Lesson Title	Severe Weather
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,d (Inquiry); 4c, (Earth Science)
DOK Level	DOK 3
DOK Application	Investigate, Identify, Make Observations, Categorize, Compare, Measure, Distinguish
National Standards	5-8: A (Inquiry); D (Earth/Space)
Graduate Research Element	Severe weather impacts people and property. Knowing what causes severe weather is important, especially for those living in severe weather-prone areas

Student Learning Goal:
MS 8th Grade:
1(b) Make inferences based on observations (d) analyze evidence that is used to form explanations and draw conclusions 4(c) Describe how meteorologists use atmospheric features and technology to predict weather. The use of radar to detect severe thunderstorms will be examined in this lesson.

National Science Education Standards of Content 5-8:
A: Inquiry: Understandings about scientific inquiry; Students will estimate hail size in a capture activity. In addition, students will also be asked to read aloud in their textbooks selected sections of a chapter in a middle school textbook on storms/severe weather. They will also be asked questions along the way as well. Students will also view videos or clips of severe weather and will answer questions asked by the instructor.

D: Earth and Space Science: Structure of the Earth's System; Students will learn what causes storms and severe weather. In addition, they will examine the types of severe weather, weather watches/warnings and severe weather safety.

Materials Needed (supplies, hand-outs, resources):
Five Styrofoam balls of different sizes used to simulate hail stones (capture activity); severe weather video(s), middle school science textbook, chalk board/chalk or dry erase board/dry erase pen and five rulers.

Lesson Performance Task/Assessment:
The instructor will observe, ask, and answer questions regarding the capture activity and lecture elements. Students will be asked to read aloud from their textbooks selected

portions of a chapter on storms/severe weather. They will also be asked questions by the instructor. In addition, there can be a class discussion on severe weather videos shown.

Lesson Relevance to Performance Task and Students:
The capture activity will give students practice in estimating hail size. The group reading of the science textbook will help students learn about the various kinds of severe weather and will also reinforce the material. Examples or diagrams related to severe weather demonstrated on the dry erase board by instructor will also help students with their cognition of severe weather concepts. Ex: a diagram of how a hailstone grows or a diagram of how weather radar detects rain. Severe weather videos will show students severe weather in action and demonstrate the destructive nature of it. Finally, thought-provoking questions will be asked during the lecture regarding severe weather. This will get the students thinking about the concepts presented.

Anticipatory Set/Capture Interest:
To get the students attention at the start of the lesson, five students will be selected to come to the front of the class and each hold a "hailstone" made of Styrofoam. Each of the "hailstones" should be a different size. The instructor will direct each student holding a "hailstone" to hold up -- one at a time -- their "hailstones" for the class to see. The rest of the class will be asked to estimate the size of the hail in inches or centimeters. After the class writes down the hail size of the five stones, five more students will be asked to come up and measure the "hailstones." After each "hailstone" is measured, the class can then compare their estimations with the actual size.

Guided Practice:
The class will observe the instructor and selected students perform the capture activity. After this, the students will be directed to follow along reading while one student reads a selected portion of a middle school science textbook dealing with severe weather. After each section of the textbook is read, a class discussion will follow. Students will be directed to copy and label any diagrams provided by the instructor on the dry erase board. Students will also be directed to answer questions as asked by the instructor. Students will be directed to watch severe weather videos and engage in a class discussion on the videos.

Independent Practice:
Students will read along with the class portions of the textbook. Students will copy and label diagrams provided by the instructor. In addition, they will answer questions. Students will also watch severe weather videos.

Remediation and/or Enrichment:
Remediation – Individual IEP; Make lecture notes available to resource teacher.

Enrichment- Depending on the season, the students could look at the current day's severe

weather reports on the Storm Prediction Center's website at http://www.spc.noaa.gov/ Students could examine if their particular state had any reports of severe weather. If no severe weather is present or there has not been any in recent days, the students could search by a particular date or dates for severe weather.

Check(s) for Understanding:
Observe students during lecture and ask them questions. Students' diagrams could be reviewed.

Closure:
Ask students questions.

Question 1: What parts of the United States get severe weather?

Question 2: What are some severe weather safety tips?

Possible Alternate Subject Integrations:
Math, Physics

Teacher Notes:
Please note the instructor has a lot of room to work with concerning the content of this lesson. If they see fit, the order of content presented could be changed around or new content could be added. When students are asked to read aloud, the instructor could assign paragraphs or sections of a chapter for the students to read. This way, more students can participate.

Websites on severe weather…

http://www.spc.noaa.gov/
http://www.nssl.noaa.gov/