

Observation Activity

In this week's Learning Together Tuesday, to celebrate heading back to school, we will learn about how scientists work and will make our own tools to carry out experiments much like they do! Are you ready to be a scientist? Let's get started!



What are Observations?

Observations are descriptions of what we see around us. Observations are very important to scientists; when we see how different parts of our environment react or behave under different circumstances, we have a better understanding of the world around us. Observations allow scientists to collect information and form questions, which is the very first and sometimes the most important step in the **Scientific Method**. The Scientific Method is a list of steps that scientists follow when they want to make a discovery. You, too, can follow these steps to think like a scientist!

First, scientists make observations and determine a question they would like to answer or a problem they would like to solve. After this, they gather information through reading about experiments others have done before them. They might find that someone has already answered their question, or has already tried to answer it. If they find that their question has not been completely answered yet, they make a guess about what they think is the answer to their question. This guess is called a **Hypothesis**. Scientists then do an experiment to see if their hypothesis, or guess, was right! When they do their experiment, they take note of their results. The results can also be called **data**. After they analyze the data, or figure out what their results mean, they share their findings or conclusions with others, telling them what they learned.

Today, our activities help with observation. Get curious to explore the world around you! As Albert Einstein, the famous scientist, said: "The important thing is not to stop questioning."



Activity 1: Water-droplet Microscope

Materials:

- ☼ Plastic cup
- ☼ Plastic wrap
- ☼ Rubber band
- ☼ Water
- ☼ Scissors
- ☼ Specimen(s)

Method:

1. First, use scissors to cut a hole in the side of the bottom of the cup. This does not have to be a neat hole; it just works as a space to slide the specimens into your microscope.
2. Stretch a piece of plastic wrap over the top of the cup and secure it with a rubber band.
3. Put your specimen in the bottom of the cup through the hole that you cut in the side.
4. Pour a little pool of water on the top of the plastic wrap.
5. Finally, look at your specimen through the water that you just placed on the top of the plastic wrap

Discussion:

What did you notice when you looked through the water? Was your specimen bigger? To understand why this happens, we need to understand a few things about lenses and light.

Scientists use lenses to observe different things up close. Some popular scientific tools that use lenses are microscopes, telescopes, and magnifying glasses. There are two types of lens: concave and convex. A concave lens curves inwards and a convex lens curves outwards.



For our water-based microscope, the water acts as a lens. One side of the water droplet is flat (the side lying on the plastic wrap), and the other is curved outward, towards your eye. This means that the water acts as a convex lens, because the surface of the water curves outwards from the middle of the water droplet. When light travels through a convex lens, or a drop of water, it bends inwards. This is known as **Refraction**. When all the light rays come together and are concentrated on a single point, whatever is located at that point appears bigger and brighter. In our water microscope, the point at which all the light came together was our specimen, and that's why it looked bigger to us!

Activity 2: Nature Journal

Materials:

- 🌀 Holepunch
- 🌀 String/Twine
- 🌀 Cardboard
- 🌀 Cardstock, several sheets
- 🌀 Art supplies to decorate cover (paint, stickers, markers, etc)

Method:

1. From the cardboard cut two pieces 10x12 inch for the front and back covers.
2. Decorate the front and back cover with any art supplies you have on hand!
3. Use a hole punch to punch 2 holes in the cardboard and the cardstock. You can use any kind of paper, but cardstock is the best option so that the paper is strong enough for watercolors.
4. Place the sheets of cardstock between the front and back covers, making sure that the holes you punched are aligned.
5. Finally, use twine or string to tie everything together for easy book binding, but make sure not to tie it too tightly because the pages will be difficult to turn.

Note: If you do not have cardstock and cardboard, you may simply fold several sheets of printer paper in half, creating a booklet, and staple them through the middle.

How to use a Nature Journal:

It's important for scientists to make notes about their observations, and you can do so in your nature journal! You can draw, write about, or explain what you noticed outside; you can also record any questions that you have, so that you can research them later. The possibilities are endless...but here are some ideas:

- 🌀 You can write down the date and time you were outside and draw what you see.
- 🌀 You can do monthly colour swatches where you can colour the page with the colours you see outside each month. You can then look over your drawings at the end of the year and see how the colours outside changed with the changing of the seasons.
- 🌀 You can draw what you saw under your water-droplet microscope!

We hope you have fun with these activities! We'd love for you to [share](#) your nature journal and microscope with us! Have a great week & stay curious!