# Welcome to STEM Distance Learning!

Hello Lakers!

First, I want to tell you how much I miss seeing you in class! I hope you are all staying safe and healthy. Here you'll find lessons, video links, and book read-alouds. I know that some STEM supplies can be hard to find at home. You may use any material you wish to complete the STEM challenge task cards. It is most important that you keep practicing, inventing, and creating; no matter what materials you use! I'd love to see your finished work! You can email me any time you need help or would like to share something with me. Stay creative, friends!

Love,

Ms. Wheeler

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**Week 1: Light and Shadow**

# Tricks of the Light

These animals use light and shadow to stay alive.

## Black Heron

This bird wades in water, looking for tasty fish. There's just one problem. The water's surface acts like a mirror. Sunlight reflects off the surface and into the bird's eyes. The bird can't see past the reflections to the fish below.

But this bird has a trick. It spreads its wings into an umbrella shape. That blocks the light. It makes a dark shadow on the water's surface. The shadow helps it look into the water. When a fish swims into its shadow, the heron can see it and . . . **GULP!**

## Atolla Jellyfish

This jellyfish lives deep in the ocean—so deep that no sunlight reaches it. Creatures there live mostly in the dark. But when they need it, many can make their own light.

This atolla jellyfish uses light for protection. If a predator tries to eat it, the jellyfish flashes a ring of blue lights. The lights act like a burglar alarm. Instead of a police officer, the lights attract a large squid. The squid rushes to the rescue and eats the predator. The jellyfish is saved!

task card 1

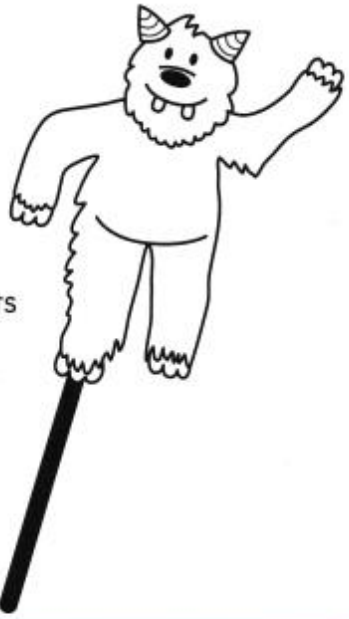
# Shadow Show

**Play with light and shadows to make a fun puppet show!**

**Materials**

- ★ cardboard
- ★ pencil
- ★ scissors
- ★ flashlight
- ★ "Shadow Show" data sheet

1. Make a shadow puppet: Draw a person, monster, or animal on the cardboard. Draw a handle from the bottom of the puppet to the bottom of the cardboard. Cut out your puppet.
2. Turn off the lights in the room. Turn on the flashlight. Hold the puppet between the flashlight and a blank wall. Does it make a shadow on the wall?
3. Experiment with your puppet and your flashlight. By moving them around, how can you do each of these "special effects"?
   - Make the puppet's shadow grow bigger.
   - Make the puppet's shadow shrink.
   - Make the puppet's shadow a thin sliver.
   - Make the puppet's shadow move without moving the puppet.
4. Use your shadow puppet and special effects to perform a short show.



Light and Shadow © Scholastic Inc.

Name: _____

# Shadow Show

Experiment with your puppet and your flashlight by moving them around. Record your observations below.

| | |
|---|---|
| How did you make the puppet's shadow grow bigger? | How did you make the puppet's shadow shrink? |
| How did you make the puppet's shadow a thin sliver? | How did you make the puppet's shadow move without moving the puppet? |

Light and Shadow © Scholastic Inc.

**Week 2: Ice**

This week we'll be experimenting with ice. What is the fastest way to melt ice?

Check out this video about how icicles form:

https://www.youtube.com/watch?v=eLBi0iCP1zg

# The Ice Hotel

**Would you stay in a hotel made of ice?**

There is a hotel in Sweden made out of ice and snow. It is called the Ice Hotel.

In winter, it gets very cold in Sweden. The river slows down and turns into ice. People take the ice from the river and mix it with snow. They call this mixture "snice." They make large blocks out of snice. Then they use the blocks to build the hotel. Even the beds are made of snice. The people who stay there sleep in special, warm sleeping bags.

Every spring the Ice Hotel melts. But in the fall, people build a new one!

**COOL FACT:**
How long does it take you to make one snowball? How about 700 million snowballs? That's how much snow is used to build the Ice Hotel!

task card 1

# The Great Melt Race

**When ice is a problem, what's the fastest way to melt it? Find out here!**

**Materials**

- ★ 5 ice cubes, same size
- ★ 5 zip-top plastic sandwich bags
- ★ ways to melt the ice: 1 tsp salt, something to crush ice with, what else?
- ★ permanent marker
- ★ "The Great Melt Race" data sheet

**1.** Put an ice cube in each bag.

**2.** How can you melt an ice cube fast? Try these:

- Leave one on your desk. (This is your "control." It shows how fast the ice will melt by itself.)
- Put salt on one ice cube.
- Crush one ice cube.
- Think of two other ways.


**3.** Use the marker to label the bags. Then close them.

**4.** **Predict:** Which way will melt the ice fastest? Slowest? Record your guesses on the chart in your data sheet.

**5.** Wait a few minutes. Check your ice cubes and record what happened.

**6.** Imagine you are in charge of keeping roads safe. If the roads were covered in slippery ice, what could you do to melt the ice?

ice © Scholastic Inc.

data sheet 1

Name: _____

# The Great Melt Race

1. Do Steps 1–3 of the Task Card. **Predict:** Which way will make the ice melt fastest? Slowest? Number these from 1 to 5 (1 for the fastest, 5 for the slowest) on the chart below.

2. Wait a few minutes. Check your ice cubes. Which ice melted fastest? Slowest? Record in the chart. Number these from 1 to 5 (1 for the fastest, 5 for the slowest).

| Ice Melters | My prediction | What happened |
|---|---|---|
| **Control** | | |
| **Ice with salt** | | |
| **Crushed ice** | | |
| **My 1st idea** | | |
| **My 2nd idea** | | |

3. If the roads were covered in ice, what could you do to melt the ice? Why? Write your answers on the back of this sheet.

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**Week 3:**

This week we celebrate Earth Day! On April 22, nations around the world celebrate our Earth and how we can keep it clean and safe.

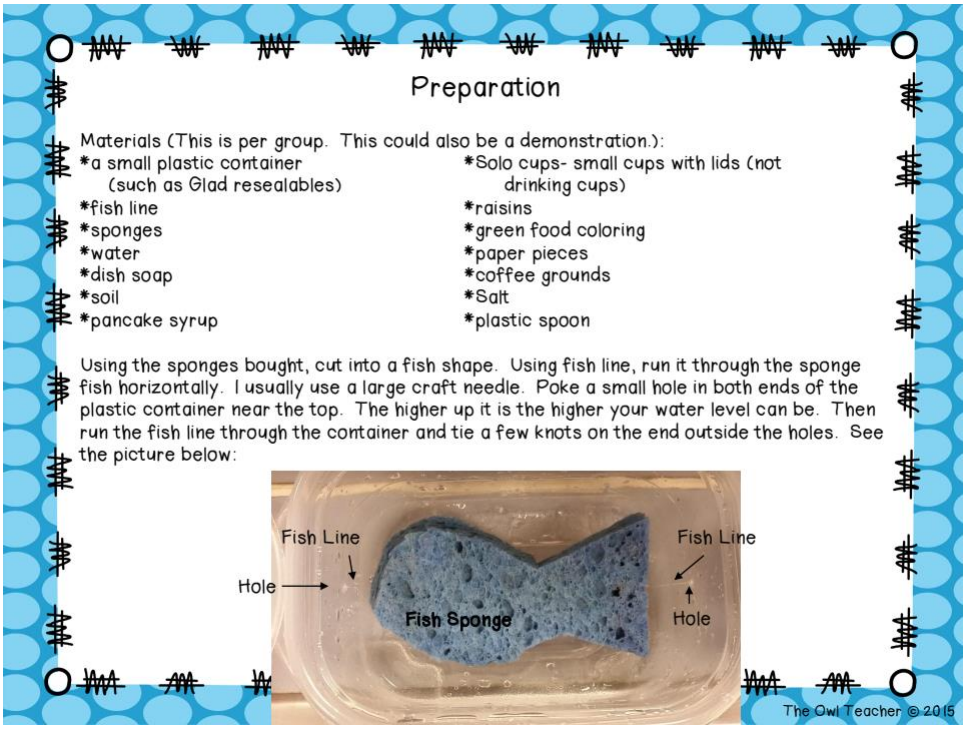
Little Critter explains Earth Day: https://www.youtube.com/watch?v=Pi8Kae6KRws

Freddie the Fish:

Freddie the Fish is an imaginary fish that decides to go on an adventure to see the world, but pollution from humans makes it very hard for Freddie to swim. Below is a video of Freddie's story on YouTube:

https://www.youtube.com/watch?v=P-Yk_83BIiA

To perform the experiment yourself, you can follow the directions here:



## Freddie the Fish

This is Freddie the Fish! He is a happy fish that lives in crystal clear water, enjoys the shade of the tall trees along the river bank, and gets lots of insects to munch on each day.

How do you think Freddie feels?

1

## Freddie the Fish

One day, Freddie wondered what was beyond his little part of the river. He decided to go on a little journey and explore. He heads on downstream. He's ready to see the world!

2

## Freddie the Fish

Along the river, Freddie first comes across a spot where bulldozers are taking out trees and clearing land. Soil and dirt roll into the river because there are no tree roots to hold the soil in place. Poor Freddie gets soil in his gills. Without the trees, Freddie notices he is feeling warmer.

**(Pour in Soil)**

3

## Freddie the Fish

As Freddie continues down the river, he spots some black and white animals moving closer and closer to the river. While these animals are getting a drink, they drop a "present" into the water for Freddie. Freddie is not impressed with the smell or that the sediment is being stirred up!

**(Pour in Raisins)**

4

The Owl Teacher © 2015

## Freddie the Fish

As Freddie rounds the corner, he has to dodge a golf ball that nearly lands in the river. The golf club likes to keep their courses looking nice, so they use a lot of fertilizer. Unfortunately, when it rained last, it caused it to run off into the river.

**(Pour in green liquid)**

5

## Freddie the Fish

Freddie noticed that this area had a lot of tall plants growing and actually was starting to feel smothered. However, Freddie is a trooper and charged on. He was determined to see all the river had to offer!

6

## Freddie the Fish

After a while of swimming, Freddie began to notice a salty taste to the water, and he started to feel the sting of salt in his gills. All the salt that was used on the roads in the winter had worked its way into the river. Ouch! It's hurting!

How do you think Freddie is feeling?

**(Pour in Salt)**

7

## Freddie the Fish

Freddie continues on and passes a picnic site at a local park. As he was passing, the wind began blowing litter into the river from the park.

**(Pour in Paper)**

8

The Owl Teacher © 2015

## Freddie the Fish

Freddie is starting to feel a bit distressed, but he keeps moving on. It begins to rain, and Freddie notices this rain is different. It turns out this rain is acid rain caused by the air pollution.

**(Pour in dish soap)**

9

## Freddie the Fish

Along the river edge, Freddie comes across an old abandoned factory. There are a lot of toxic pollutants and rusty materials seeping into the river. This creates a sludge in the river. Freddie tries to swim through it.

**(Pour in coffee)**

10

## Freddie the Fish

After struggling, Freddie finally gets through the toxic pollutants in the river. Along the side of the river, Freddie notices a man dumping oil from his car into the river. The oil gets into his gills and he starts to have difficulty breathing. He gasps and takes his last breath.

**(Pour in Syrup)**

11

## Freddie the Fish

12

The Owl Teacher © 2015

## Week 4: Sunlight STEM

This week we'll test the power of the sun! The sun's UV rays can be used to make prints on construction paper.

You'll need:

1 piece of construction paper (a dark page is best)

Materials from home (rocks, yarn, coins, pattern blocks, flowers, etc.)

This video shows how to make a sun print at home:
https://www.youtube.com/watch?v=ClFpZS-Xxco

Try it!

1.Place your material on a piece of construction paper

2. Let the paper sit in the sun for at least 2 hours. Take the objects off the paper. Observe the color of the paper after it's been in the sun. Has anything changed? Do you see any shapes from the objects you left on your paper? What happens when a person spends too much time in the sun?

How It Works: The powerful rays of the sun contain ultraviolet radiation. UV rays are so strong that they can fade the dye on construction paper and cause sunburns on skin. Humans use sunscreen as protection from the sun's rays. Could you use sunscreen to make a sun print?