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| **Lesson Title** | Weather Elements and Instruments |
| **Length of Lesson** | One (50 minute) class period |
| **Created By** | Rob Thornton, Will McBryde |
| **Subject** | Earth Science |
| **Grade Level** | 8th grade |
| **State Standards** | 8th: 1b, (Inquiry); 4c, (Earth Science) |
| **DOK Level** | DOK 3 |
| **DOK Application** | Define, Investigate, Identify, Distinguish, Hypothesize, Explain Phenomena in Terms of Concepts |
| **National Standards** | 5-8: A (Inquiry); D (Earth/Space) |
| **Graduate Research Element** | Understanding the basic elements of weather and how they are measured is the foundation for understanding future concepts in the field of meteorology |

**Student Learning Goal:**
MS 8th Grade:
1(b) Make inferences based on observations 4(c) Describe how meteorologists use atmospheric features and technology to predict the weather. The students will learn about the various instruments used to measure weather elements (temperature, humidity, dewpoint, wind, pressure, etc.)

National Science Education Standards of Content 5-8:
A: Inquiry: Understandings about scientific inquiry; Students will learn about weather instruments used to measure weather elements in a PowerPoint lecture. They will also be asked questions about the capture activity.
D: Earth and Space Science: Structure of the Earth's System; Students will learn about weather elements (temperature, humidity, dewpoint, wind, pressure, etc.) through a PowerPoint lecture and capture activity using a chilled soda can.

**Materials Needed (supplies, hand-outs, resources):**
PowerPoint file (INSPIRE_Thornton_10.15.10_PP); laptop; projector; chilled soda cans (for capture activity).

**Lesson Performance Task/Assessment:**
The instructor will lecture, observe, ask, and answer questions regarding the lesson. Students could also be directed to write the definitions for each of the weather elements and cite the instrument used to measure the element.

**Lesson Relevance to Performance Task and Students:**

The capture activity with a chilled soda can will help students understand the concept of dewpoint temperature. The PowerPoint lecture will give students details on the various weather elements and instruments used to measure them. This will also show the students the importance of understanding weather elements and how they are important to everyday life. In addition, students will understand information about current weather conditions seen on a TV weathercast, in a newspaper or on the internet.

**Anticipatory Set/Capture Interest:**
At the beginning of the lesson, the instructor will take out a chilled can of soda and place it in front of the class. The instructor will then state "Here I have a cold can of soda. Can someone tell me what will happen to the can if left outside of a refrigerator or ice chest?" The instructor will respond accordingly to student answers and eventually explain that the chilled can of soda cools the layer of air around the can to the dewpoint temperature. When this happens, condensation occurs and moisture appears on the outside of the can. This moisture comes from the air.

**Guided Practice:**
The class will observe the instructor perform the capture activity. After this, the students will observe a PowerPoint lecture on weather elements. Students will be asked questions regarding the capture activity.

**Independent Practice:**
Students will observe a PowerPoint lecture on weather elements. During this lecture, students could be directed to take notes on aspects of weather elements and instruments used to measure them.

**Remediation and/or Enrichment:**
Remediation – Individual IEP; Make PowerPoint presentation available to resource teacher.

Enrichment- Students could be directed to look at a local TV weathercast and take notes on current weather conditions. They could then give the definition of each weather element (provided in lecture) and explain what is happening with this element. This could be done for an assignment.

**Check(s) for Understanding:**
Observe students during lecture and ask them questions.

**Closure:**
Ask students questions.

Question 1: Why is air pressure important to weather?

Question 2: What is the difference between relative humidity and dewpoint?

**Possible Alternate Subject Integrations:**
Math, Physics

**Teacher Notes**

A website for weather basics…
**http://www.eo.ucar.edu/basics/index.html**