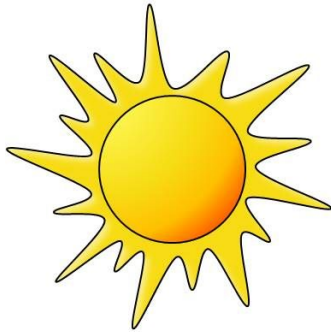


Weather



Sunny



Cloudy



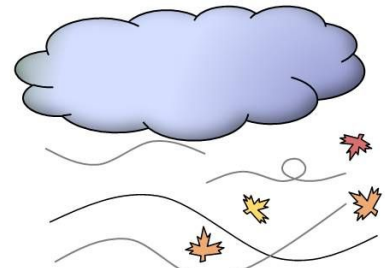
Stormy



Snowy



Rainy



Windy

<http://thefilesofmrse.com>

5th Grade

Abby Wegner and Cassie Schroer

Dr. Pfeifer

EDUC 360

3 May 2016

Teacher: Abby Wegner and Cassie Schroer

Content Area: Science

Unit Topic: Weather

State Standard Strand (or Common Core Standard):

- 4. Tools and mathematics help scientists and engineers see more, measure more accurately, and do things that they could not otherwise accomplish.
- 4. Current and emerging technologies have enabled humans to develop and use models to understand and communicate how natural and designed systems work and interact.
- 2. Patterns of atmospheric movement influence global climate and local weather.

Substrands:

- 3. Interactions Among Science, Engineering, Technology and Society
 - 3. Interactions Among Science, Technology, Engineering, Mathematics and Society
 - 2. Interdependence Within the Earth system
-

Units Objectives:

- The student will KNOW that the natural events are often predictable and logical.
- The student will KNOW that data is collected and interpreted in order to explain an event or concept.
- The student will UNDERSTAND that a successful method to explore the natural world is to observe and record, then analyze and communicate the results.
- The student will DO different problems, make decisions, and form new ideas.

Materials for Unit:

- Textbook (each student)
- Teacher book
- Smartboard
- The weather tools (For the end of class)
- Poster Board
- Task cards
- Work sheets
- Pencils
- Plastic jar
- Ruler
- Room temperature water
- Red food coloring
- Plastic straw
- Clay

- Bowls of very warm water and very cold water
- Dixie cups
- Pin
- Stapler
- Two straws
- Pencil
- Scissors
- Canning jar
- Balloon
- Straw
- Toothpick
- Glue
- Index card
- Pencil
- Construction paper
- Compass
- Markers
- Worksheets
- Smart Board
- [Video](#)
- Worksheet

Vocabulary for Unit:

- Troposphere
- Stratosphere
- Mesosphere
- Thermosphere
- Exosphere
- Convection current: gases and liquids rise and sink in a circular path.
- Air mass: a large body of air with similar properties all
- Thunderstorms: a storm with thunder and lightning and typically also heavy rain or hail.
- Tornadoes: a mobile, destructive vortex of violently rotating winds having the appearance of a funnel-shaped cloud and advancing beneath a large storm system.
- Hurricanes: a storm with a violent wind, in particular a tropical cyclone in the Caribbean.
- Lightning: the occurrence of a natural electrical discharge of very short duration and high voltage between a cloud and the ground or within a cloud, accompanied by a bright flash and typically also thunder.
- Barometer: shows air pressure
- Anemometer: measures wind speed

Lesson # 1

Objectives:

- Cognitive: At the completion of this lesson students will be able to describe how air pressure relates to altitude, convection currents, and the water cycle.
- Affective: During the lesson students will be able to make an acronym to remember the levels of the atmosphere.
- Psychomotor: During the lesson students will need to write down any key terms and the checkpoint questions after each section of reading.

Vocabulary:

- Troposphere
- Stratosphere
- Mesosphere
- Thermosphere
- Exosphere
- Convection current: gases and liquids rise and sink in a circular path.

Materials:

- Textbook (each student)
- Teacher book
- Smartboard
- The weather tools (For the end of class)

Differentiations:

Have the option to:

- Listen to the book on a recording
- Read aloud with a partner
- Read silently alone

Plan:

Read page 231 in the text together as a class.

Checkpoint question: As altitude increases, how does air pressure change? Why?

Answer: Air pressure decreases as altitude increases. As altitude increases, gas particles are farther apart and there is less air above.

Acronym: T, S, M, T, E: Today, Super, Man, Threatened, Everyone

Troposphere, Stratosphere, Mesosphere, Thermosphere, Exosphere

Read pages 232-233 in the text together as a class.

Vocabulary: Convection current: gases or liquids rise and sink in a circular path.

Checkpoint questions:

1. What causes convection currents?

Answer: Different temperatures between air above land and water cause convection currents.

2. In what direction do surface winds over the United States generally blow?

Answer: The surface winds in the United States generally blow from west to east

Assessment:

- Students answer the checkpoint questions at the end of the reading

Lesson # 2

Objectives:

- Cognitive: At the completion of this lesson, students will be able to explain what happens when air masses meet.
- Affective: During the lesson students will be able to think about how the weather changed when a storm passed through.
- Psychomotor: During the lesson students will write down notes with the reading and also answer the checkpoint questions in their notebook.

Vocabulary:

- Air mass: a large body of air with similar properties all

Materials:

- Teacher textbook
- Students textbook

Plan:

- Read page 234 in the text together as a class
- Checkpoint question: How do air masses form and move?
- Answer: Air masses form when air stays over an area for some time and takes on the temperature
- Assign students to read pages 236 and 237 with a partner
- Assign students to answer checkpoint questions after those pages are read.
- Questions:
 1. Why does precipitation often happen at fronts?
 2. Suppose one morning, you need a light coat to play outside. A thunderstorm forces you to go inside for several hours. That afternoon, you need a heavy coat to go outside. What kind of front has passed?
- Answer: A cold front

Assessment: Students answer the checkpoint questions at the end of the reading

Lesson # 3

Objectives:

- Cognitive: At the completion of this lesson students will be able to compare and contrast causes and structure of types of severe weather.
- Affective: During the lesson students will be able to remember different types of storms that they may have seen and how that experience was for them.
- Psychomotor: During the lesson students will write down notes with the reading and also answer the checkpoint questions in their notebook.

Vocabulary:

- Thunderstorms
- Tornadoes
- Hurricanes
- Lightning

Materials:

- Textbook for students and teacher
- Textbook (each student)
- Teacher book
- Smartboard
- The weather tools (For the end of class)

Differentiation:

Students have the option to:

- Take notes on the posters by typing on an Ipad
- Take notes by recording what was said
- Take notes by hand in their notebook

Plan:

Talk about what will be needed on the posters for the severe weather

- Title
- How it is formed
- 3 facts
- Picture

Tell students what group they will be a part of and what severe weather topic they have.

Have students present their posters

Have students that are listening take notes:

- Title

- How it is formed
- One fact

Assessment: Students Posters

Lesson # 4

Objectives:

- Cognitive: At the completion of this lesson students will be able to explain how weather is collected and analyzed.
- Affective: During the lesson students will be able to think about their weather tools and how the data is collected from them.
- Psychomotor: During the lesson students will use the weather tools that they made to gather the different data needed.

Vocabulary:

- Barometer: shows air pressure
- Anemometer: measures wind speed
- Rain gauge: measures how much rain has fallen
- Weather vane: Determines wind direction
- Thermometer: Measures air temperature

Materials:

- Teacher textbook
- Students textbook

Plan:

- Read pages 242 and 243 in the text together as a class
- Show presentation on smart board of the weather tools that is on the post assessment.
- Students already have these in their notebooks but should open them up to follow along
- Assign students to read pages 244 and 245 with a partner.
- Assign students to answer checkpoint questions 1 and 2 that are found on page 245.
- Questions:
 - 1. Read the weather map. What was the weather like in your part of the country when this map was made?
 - Answer: Answers will vary. Students' weather descriptions should include a discussion of the weather in and around their part of the country. (Cloudy and 4 degrees Celsius)
 - 2. What kind of weather system is found in areas of high air pressure? Low air pressure?

- Answer: High air pressure areas often have clear skies. Low air pressure areas usually have cloudy skies.

Assessment: Weather tools worksheet

Lesson # 5

Objectives:

- Cognitive: At the completion of the lesson students will be able to compare and contrast weather and climate.
- Affective: During the lesson students will be able to explain how climates have changed over time.
- Psychomotor: During the lesson students will use the weather tools that they made to gather the different data needed.

Vocabulary:

- Climate: the average of weather conditions over a long time.

Materials:

- Teacher textbook
- Students textbook

Plan:

- Read pages 2446 and 247 in the text together as a class
- Look at checkpoint question number one:
 - How are weather and climate different?
 - Answer: Weather consists of conditions in one place at one time that change often. Climate is the average of weather conditions over a long period of time, usually thirty years.
 - Discuss as a class
- Assign students to read pages 248 and 249 with a partner.
- Assign students to answer checkpoint questions 1 and 2 that are found on page 249.
- Questions:
 - 1. How are fossils used to study past climate?
 - Answer: Scientists can make assumptions about ancient climates, based on similarities between fossils and modern organisms.
 - 2. What can cause a sudden climate change?
 - Answer: Volcanic eruptions and asteroid or meteorite impacts

Assessment: Checkpoint questions

Lesson # 6

Objectives:

- Cognitive: After the lesson, students will be able to identify the vocabulary words weather, evaporation, overcast, thermometer, radar, and storm
- Affective: After the lesson, students will feel more confident in their ability to recall and define vocabulary words
- Psychomotor: During the lesson, students will go on a scavenger hunt around the room and write a story.

Vocabulary:

- Weather
- Evaporation
- Overcast
- Thermometer
- Radar
- Storm

Materials:

- [Task cards](#)
- Work sheets
- Pencils

Plan:

- First distribute worksheets
- Tell students that they will be going on a scavenger hunt to review their vocabulary words
- Students will be separated into six groups
- Students will travel around the room to find the task cards and answer the questions
- When the students have gone to every task card and completed the question, they will return to their desk and complete the question at the end of the work sheet.
- If time permits, we will go over the answers for the task card questions
- They will also turn to their partner and share their short answer
- Lastly, they will hand in their worksheet

Assessment:

- Worksheet

Lesson #7

Objectives:

- Cognitive: After the lesson, students will be able to identify ways severe weather is impacted by increasing global temperatures
- Affective: After the lesson, students will feel less afraid during storms because they will have a greater understanding of how and why storms happen
- Psychomotor: During the lesson, students will research, collaborate, and present

Materials:

- [Torrents, Droughts, and Twisters Student Sheet](#)
- [T.D. T Backgrounder and Note-Taking Form](#)
- [Presentation Rubric](#)
- Access to the internet

Plan:

- As a pre-assessment, distribute worksheet A and have students rank which weather or climate phenomena scientists feel are most influenced by or influence Earth's increasing heat-trapping gases
- In groups, students will then read "Torrents and Droughts and Twisters-Oh My!"
 - Students should be encouraged to highlight important parts of the reading
- Come back as a class and discuss what they have read
- Split class into groups and have them research a particular phenomenon and how it relates to Earth's increasing greenhouse gases
 - Tornadoes
 - Drought
 - Hurricanes
 - Global Temperature
 - Extreme heat
- Groups will then present their findings to the class verbally
- As an exit ticket, students will review worksheet A and make changes based on what they have just learned through their research and peers instruction

Assessment:

- Students will be assessed through
 - Presentation
 - Worksheet A

Lesson #8

Objectives:

- Cognitive: At the conclusion of the lesson, students will be able to identify weather tools and explain how they accumulate data
- Affective: At the conclusion of the lesson, students will feel appreciation at the ability of the tools and pride in their accomplishments
- Psychomotor: During the lesson, students will be constructing weather tools

Differentiation:

- Students can either build with materials given or use an Ipad app and simulate the building of them through the app.

Materials:

- Plastic jar
- Ruler
- Room temperature water
- Red food coloring
- Plastic straw
- Clay
- Bowls of very warm water and very cold water
- Dixie cups
- Pin
- Stapler
- Two straws
- Pencil
- Scissors
- Canning jar
- Balloon
- Straw
- Toothpick
- Glue
- Index card
- Pencil
- Construction paper
- Compass
- Markers
- Worksheets

Vocabulary:

- Thermometer

- Anemometer
- Barometer
- Wind vane

Plan:

- After handing out the directions to construct the weather tools, I would have the class take 5 minutes to read through the directions
 - Then they would be able to ask questions
- Students would be grouped into pairs
- Materials would be placed on a table and students can collect the materials as they need them.
- When students finished constructing their tools, we would go outside to test them.

Assessment:

- Students will be assessed on their ability to collaborate with their peers and the result of their tools
 - This will show us how well they are able to read and follow instructions

Lesson #9

Objectives:

- Cognitive: At the conclusion of the lesson, students will be able to identify the difference between weather and climate
- Affective: At the conclusion of this lesson, students will feel more confident in their knowledge about weather and climate
- Psychomotor: During the lesson, students will be watching a video and completing a worksheet.

Materials:

- Smart Board
- [Video](#)
- Worksheet
- Pencil

Vocabulary:

- Climate
- Weather

Plan:

- Begin by asking students if they know the difference between weather and climate
 - Allow this to turn into a class discussion
- Tell the students that we will be watching a video to better understand the difference between weather and climate
- Distribute worksheet
 - Go through the worksheet with them first so that they know what they will be looking for
 - Allow questions at this time
- Play the video
 - You may have to stop the video at some points so that they have time to write down the answers
- Go over the students worksheets with them
- Collect the worksheet

Assessment:

- The collected worksheet at the end will be what the students are assessed on

Name _____

1. What is weather?

2. What are the 3 factors that affect weather?

a. _____

b. _____

c. _____

3. What is climate?

4. What is the difference between rain, snow, and sleet?

5. What causes a thunderstorm?

6. What is the difference between weather and climate?

Lesson #10

Objectives:

- Cognitive: At the completion of this lesson, students will be able to identify facts about weather and how it is affected
- Affective: At the completion of this lesson, students will feel proud of their abilities to communicate with others what they have learned.
- Psychomotor: During the lesson, students will choose a form of assessment they would like to use to present their knowledge on the subject of weather.

Materials:

- Video cameras
- Computer
- Paper
- pencil

Plan:

- Students can choose to either create a video, powerpoint, or essay to convey their knowledge about weather
 - If students choose to make a video they may work in groups of two
- Students will be given three class periods to complete this
- Presentations must include
 - Vocabulary
 - Troposphere
 - Stratosphere
 - Mesosphere
 - Thermosphere
 - Exosphere
 - Barometer: shows air pressure
 - Anemometer: measures wind speed
 - Rain gauge: measures how much rain has fallen
 - Weather vane: Determines wind direction
 - Thermometer: Measures air temperature
 - Climate: the average of weather conditions over a long time
 - If the vocab is present, they will be given full credit
 - Talk about one type of storm
 - How it is formed
 - Explain why they think it is important for one to be informed about weather.
- Instruction will be kept vague in order that they will be creative and think of new ways to convey information

- The fourth class period is when they will present

Assessment:

- This is their summative assessment

Objectives	3	2	1
All vocabulary is presented and defined			
Defined one type of storm and how it is formed			
Explanation of why they think the knowledge of weather is important			
Presentation is visually appealing and grammatically correct			