

## Arts on the Go *Weather Module*

Welcome to the Weather module of the Arts on the Go project designed by the Center for the Arts and sponsored by the United Way of the National Capital Area, Lockheed Martin, Micron Technology Foundation, SPARK, NOVEC, Minnieland Private Day School, Inc., BAE & BB&T. There will be a total of 3 modules (Habitats & Energy Matters & Weather) which will circulate among over 40 schools throughout the 2011-2012 school year. Each school will have each module for approximately 10 school days.

The Weather module is a self-contained interactive exhibit, which enables the Center for the Arts to take the art room directly into your school and reflect and support several 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> grade science and art Standards of Learning. Our goal is to enrich your curriculum by adding artistic element and by giving students hands-on activities to complement lessons they are learning in the classroom. Special Needs students as well as 1<sup>st</sup> and 2<sup>nd</sup> graders may also use the module if time permits.

The emphasis of the Weather module is discussing, examining and deepening the understanding of the exciting elements and events that make this world such a wonderful place. The activities include: Weather Word Finder, Create a Weather Character & Tale, Weather Map Activity, Events & Organisms – Good or Bad?!, Design & Fly a Paper Airplane and The Living Water Cycle. Instructions for each activity are in the Teacher's Manual in the trunk along with activity pieces.

We hope you and the students enjoy the Weather module. We will be looking for suggestions and feedback from you, the teacher, on how we can better assist you and improve the project for the future!

We hope you enjoy the Weather module! If you are missing an item when the module arrives, please call me right away at 703-330-2787, so I can replace it.

Thank you! Marci Settle

## Weather Trunk Inventory

1. CD with Weather Teacher Manual Files
2. Green Teacher's Manual
3. Crayons
4. Paper clips
5. Yard Stick
6. 3 module walls
7. Yellow Magnetic Map pieces ON module wall (magnetic United States map)
8. 2 Speed Electric Fan with extension cord
9. Yellow Vocabulary words to velcro on walls
10. Water Cycle Activity Contains:
  - a. 2 Clouds (1 white and 1 gray)
  - b. Water spray bottle
  - c. 'Body of water' container
  - d. Mug

**Please call or email me if any items are missing from the trunk!!!**

Marci Settle – 703-330-2787 – marci@center-for-the-arts.org

## **Weather Word Finder**

*Science SOL's: 3.10 a & c: interdependency of plants and animals, effects of natural events on organisms; 4.6 a-b: clouds & temperature vocabulary, how weather instruments are used; 4.8 a: watershed resources*

*Visual Arts SOL's: 4.18 & 5.26: Analyzing visual properties.*

*Materials needed:* Three Weather module walls and yellow vocabulary cards

*Objective:* Discuss, identify and categorize weather related words on the module walls.

*Instructions:* Have students Velcro the appropriate yellow word to the area of the module wall that BEST matches and describes the object on the wall. All areas of all three walls will be used!

Teachers: Please see words and brief definitions following.

## Weather Word Finder Definitions

**Air Pressure** - force put on a given area by the weight of the air above it.

**Anemometer** - a device for measuring wind speed

**Barometer** – a device for measuring air pressure

**Celsius** - a scale and unit of measurement for temperature with 0 °C defined as the freezing point of water and 100 °C defined as the boiling point of water

**Cirrus** - thin, high-altitude cloud with a feather like shape made of ice crystals.

**Climate** - averages of weather pattern of a region over a period of time.

**Cloud Burst** - an extreme amount of precipitation, sometimes with hail and thunder, which normally lasts no longer than a few minutes but is capable of creating flood conditions

**Clouds** - a visible mass of water droplets or frozen ice crystals suspended in the atmosphere above the surface of a planetary body.

**Cumulonimbus** - a towering vertical cloud that is very tall, dense, and involved in thunderstorms and other inclement weather.

**Cumulus** – a puffy cloud that appears to rise up from a flat bottom

**Digital Thermometer** - a device that measures and displays the current temperature in digits

**Evaporation** – the slow changing of a liquid into a gas, caused by exposure to heat.

**Fahrenheit** –the temperature scale, where the freezing of water into water ice is defined at 32 °F, while the boiling point of water is defined to be 212 °F.

**Fronts** - a boundary separating two masses of air with different temperatures

**Humidity** - the amount of water vapor in the air

**Lake** - a body of relatively still fresh or salt water of considerable size, localized in a basin

**Mercury Thermometer** - a thermometer consisting of mercury in a glass tube, where the temp is read by on the scale at the level of the mercury.

**Migration** - the relatively long-distance movement of individuals, usually on a seasonal basis.

**Mountain** - a large landform that stretches above the surrounding land in a limited area usually in the form of a peak.

**Phenomena** - any observable occurrence - often, but not always, understood as 'appearances' or 'experiences'

**Precipitation** – any form of water particles that fall from the atmosphere and reach the ground - rain, sleet, hail, or snow

**Rainbow** - is a phenomenon that causes a spectrum of light to appear in the sky when the Sun shines on to droplets of moisture in the Earth's atmosphere.

**Rainfall** - liquid precipitation, as opposed to non-liquid kinds of precipitation such as snow, hail and sleet

**River** - a natural watercourse

**Stratus** - flat, hazy, featureless clouds of low altitude varying in color from dark gray to nearly white forming a blanket like layer

**Temperature** - a physical property of matter that quantitatively expresses the common notions of hot and cold

**Tornado** - a violent, dangerous, rotating column of air that moves across the ground in a narrow path

**Troposphere** - the lowest portion of Earth's atmosphere

**Water Cycle** – continuous movement of water between Earth's surface and the air, changing from liquid to gas and back to liquid

**Water Shed** - a drainage basin is an area of land where surface water converges to a single point, usually the exit of the basin, where the waters join another water body, such as a river, lake, reservoir, estuary, wetland, sea, or ocean

**Water Vapor** - the gas phase of water

**Weather Map** - displays various meteorological features across a particular area at a particular point in time

**Weather Vane** - an instrument for showing the direction of the wind

**Wind Direction** - reported by the direction from which it originate

**Wind speed** or velocity - now commonly measured with an anemometer

## **Events & Organisms – Good or Bad?!**

*Science SOL's: 3.6 a-c: investigate & understand various environments; 3.8 a: basic patterns & cycles occurring in nature; 4.5 a,b,d,e: organism/environment interaction.*

*Visual Arts SOL's: 3.14: identify characteristics of environments; 4.18: analyze visual properties; 4.25: formulate questions about works of art.*

*Materials needed:* Weather Art Prints from the Teacher's Manual or on the CD

*Objective:* Discuss, identify and categorize weather events and organisms from the prints, using them as an opportunity to discuss how they affect each other. Some prints used are well known pieces of art work.

*Instructions:* Discuss how natural events affect organisms. Recognize the artists and their respective work.

## Create a Weather Character & Tale

*Science SOL: 3.4 b: behavioral & physical adaptations; 3.6 a-c: understand different environments; 3.8 a-b: basic patterns & cycles occurring in nature; 3.10 c: effects of natural events on organisms; 4.5 a,b,d,e: organism/environment interaction; 4.6 a-b: weather phenomena.*

*Visual Arts SOL'S: 4.1 & 5.1: research & generate ideas to create art.*

*Materials Needed:* Module walls, blank paper, & crayons

*Objective:* To understand that weather phenomena/events affect the survival of organisms in good AND bad ways!

*Instructions:*

1. Choose a natural event (ex.: rain, tornado, snow, tsunami, etc.) and draw a picture showing how it would affect you on upper portion of page. Does this event make survival easier or harder?
2. Now, write a descriptive paragraph that tells what is happening in the picture. Use and underline as many words from the module walls as possible.
3. Color and decorate your picture.

## **Design & Fly a Paper Airplane**

*Science SOL's: 3.1 a: predictions & observations; 4.1 c,h: understanding variables & making predictions; 4.2 a-d: understand characteristics and interactions of moving objects; 5.1 f,g: predictions & manipulating variables.*

*Visual Arts SOL's: 3.2: demonstrate craftsmanship; 3.4 balance & symmetry; 3.9: using architectural forms; 5.5: principles of design & proportion.*

### *Materials needed:*

- Airplane template from Teacher's Manual
- Sheet of paper for each student
- Paper Clips - each plane gets 2 clips
- Crayons
- Yard stick
- Small 2 Speed Electric Fan With Extension Cord

### *Objectives:*

1. To follow directions or
2. To experiment with airplane design,
3. Measure distances,
4. Define variables and determine outcomes. The fan creates a variable for the experiment.
5. Develop artistic abilities

*Instructions:* Have the students either copy the airplane template, or design their own. They may decorate the paper plane as they wish. The students may line up and measure the distance flown by their creations.

You may make this activity as simple or involved as desired.

## Weather Map Activity

*Science SOL's: 3.8 a: basic patterns & cycles occurring in nature; 4.6 a,b: weather phenomena.*

*Visual Arts SOL's: 4.17: multiple meanings of art; 4.18: analyze visual properties; 5.9: symbolic meanings of art.*

*Materials Needed:* Weather map on middle module wall (yellow magnetic weather pieces included) & cloud grid template

*Objective:* To explore and discuss current local and national weather patterns

### *Instructions:*

1. Use the weather map symbols to show types of weather patterns around the United States.
2. Use the weather symbol(s) over Virginia that most accurately represents the weather at your school today.
3. What type of weather will there be with high pressure, low pressure?
4. Compare the clouds on the cloud chart with the clouds outside your school today.
5. Describe the clouds you see. (puffy, bulging, low gray, high and wispy)
6. Use the Cloud Grid provided in this manual (also emailed to you) to draw the appropriate clouds in the squares.

### LOCAL Weather Questions:

1. Do you know the elevation of the city your school is in?
2. How is barometric pressure affected by the elevation of your city?
3. What is the warmest month of the year in your city?
4. What is the coldest month of the year in your city?
5. How many inches of rain, on average, does your city get each year?
6. What is the wettest month of the year for your city?

**Answers:**

1. Woodbridge: 70 ft, Dumfries: 67 ft, Manassas: 300 ft.
2. Barometric pressure varies with altitude. A higher elevation will have less atmosphere above it and exert less pressure. To keep readings standard across the world, barometric pressure is indicated at sea level. Readings at elevations other than at sea level require a correction factor which is based on the elevation and the air temperature (colder air weighs more and will require a greater correction).
3. Woodbridge: July (87.60F), Dumfries: July (87.60F),  
Manassas: July (87.40F)
4. Woodbridge: January (26 F), Dumfries: (26 F), Manassas: January (21.9 F)
5. Woodbridge: 40.71, Dumfries: 40.71, Manassas: 41.8
6. Woodbridge: September, Dumfries: September, Manassas: May

## The Water Cycle

*Science SOL's: 3.9 a-d: investigate & understand the water cycle & its relationship to life on Earth.*

*Visual Arts SOL's: 4.18: analyze visual properties; 4.19: compare/contrast representational works of art; 4.25: formulate questions about art; 5.7: collaborate with others to produce a work of art that characterizes an event.*

*Materials Needed:* Module wall art that represents weather and the water cycle.

'Water Cycle' container in trunk, which includes materials for project.

*Objective:* Deepen students understanding of the water cycle by performing a "Living Water Cycle".

*Instructions:* Teachers – all you need to do for this project is fill up the mug supplied with water and heat to steaming in a microwave, AND put some water in the Body of Water container.

Have 5 students at a time show the different stages of the water cycle.

1. The steaming mug represents evaporation.
2. The white fan/cloud represents a cloud gathering moisture on a sunny day.
3. The gray fan/cloud represents clouds gathering moisture and darkening in preparation of precipitation.
4. The spray bottle represents rain.
5. The "Body of Water" container represents a lake.