Prize Winner

Science Investigation

Year 3 - 4

Jack Sellwood

Vale Park Primary School



Jack Sellwood - Scientific Report

1. Questioning and Predicting

I am doing this project to investigate “How does water flow affect the number of microorganisms living in a water body?”. I will look at running and still water. Running water is water that is flowing or has water coming in and out. Still water is water that is in an area that doesn’t have flow or movement in and out, only in.

The things in the water are called microorganisms, and they are tiny and are not animals or plants. There are three different types called: bacteria, fungi and virus.
(BBC, 2026) (Science Kids, 2023)

I predicted that there will be more microorganisms in the stagnant water because they can’t float away or get hit by debris in the water. I also thought there would be more chance of them growing and multiplying if they were not being moved around so much.

2. Planning and Conducting

At first, I thought which places I will get water and then I thought of the lake, river, drain and pond. I could get all these samples on the same weekend while we were at my Grandparents house.

I would get a small sample from each water source and then carry out the investigation straight after. It was important to carry out the investigations straight away.

I needed to plan a fair test, which means only one variable. The variable I have is the water source. I kept the day I collected the water the same, collected it from the deepest point each time and used the same equipment.

Method

1. Get equipment ready. Place paper under petri dish. Put microscope on to the phone.
2. Get jar and go to water source.
3. Use jar to scoop water from deepest spot you can reach.
4. Fill syringe with water from jar.
5. Put two-three drops of water on the petri dish.
6. Turn the light on the microscope.
7. Place the 200x microscope on the drop of water.
8. Take a photo and video of the sample.
9. Return water sample to water source.

3. Equipment and materials

- Petri dishes
- Syringe
- Mobile phone
- Microscope – up to 200x zoom
- 2 Empty and clean jars

- Plastic container
- White paper
- Water samples

4. Processing and Analysing Data and Information

At each water source I used a jar or container and scooped out some water from the bottom of the water source, just above the bottom. I then had to use a syringe to take a small sample of water out the jar or container. We then put a small piece of white paper underneath the Petri dish – this would allow us to see anything in the water more clearly. Once a small sample of water was on the base of the Petri dish, I used the microscope attached to a phone camera to look at the sample. We had to spend a little bit of time trying to get this in the right place and then adjusting the settings so that it focused on the water sample.

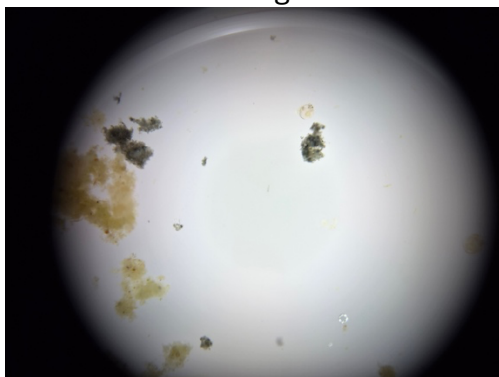
I used videos and photos of the sample to count the number of microorganisms in the water sample.

Results

Pond

This was a small pond at my grandparents' house. This was stagnant water as there was no pump

We found 1 microorganism



Pond sample 200x zoom

Drain

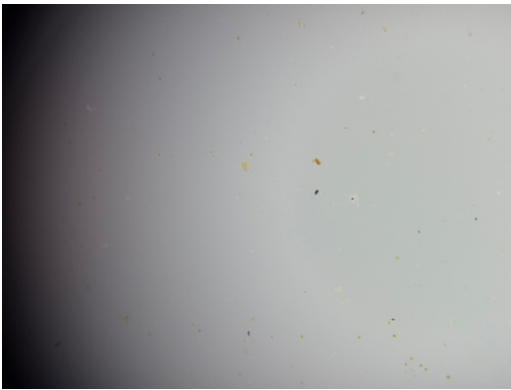
This was stagnant water

We found no microorganisms in the sample



Lake –

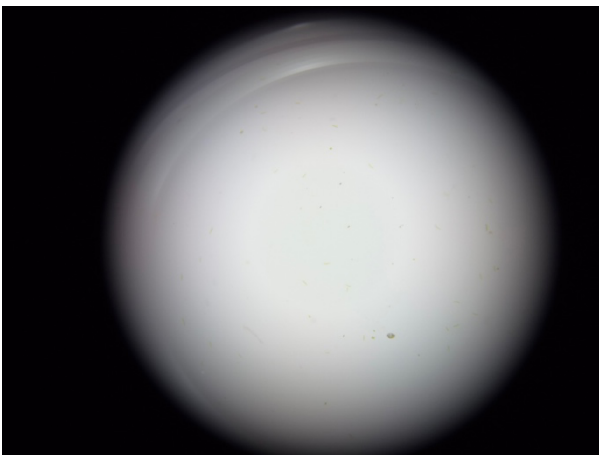
Lake Drain sample 200x zoom
This had twenty-eight microorganisms



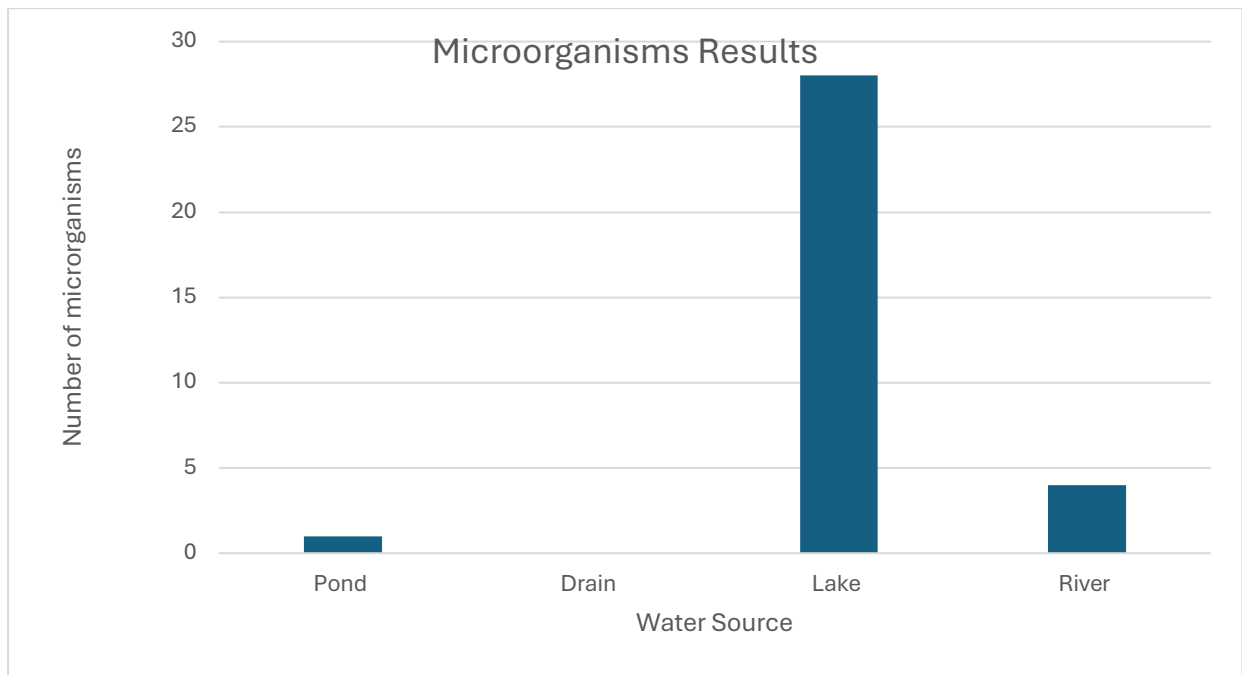
Lake sample 400x zoom

River – River Murray (Kingston)

This had four microorganisms



River sample 200x zoom



After carrying out the sample tests at all the locations, I was really surprised by the results. The Lake had the most microorganisms, and it was interesting to see them all. They were all different types, some were slow, some were fast one. One was so fast we could barely see it, and one was so slow we could see its eyes, how it moves and its colours.

5. **Evaluation**

Based on the results from my water samples I discovered that water sources that are flowing have more microorganisms. This was different to my prediction. If I did this again, I would get more water samples to test. I also want to investigate if temperature impacts the amount of living microorganisms.

6. **Support**

I would like to thank my Mum and Dad for helping me to my science investigation. Mum helped me learn how to use the microscope and Dad drove me to the places to collect water. Both Mum and Dad also helped me format my information and showed me how to put my data into a graph on the computer. Mum also helped me write the bibliography using Microsoft Word References.

Word count: 798 words

Jack Sellwood Log Book

21st of April

One day in summer we went for a walk, and I said to my mum I wonder what things live in the stream in different seasons.

I wondered if the temperature is making more or less things come into the stream.

To find out I need a microscope, jar, thermometer and something to record on.

I will go there once a week and I will need to ask my mum and dad to drive me there.

I will need to measure and record the temperature of the stream.

Next I'll bring my jar and get some water on the walk from the stream and bring it home and use my microscope to see the things in the water.

My mum told me that it must be a fair test, and I don't know what it is, so I need to learn that first.

4th of May

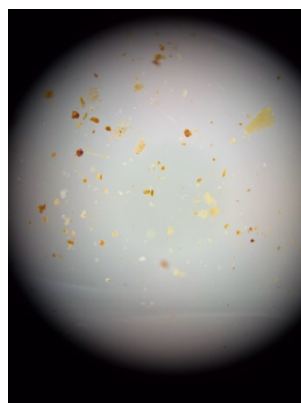
Today me and my mum researched what type of microscope we need to look at the different organisms in the water. We found a 200x microscope that fits on the phone. We bought this and petri dishes.

10th of May

I went to Old Mill Reserve and walked along River Torrens and got a water sample. I scooped some water in a container then filed the petri dish and put the lid on the petri dish. Then I used my mums phone to use the microscope. I thought the water would be dirty but it was crystal clear and it couldn't focus. I tried to use different colour lights on the microscope but that didn't work ether. My mum helped me but it still didn't work so we went home. I was surprised that the water sample looked clear and clean because the river looked brown and dirty. I noticed that the water was flowing quite fast and I wondered if that affected the organisms living in the water.

16th of May

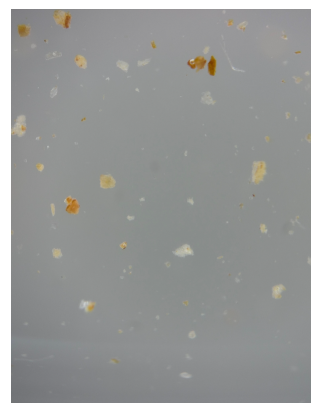
Today I practised how to use the microscope. First I tested on the couch, floor, wall, table and a blanket. Next we mixed some garam masala and water . I used a syringe to put two drops of the mixture on a petri dish, it was tricky lining up the microscope with the water. I practised Zooming in and out, taking pictures of different bits of garam masala and I practised how to focus. I used a piece of white paper so that we don't see the table and lose the bits of garam masala since our table is brown and the garam masala is brown to. Now I know how to look at the water with our microscope.



200x Zoom



400x Zoom (2x zoom on phone)



600x Zoom (x zoom on phone)

3rd of June

The temperature has not changed and I thought that because it was winter so were not going to get any hot days so it will stay similar. I decided that I will change my investigation. I noticed the water we collected from last time was flowing and I couldn't see much in the water. I wondered if there would

be more in the water if it was flowing or still. Mum and Dad helped me change my question to “How does water flow affect the number of organisms within the water?”.

We are visiting my grandparents, and we thought it would be a good place to get water from different places. I learnt that a fair test needs everything to be the same except one thing. My thing staying the same will be where I get the water from. I will get all water samples from the bottom, on the same day, and use the same equipment. I think I will get 3 samples of flowing water and 3 of stagnant water.

I predict there will be more organisms in the stagnant water because they can't float away or get hit by stuff in the water.

7th of June

Today we were in the Riverland and I collected 4 water samples. I collected 2 stagnant and 2 flowing water samples with my Mum and Dad. The first sample I collected was in my Grandad's pond. He told me he normally has a pump in the pond but it has been broken for months so the water is stagnant. I went to the pond and reached to the bottom with a container. Then I got a syringe from my Granny and put a drop of the pond water sample onto the petri dish. With my mums help I put the microscope on the water drop to see the water organisms. That is when I found the first water organism, it was circle like with two black eyes, it was clear and it had something like bike peddles twirling around really fast and it was going round in circles. We took a photo and a video at 200x zoom. I also zoomed 2x on my mums phone, which means it was magnified 400x and took another photo and video. I then put the water back in the pond.

Next I collected water from a drain on in my Granny's garden. It was smelly and looked dirty and gross. I could see dead bugs in it. I thought I would find lots of organisms here. I did the same to collect my water sample and we found no organisms! I was surprised because it looked like it had lots of things in it.

My Dad took me to the Barmera Lake and I collected a water sample from under the jetty. I saw pelicans and even caught a shrimp. We used the microscope again and I saw lots of tiny small brown organisms moving around, they were so fast. They were a lot smaller and quicker then the one from the pond.

On our way home to Adeliade we stopped at the River Murray to get one more sample. I used the container to get to the bottom of the bank and we had to use the microscope on the side of the boat ramp. We saw even smaller organisms swimming around fast and one bigger one that was black moving slow.

We made sure to put the water samples back after we had finished every time.

Then we drove back to Adelaide.



I am collecting a sample from the pond.



I am using a syringe to squeeze water onto the petri dish.



I am collecting water from the drain.



I am collecting a sample from the Murray River.



Here I am squeezing water onto the petri dish. On the other one I am collecting water from the container with the syringe.

13th June

I did some research today. I found out that the things in the water are called microorganisms and that they are tiny and are not animals or plants. There are three different types called: bacteria, fungi and virus.

(BBC, 2026) (Science Kids, 2023)

I also read about different bodies of water and confirmed that bodies of water can be still or moving. (Kiddle Encyclopedia, 2025)

20th June

Today I counted the microorganisms in the videos I took.

In the pond there were one.

The drain had no microorganisms.

The lake had twenty eight. It was tricky to count them because they were tiny and Moving fast so I looked at it in different parts I also asked my mum to count to confirm it.

The river had four. I confirmed by counting two times and asking my mum.

21st of June

I have been typing my logbook as I go so today I read and edited this. I also worked with Mum and Dad to put my information into my scientific report, I needed help creating the graph in Word and formatting my work.

Bibliography

BBC. (2026). *What is a microorganism?* Retrieved from BBC Bitesize:

<https://www.bbc.co.uk/bitesize/articles/zsgtrwx#z72jfdm>

Kiddle Encyclopedia. (2025, October). *Body of water facts for kids*. Retrieved from

https://kids.kiddle.co/Body_of_water

Science Kids. (2023, October). *Microscopic Creatures in Water*. Retrieved from Science Kids:

<https://www.sciencekids.co.nz/experiments/microscopiccreatures.html>

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: Jack Sellwood ID: 0755-006

SCHOOL: Vale Park primary school

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

I am collecting water samples to
look for water microorganisms.

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
• touching dirty water. • falling in the water.	• washing hands. • Get an adult to help me.

(Attach another sheet if needed.)

Risk Assessment indicates that this activity can be safely carried out

RISK ASSESSMENT COMPLETED BY (student name(s)): Jack Sellwood

SIGNATURE(S): J Sellwood

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

TEACHER'S NAME: Dave Hern

SIGNATURE: [Signature] DATE: 22/06/26