**5E Template- Science**

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| **Name: Beth Gall** | **Date: 7/13/11** |
| **Content Area: Earth Science** | **Grade Level(s): 9** | **Topic(s): Weather: Air Pressure** |

**Standards (SOL)**

*ES.1a, ES.12a*

**Objectives (UKD’s)**

*The student will investigate and understand the cause of barometric pressure, interpret barometric pressure data and interpret isobars to show the pattern of air pressure across the nation at a given time.*

**CTA Session/ Resource**

*Data-Based lessons – Chris Kaznosky*

*Text – Today’s Weather: Studying Weather as It Happens – DataStream*

*Atmospheres by American Meteorological Society*

**Materials & Resources**

*Laptop computer, web site – WeatherBug Achieve, text resource: Today’s Weather: Studying Weather as it Happens by AMS*

**Safety Considerations**

*None*

**Engage – Time Estimate - 5 minutes**

*Ask students to describe the day’s weather. Ask them to list the decisions they made today based on the weather.*

**Explore – Time Estimate – 60 minutes**

*Vocab. To Introduce: barometer, barometric pressure, isobars*

Students will work individually if there are enough computers available. Special needs students may need to work with a partner.

1. Students will enter the WeatherBug Achieve web site – <http://achieve.weatherbug.com>
2. Click on “Enter Classroom”
3. They will enter Student Login info including their zip code. They will then need to choose a WeatherBug station/school/grade closest to them to acquire current data.
4. From the left menu, choose ACTIVITIES then go to Activity Explorer.
5. Select Subject area – *Science*, Grade *10*, Lesson Type – *Lesson plans*, then click on *Search*
6. Click on *Matching Results* and *Open Activity*
7. Go through Introduction information with students by reading aloud and reviewing diagrams of Highs and Lows and the maps of the major highs and lows.
8. Now, provide the text resource, Today’s Weather, pages 13-17.
9. Go over the Investigations and tips for drawing isobars on pg. 13-15.
10. Allow student practice time by having them construct isobars using the data provided. They should use a pencil, not a pen, as mistakes will occur.
11. Circulate around the room and assist students as needed. Remind them that it is a bit like connecting the dots.
12. When all students have made an acceptable attempt, have students explain what they just did and their observations. Do they observe any patterns?
13. When done return to the WeatherBug Achieve Procedure. Follow all steps in the procedure. Please emphasize to students that this is real time data they are using.

**Explain -- Time Estimate - 10 minutes**

1. Ask students to define barometric pressure.
2. Ask students what an isobar illustrates.
3. Ask students how they know where there is high pressure and where there is low pressure.
4. Ask students what kind of weather they observe at the highs and lows.
5. Ask them what the pressure is like here and does the weather out the window match their prediction.
6. Ask students to describe any patterns they observe on either the map they drew or the real data map in WeatherBug.

**Extend -- Time Estimate – 10 – 15 minutes**

Offer students a map from another date, perhaps with data from a hurricane and ask them to interpret the map and make weather predictions.

**Evaluate -- Time Estimate - 30 minutes**

Students will be given a complete weather map, including isobars, to interpret.

**Plans for Diversity**

Special needs students may need the support of the inclusion teacher or a student-partner.

**Connections**

Weather maps are just one example of how we want students to discover patterns in nature and draw conclusions based on these patterns. Recognizing patterns allow students to make predictions.