



LABS

# The Makerspace Playbook

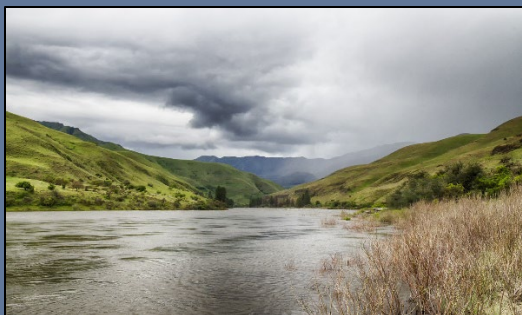
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## CAREER SPOTLIGHT: HYDROLOGIST

Hydrologists follow the water. That means water's occurrence in the atmosphere (rain and snow), on the surface (snow, ice, rivers, and bodies of water), and underground (aquifers). A hydrologist describes and predicts these water resources. They describe current conditions, like snowpack, water flows through rivers, and the amount of water in lakes and reservoirs. They also predict upcoming conditions, like melting snowpack and future droughts.

Hydrologists find employment throughout industry and government (city, state, and federal level). The average hydrologist makes around \$84,000 per year and has a master's degree. To become a hydrologist, you should have a good science background in high school and then complete a hydrology degree at a college or university. Because of Earth's growing population and finite water resources, hydrologists remain in demand. So, if you enjoy laboratories and working outdoors, hydrology might be a good career for you.

*-Dr. Paul Verhage, TMC Labs AmeriCorps member, Idaho Out-of-School Network*



## Spotlight on Nebraska: Valentine Community Schools

The summer of 2023 was our first summer program and we knew we wanted to make the most use of our TMC trailer. As we began planning, we knew there were a couple of things we needed to gather: more supplies and a lot of recyclables. With the extra space in the trailer, we were able to receive and gather our recyclable supplies. With all the recyclables, we were able to accomplish two of our big plans. Our first was to start each day with Maker Space time for each age group. Each day we had a STEM Challenge, in which we were able to use all the extra supplies and recyclables. This allowed us to offer students lots of different choices for the supplies each day.

Another great thing we were able to put into our summer program was the ability to complete City Build 2050. The students were given the option to work individually or as partners. We talked about what businesses we would not only need in 2050, but also what businesses we would want. With the supplies that we had on the TMC trailer and the ability to keep all the cardboard we could gather, our students were able to build an amazing view of what they want and think Valentine, NE would look like in 2050.

To be able to watch our student's imaginations go so far and watch them create was so fulfilling.

*~ Rachele O'Kief, After School Program Director, Valentine Community Schools*

## Give It A Try: Recycled Christmas Lights!

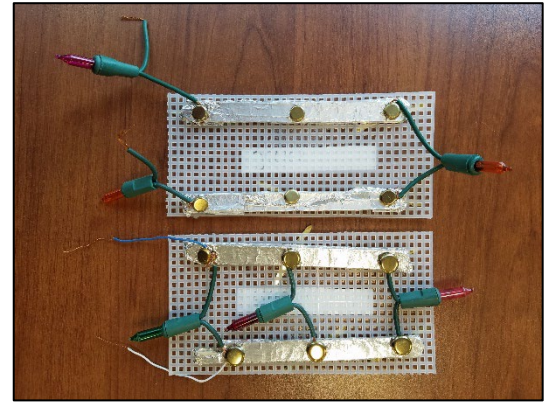
It's that time of year when there is an abundance of Christmas lights headed to the trash because they don't work. However, these strands of lights can still function to teach youth about circuits. The strands of lights can be cut up and the individual lights can be used in a variety of ways.

This basic lesson shows how to teach parallel vs. series circuits:

<https://iqa.airprojects.org/events/archive/2017-spring-conference/holiday-light-series.pdf>

Once youth are comfortable with how circuits work, they can use the lights to build circuits into popsicle stick structures and other types of builds.

*~Christine Wood, 4-H STEM Field Specialist – SDSU Extension*



## Put it Into Practice: Snow as a Phenomenon

Scientific phenomena are real-world events or occurrences that exemplify a scientific idea. Phenomena can help engage youth's curiosity and capture their attention. They can also help guide students to use scientific thinking, understand scientific concepts, and practice science and engineering practices. Educators can use phenomena as a theme for science units or as a starting point to guide scientific exploration through STEM activities or inquiry.

Snow as a scientific phenomenon could lead to explorations of cause and effect (temperature changes, states of matter, climate change), patterns (snowflake shapes and crystallization), or structure and function (plant and animal adaptations to winter). Youth could engage in science and engineering practices by doing experiments with snow water content, or making observations about weather patterns, snowpack, or animal tracks in the snow. The possibilities are endless! Embracing snow as a learning opportunity can help make the cold, dark winter months a lot more fun and engaging!

Links to some fun and useful info on phenomena and snow science:

- [Idaho Phenomena](#)
- [Snowflake Science](#)
- [Snow science lessons by the Winter Wildlands Alliance:](#)
- [Phenomena for NGSS](#)

*~ Amy Post, TMC Labs Coordinator, Idaho Out-of-School Network*

## Tips and Tricks: Snow Science

It's snowing, now what are you going to do for a science activity? Well, how about looking at snowflakes through a magnifying glass or microscope?

Start by spraying a clean glass microscope slide with hair spray. Then place the tacky slide outside until at least one snowflake lands on it. Cover the slide with a box to prevent other snowflakes from landing on it while the hair spray dries outside. After drying, the slide will have a cast of the snowflake that you can observe under a microscope. That's pretty cool (get it?)!

You can find more information at [THIS LINK](#).

*- Dr. Paul Verhage, TMC Labs AmeriCorps member, Idaho Out-of-School Network*

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