Grade Level/Course: K Standards: K-PS3-1; K-PS3-2; K-ESS2-1; K-ESS3-2

Unit 2: Weather and Temperature

# of Instructional Days: 20 Curriculum Weeks: 6-9

Capstone Project/Activity:

Monsters Need Shade!

K-PS3-2: Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area. This activity also addresses the engineering standard for grades K-2 – standards are on page 3 of this packet.

Materials: -The black paper plate from Activity 2 (or whichever substance absorbed the most heat in Activity 2), monsters -Materials to build a shade, canopy or tent: paper, cardboard, student folders, posterboard, straws, paper towel tubes, toilet paper tubes, anything!

Procedure: Read the short story about the monsters who need shade. Challenge for your students: can you design & build a structure that will reduce the warming effect of sunlight on an area? It's a hot day and the monsters need shade – can you build them a shade structure? Discussion:

Explain your structure to the class. How does it reduce the warming effect of the sun? (It blocks the rays) How can we see if your shade structure actually works? (Put black paper plate outside with a thermometer and put shade structure over another black paper plate with a thermometer- see which 1 has the lowest temperature).

Inquiry Based Activities:

1) Start off this unit by introducing your students to some cool weather and temperature facts! I show my kids the slides.

2) Intro to Thermometers Activity materials needed: water, beaker or cup, thermometers, ice Students add 200 milliliters of water to a beaker. Put the thermometer in and record the (approximate) temperature on the worksheet provided. Add ice cubes and watch the temperature fall. Record approximate temperature on worksheet.

3) Which gets the hottest?
K-PS3-1: Make observations to determine the effect of sunlight on Earth's surface. This standard is based on A Framework for K-12 Science Education standard PS3.B which states that by the end of grade 2, students will know sunlight warms Earth's surface.
Materials: dirt, sand, pebbles or rocks, water, white paper, black paper
Procedure: Students should put each material on the paper plates (see photo), put each plate out in the sun and then lay a thermometer on top. Make predictions! After a designated amount of time (~15min), record each thermometer temperature (worksheets provided)- (use exact or approximate temps).

4)K-ESS2-1: Use and share observations of local weather conditions to describe patterns over time.
Materials:
Weekly weather worksheets crayons
Procedure: Create a weather log. Each day, record the weather by color coding the day. At the end of the month, tally up the weather for the month.
Discussion:
How would you describe this month? Mostly sunny, cloudy, rainy or snowy?
Which weather did we have the least of?
What kind of weather do you think we will have tomorrow? Next month?
What season are we in? How would you describe this season so far?

5) Activity 6 - Tornado Tubes
Have your students create tornado tubes so they can see the speed and shape (vortex) of a tornado.
I buy Tornado Tubes from Steve Spangler Science on-line but you can make your own using duct tape and a washer. Place a washer that fits on the end of a 1 liter or 2 liter bottle. Fill bottle with colored water. Connect the bottle to another using duct tape. If you turn the bottle upside down so that water is in the top bottle, the water will not empty into the bottom bottle. Rotate the top bottle and watch the tornado form! All the water will quickly drain into the bottom bottle. Have races to see who can empty their top bottle the fastest!

Vocabulary:	Suggested Resources:
- weather - temperature - rainbow -tornado - hot -cold -thermometer - dark paper -light paper -design -build -blocks -shade - structure -weather log -sunny -cloudy - rainy -snowy -predict -season -forecasting - thunderstorm -basement -hurricane	http://ww.TeachersPayTeachers.com/Store/Science-For-Kids http://www.ScienceForKidsBlog.blogspot.com

Engineering Standards addressed within this unit:

K-ESS3-2: Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.

The following slides are included to address this standard along with The Framework for Science Education's standard. Discuss the following slides on extreme weather with your students. Emphasize the importance of weather forecasting in order to prepare for and respond to each type of severe weather.

Day	Performance Expectations	Activities	Date Completed
1		Introduce students to some cool weather and temperature facts using a slideshow.	
2-3	K-PS3-2	Intro to thermometer Activity.	
4-6	K-PS3-1	Which gets the hottest activity.	
7-9	K-PS3-2	*Capstone project: Monsters need shade.	
10-14	K-ESS2-1	Start on weather log.	
15-17	K-ESS3-2	Extreme weather forecasting story and slideshow.	
18-20	K-PS3-2	Create tornado tubes.	