

# **Grade Five Weather Unit**

ESCI 310

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# Lesson 1: Weather Scavenger Hunt

**Subject:** Science

**Grade:** Grade 5

**Time:** 45 Minutes

**Parts of the Learning Cycle Included:** Engagement, Exploration and Explanation

**Learning Objective and Lesson Purpose:** Students will share their understanding of weather and any previous knowledge they have about the topic. The purpose of this lesson is to introduce students to the weather unit.

**About/ In/ For the Environment:** Looking at how we are impacted by the weather as a part of our environment. Searching for puzzle pieces outside in the environment, where students are exposed to the current weather.

**Outcomes & Indicators:**

- **WE5.3 Analyze the impact of weather on society and the environment, including technologies that help humans address weather conditions. [DM]**

**Content Background:**

- Weather is a description of atmospheric conditions. It has a significant effect on our lives. Climate is the general trend of weather over a period of time. The day to day temperature, precipitation and other weather examples can vary on a daily basis. Weather can be observed and measured.

**Processes Developed:** Responding, Recording, Retrieving Information

**Adaptive Dimensions:** This lesson could be done inside if required; however, outside creates a better interaction with the weather ideals.

**Cross Curricular Competencies (CCC's):** Developing Thinking: To think and learn contextually, critically and creatively.

**Prerequisite Learnings:**

- Experiences outside and in different weather
- Understanding of how to do a scavenger hunt

**Materials/ Equipment/ Safety:**

- [Pre-made Scavenger Hunt Puzzle Pieces](#)
- Pre-made Scavenger Hunt Clue Cards
- Fun Tack
- 30 Small Notebook or Stapled together pieces of loose leaf (For Weather Journals)

**Advanced Preparation:**

- Print and Cut out Puzzle Pieces. Each puzzle should be printed on a different colored paper (Great idea to laminate these so you can reuse them)
- Select places that the puzzle pieces and clues will be hidden.

- Hide the clues and puzzle pieces before class
- Decide on grouping of students (Aim for 2-3 in a group).

**Lesson Procedure:**

**Engagement: (5 Minutes)** Tell students that you are going to be starting a new unit in Science today and that you will be going outside to do an activity. Ask them what they think they might need to wear today and have them get dressed in appropriate clothing for the weather. Break the students into groups of 2-3 and give each group a colored puzzle piece and a paper copy of a clue of where they can find their next puzzle piece.

**Exploration: (20 Minutes)** Provide 15-20 minutes for students to work with their group to find the rest of their puzzles pieces. As an educator, your job is to walk around and answer any questions that student may have in regards to their clues. Ensure to give students a five minute, two minute and one minute warning so that they may prepare for transitions. Once time is up, gather all the students up and head back into the class.

**Explanation: (20 Minutes)** Ask student to work with their group to put their puzzle together and figure out what their word is. Have student sticky tack their puzzle to a board for all students to see. As a class look at all of the words and brainstorm what they think the unit will be about. *Ensure that students come to this understanding of their own and that you as the educator, do not give it away.* Once students have guessed that their next unit in Science will be about Weather, make sure to write it in big letters on the board. Ask the students the following questions and ensure to record the responses somewhere to use for further adaptation of what students understanding is.

- Do you already know anything about these topics?
- What topic are you most excited to learn about?
- What ideas do you have about how we could learn about these topics?

Provide each student with a weather journal. This journal will be used to write down responses to prompts that are provided throughout the unit. Time permitting, students will have time to decorate their journals as they please.

**Extensions/ Modifications:** Have a talking circle to discuss prior knowledge about weather. Watch a video that introduces weather. Take the students to a weather station to get them excited about learning about weather.

**Assessment:** Look at journals to see what students know and understand about weather.

## Lesson 2: Weather v.s. Climate

**Subject:** Science

**Grade:** Grade 5

**Time:** 45 Minutes

**Parts of the Learning Cycle Included:** Engagement, Exploration, Explanation, Elaboration

**Learning Objective and Lesson Purpose:** Students will distinguish the differences and relationship between climate and weather. The purpose of this activity is to ensure that students understand that climate and weather are not the same thing, but interconnected.

**About/ In/ For the Environment:** Students will discuss the environment and how their life is affected by the weather of the natural world.

**Outcomes & Indicators:**

- **WE5.1 Measure and represent local weather, including temperature, wind speed and direction, amount of sunlight, precipitation, relative humidity, and cloud cover. [CP, SI, TPS]**
  - Distinguish between the two terms of climate and weather.

**Content Background:**

- Remember that the weather of each day does not tell us specifically what will be the weather of that same day next year, but over time we start to see patterns emerge, that help us make educated guesses of what the weather will be like around that time every year. For example: Some days in November in Saskatchewan, it is cool and cloudy, other years it is warm and sunny or perhaps there is a lot of snow on the ground. Throughout history we have developed and understanding that November is traditionally a cold and snowy month, but some years it is not.
- Climate is the general trend of weather over a period of time. The day to day temperature, precipitation and other weather examples can vary on a daily basis.

**Processes Developed:** Communication, Classification, Recording

**Adaptive Dimensions:** Students could do this activity as a group, if peer scaffolding is required.

**Cross Curricular Competencies (CCC's):** Developing Thinking: To think and learn contextually, critically and creatively.

**Interdisciplinary Connections:**

- **N5.1 Represent, compare, and describe whole numbers to 1 000 000 within the contexts of place value and the base ten system, and quantity. [C, CN, R, T, V]**

**Prerequisite Learnings:**

- Understanding of what the following weather conditions look like: Cold & Snowy, Hot & Wet, Sunny & Hot, Cool & Cloudy, Thunderstorm & Rain

**Materials/ Equipment/ Safety:**

- [Activity Sheet](#)
- Snack packs of skittles, smarties or M&M's (1 per Student) or beads of different colors
- Markers
- Labels
- Dry Erase Markers
- Dry Erase Board

**Advanced Preparation:**

- Print off 30 the Activity Sheet (1 per Student)
- Purchase Small Packs of Candy and label them different years. Write the different years on the board with plenty of blank spaces beside them
- Create a Weather Examples for Each color of candy and write them on the board
  - Red - Snow & Cold
  - Orange - Hot & Wet
  - Yellow - Sunny & Hot
  - Greene - Cool & Cloudy
  - Purple - Thunderstorm & Rain

**Lesson Procedure:**

**Engagement: (5 Minutes)** Write two words on the board: Weather and Climate. Ask students if they know the difference between the two. Explain that today, we will be looking into the difference between weather and climate.

**Exploration: (15 Minutes)** Explain the procedure of the experiment: *We are each going to receive a bag of candy that represents the weather of different years. On the board behind me, you will notice that there are a few different colors written down. These colors can be found in your candy bags and they each have a type of weather that they represent. Your job is to cut open corner of your candy bag, so you are able to take candies out one by one. We are going to record what comes out of our candy bag on the board.* Provide each student with a bag of candy. Ask the students to take out one candy out of their bag. Record beside their year, which color came out. (Alternative: Have students come up and record their answer or if technology is available, create a google sheet that allows students to put in their information, directly onto the

spreadsheet). Continue until all students have recorded their entire candy bags of weather.

**Explanation: (10 Minutes)** Once your data is recorded, have a classroom discussion about what this data shows and which weather type was the most common. *In our experiment, as we pulled out candies one at a time. This represented the weather. By tracking weather over many years, we are able to come up with a pattern of what traditionally weather is like at a certain point in the year. This long-term pattern of weather is called climate. Climate can help us make up a basic understanding of what the weather is usually like in a certain place. The weather types that we used today for our activity, were all examples of weather that you may experience here in Saskatchewan. In order to figure out the climate we would have to look at what is the most common weather type that occurs in Saskatchewan.*

**Elaboration: (15 Minutes)** As a whole, ask the students to brainstorm how weather impacts the way that they spend their birthdays, holidays, special events. *When we celebrate different events annually or in other words, every year; we use the climate to help us understand how we should prepare or what we should do for that event. This does not mean that it will necessarily be 25 degrees celsius in July always, but climate wise July is a time of year that is warm and dry compared to November which is usually cold and Snowy. Have students take out a piece of loose leaf and write a small paragraph about how weather impacts the way that they celebrate a special event in their life.*

**Extensions/ Modifications:** *Could be done in groups. Put definitions of different colors of skills = different weather moments on a projector instead of on a dry erase board. Write up could be done as a voice recording or with a combination of drawing and writing.*

**Assessment:** Have student complete the write up and hand in the paragraph.

## Lesson 3: What About Air?

**Subject:** Science

**Grade:** Grade 5

**Time:** 2 Class Periods of 45 Minutes

**Parts of the Learning Cycle Included:** Engagement, Exploration, Explanation

**Learning Objective and Lesson Purpose:** Students will demonstrate the different properties of air. The purpose of this lesson is to get students actively involved with small experiments that demonstrate the properties of air.

**About/ In/ For the Environment:** Students are looking at how air may be something that we cannot see, but it is very important to our world and it infact has properties.

**Outcomes & Indicators:**

- **WE5.2 Investigate local, national, and global weather conditions, including the role of air movement and solar energy transfer. [SI]**
  - Demonstrate properties of air, in that air takes up space, has weight, expands and rises when heated, exerts pressure, and moves from areas of high pressure to areas of low pressure.

**Content Background:**

- “Most of the time, we hardly notice the air around us. We cannot usually see it or taste it. Air does not usually smell (but it does carry substances that we do smell). However, you can feel air when it moves and you can see the effects of air on your surroundings. When air moves, it has great power (to push sailboats, drive windmills and move clouds), and when it is compressed (squashed into a



small space), it has great strength (air in a tire supports a vehicle and helps a helicopter to rise into the air).

- We must have air to survive. Because of this, engineers work to solve our air pollution problems. There are many things that complicate these solutions, so engineers who work on air pollution problems must have a firm understanding of the composition, properties and behavior of air.
- This activity focuses on the physical properties of air: Air takes up space, has mass, can move, exerts pressure and can do work.” ([TeachEngineering.org](http://TeachEngineering.org))

**Processes Developed:** Observation, Communication, Inference, Prediction, Hypothesizing, Recording

**Adaptive Dimensions:** These lessons could be set up as five stations in a classroom which instructions on how to complete each of the activities. This would allow for students to all be engaged with each activity.

**Cross Curricular Competencies (CCC's):** Developing Thinking: To think and learn contextually, critically and creatively.

**Prerequisite Learnings:**

- Process of guessing or hypothesising
- Air is essential to life for humans and animals

**Materials/ Equipment/ Safety:**

- [Air Song Lyrics](#)
- [Writing Journal Prompts Sheet](#)
- *Air Takes Up Space Activity*
  - 1 paper lunch bag
  - 1 balloon
  - 1 empty 1 litre pop bottle with no label
- *Air Has Mass Activity*
  - 2 Identical Balloons
  - 1 Meter Stick
  - 1 Straight Pin
- *Air Can Move Activity*
  - 1 Electric Fan
- *Air Exerts Pressure Activity*
  - 5 Letter sized piece of paper
  - 30 straws and 30 small cups containing water (1 per student)
- *Air Does Work Activity*
  - 1 Sandwich sized Ziploc Bag
  - 2 Textbooks

**Advanced Preparation:**

- **Day 1**
  - Print 30 Copies of Air Song Lyrics (1 per Student)
  - Gather Paper Bag, 1 Litre Pop Bottle Without a Label and A Few Balloons

- Gather a metre stick, two balloons, a pin and some tape. Tape two blown up balloons to the metre stick with one on their side.
- **Day 2**
  - Materials for air can move, air exerts pressure and air works activities.

### **Lesson Procedure:**

**Engagement: (Day 1 - 10 Minutes)** Hand out a student sheet copy of the air song lyrics. Tell the students that you are going to look through the lyrics of this song and try to figure out what the song is about. Read the lyrics out loud and ask students what they think the song is about. When students have decided what they think the song is about ask them to fill in the two blanks on their piece of paper. *We are going to be talking about the very important element of air today. Air is something that we need in order to survive and even though we cannot see it, it is always around us. We are going to do a couple of experiments to help you understand the properties of air.*

**Exploration:** Student will explore five demonstrations that develop their understandings of the properties of air.

**Air Takes Up Space Activity: (Day 1 - 15 Minutes)** Ask students to pull out weather journals to use to record their data. Grab a brown paper bag and open it up. Ask the student *is there anything in this paper bag?* Provide time for student to look into the bag and explore that it is empty. Next blow into the bag and close it tightly with your hand. Ask the students *what is in the bag now?* (Answer: Air)  
Set the paper bag aside and pick up the 1 litre bottle and a balloon. Push the balloon into the 1 litre bottle so that the mouth of the balloon wraps around the mouth of the bottle. The balloon should be inside the bottle at this time. Ask the students to *write their prediction of what will happen to the balloon if you were to try and inflate it while it is in the bottle.* When this is done, try and blow up the balloon. Discuss with the students why they think the balloon did nothing. (Answer: The air in the bottle takes up space and therefore there is no room for the balloon to inflate.) Ensure that you point out that air may be invisible, but it still takes up space.

**Air Has Mass Activity: (Day 1 - 15 Minutes)** Take the metre stick with a blown up balloon on their side and balance them in front of the class. Ask the students *is there anything in the balloons?* (Answer: Air) *Why do the balloons balance the way that they do.* (Answer: *They have the same amount of air in them. The air weighs the same in each balloon so therefore they balance*) *What would happen if we popped one of the balloons?* Get students to write their prediction in their journals. Next, pop one of the balloons with the pin and have students write the description of what happened on their weather journals. Ask for a few students to verbally give their answers. Ensure to verbalize that even though Air is invisible, it still has mass.

**Evaluation:** Have student hand in their record sheet so that you can take a look at it. Return the sheets at the beginning of day two for students to add to with the three other activities.

**Air Can Move Activity (Day 2 - 10 Minutes) Exploration:** Ask the students *can you see air? How do you know that it is there?* (Answer: You can feel it moving ie: the wind) Place a fan in front of the students and turn it on. Ask the students *what did you feel when you were in front of the fan?* (Answer: Students were feeling the air moving very fast) Explain that the fan blades spin around and around and because air takes up space, when the blades push through the air, they move it. Make sure to make the point that even though air is invisible it still can move. Direct students to write down another example of when air is moving very fast on their record sheet.

**Air Exerts Pressure Activity (Day 2 -15 Minutes) Exploration:** Clear an area at the front of the room for this activity or take students out in the hallway. The clear area is for movement that is required with this activity. Ask the students to write down a prediction in their journal of what will happen if the volunteers walk with a piece of paper against their stomach without holding on to it. Have the volunteers walk with a piece of paper against their stomach and then let go of it to see what happens. (The paper should fall). Ask the students *why do you think the paper did not stay against their body?* Ask the students to record what they think will happen if the volunteers run with the paper against their stomach without holding on to it. Have the volunteers run with the piece of paper against their stomach without holding on to it. Ask the students *why did the paper stay?* (Answer: The force that was holding the paper in place while the volunteers were running was air.) Make the point that even though air is invisible, it exerts force. While running the air pushes against you which causes the paper to stay in places; however, while you are walking, there is not enough air force against you to hold the paper in place.

**Exploration:** Provide each student with a cup of water and some straws. Have each student record what they think will happen when they dip the straw in water and put their finger over the top of the straw before removing the straw. Ask students to stick the straw in the water and place their finger across the top hole of the straw. Students then should lift the straw out of the water for a few moments and then release their finger (Water should come out of the straw) **Explanation:** Ask students *why do you think that the water does not fall out of the straw while your finger is on top of it?* (Answer: the pressure outside of the straw pushes against the water through the open end of the straw therefore creating a vacuum)

### **Air Does Work Activity (Day 2- 15 Minutes)**

Set a pile of textbooks at the front of the room. Ask the students *is there a way to lift a pile of books with only your breath? If water is strong enough to push a piece of paper and hold water in a straw, is it strong enough to move or hold a book?*

**Exploration:** Place a sandwich sized ziploc bag underneath a pile of textbooks with the open end sticking out a bit. Have students record in their journal what they think will happen when air is blown into the bag. Carefully blow into one open part of the bag and seal it quickly. (The air should lift the books) Ask the students to record what is happening in their journals. Make the point that even though air is invisible, air lifts the books. Ask the students to write down in their journal, other examples of when air works. **Evaluation:** Have students hand in their journal to you as a way to see what their thoughts are about the experiments that were explored.

**Extensions/ Modifications:** Ask for student volunteers to complete the different experiments. Could be done as stations, but would require further instruction.

Assessment:

## Lesson 4: Teleporting Water

**Subject:** Science

**Grade:** Grade 5

**Time:** 2 Class periods of 45 Minutes

**Parts of the Learning Cycle Included:** Engagement, Exploration, Explanation, Elaboration, Evaluation

**Learning Objective and Lesson Purpose:** Students will analyze the role of water, sun and air in the water cycle. The purpose of this activity is to introduce students to the roles that water, air and the sun play in the water cycle as it pertains the formation of clouds and the atmosphere.

**About/ In/ For the Environment:** Exploring the roles that the water, sun and air play in the water cycle and our daily lives.

**Outcomes & Indicators:**

- **WE5.1 Measure and represent local weather, including temperature, wind speed and direction, amount of sunlight, precipitation, relative humidity, and cloud cover. [CP, SI, TPS]**
  - Classify clouds as stratus, cumulus, cirrus, or “other”, compare results with others, and analyze why results may vary.
  - Explore the different levels of the atmosphere and how clouds fit into the layers.

**Content Background:**

- The atmosphere is made up of 4 main layers:
  - *Troposphere*: The layer from the ground to about 6 to 10 miles high. This is the area that we live in and airplanes fly in.
  - *Stratosphere*: This layer extends from 10 - 30 miles above the ground. This is where the ozone is located. The ozone is important as it helps reflect harmful UV Rays from the sun.
  - *Mesosphere*: This layer extends from 30 miles above the earth to 55 miles above the earth.
  - *Thermosphere*: This layer reaches from 55 miles above the earth to 600 miles above the earth. This is the point where the atmosphere merges with “outer space”.
- There are three main types of clouds:
  - *Cirrus*: High level clouds that look like tails or wisps in the sky.
  - *Cumulus*: Low level clouds that are fluffy and tall. These clouds are the ones that you will see “shapes” in. They start to bubble up as the hot air rises from the ground and then condenses when it meets the cooler air.
  - *Nimbus*: More dense clouds because they are filled with precipitation. This makes them appear to be darker. Nimbus clouds are low level clouds.

**Processes Developed:** Observation, Communication, Inference, Prediction, Hypothesizing, Recording

**Adaptive Dimensions:** Each student could create their own water cycle experiment to keep everyone engaged throughout the lesson.

**Cross Curricular Competencies (CCC's):** Developing Thinking: To think and learn contextually, critically and creatively.

**Interdisciplinary Connections:**

- **CP5.8 Create art works using a variety of visual art concepts (e.g., positive space), forms (e.g., graphic design, photography), and media (e.g., mixed media, paint).**

**Prerequisite Learnings:**

- Water Cycle
- Shape of the Earth
- Basic Understanding of Gravity

**Materials/ Equipment/ Safety:****- Day 1:**

- [Bill Nye Atmosphere](#)
- [Learn About Planet Earth - Earth's Atmosphere](#)
- [Earth's Atmosphere Video Fill-In-The-Blanks](#)

**- Day 2:**

- The Cloud Book by Tomie de Paola
- Blue Construction Paper
- White Crayons
- Cotton Balls
- Glue

**Advanced Preparation:**

- Load Bill Nye and Earth's Atmosphere Videos
- Print 30 copies of the Earth's Atmosphere Fill-In-The-Blanks Sheets

**Lesson Procedure:**

**Engagement: (Day 1 - 10 Minutes)** Ask the students *does anyone know what are the three main elements that are a part of the water cycle? (Answer: Water, Air, Sun) Can anyone tell me what precipitation is? (Answer: Snow, Rain Sleet or Hail that falls to the ground). When precipitation falls, where does it come from? (Answer: Clouds) Where are clouds located? (Answer: In the sky or atmosphere)* Have students watch the Bill Nye 2 minute video about the atmosphere. Discuss with students *why is our atmosphere so important? What property of air does this video show us? (Air takes up space and air has mass. The mass of air pushes down on lower parts of the earth which acts like a jacket, keeps air trapped between us and outer layers of the atmosphere. This helps keep us warm.)*

**Exploration: (Day 1 - 20 Minutes)** *Today we are going to be looking at the atmosphere and what levels makes up the atmosphere.* Hand out the fill-in-the-blank sheet for students to complete as they watch the Earth's atmosphere's video. Provide instructions to students: *we are going to watch a video today to learn about the different levels in our atmosphere. Your job during this video is to fill in the blanks on your paper. All of the information can be found in the video, so make sure that you pay attention.* Play the Earth's Atmosphere Video. If required, play the video a second time for a better understanding.

**Explanation: (Day 1 - 5 Minutes)** Go through the worksheet with students.

**Exploration: (Day 1 - 15 Minutes)** Gather supplies to create teleporting water activity. *We are going to set up an experiment that has to do with our atmosphere. We will need a container of water, a empty cup, some saran wrap and a small rock. Go through the procedure of setting up the teleporting water experiment. Place the glass in the middle of the container. Fill the container with water, but not the glass. Ensure that the container is taller than the glass. Cover the container with saran wrap and place a small rock or marble on top of the saran wrap, above the glass. Set the container in a place that it will receive direct sunlight. We will take a look at this experiment another day, but for now, I want you to take out a piece of loose leaf and write a small prediction*

*of what you think will happen when we look at this experiment in a few days. Will there be any changes? Why or why not? What do you expect to see?*

**Engagement (Day 2 - 15 Minutes)**

Direct students attention to the experiment setup in the previous class. Ask the students *what happened in this experiment or what is different from when we set it up?* (There should be water in the cup) Have students take out their prediction sheets and write what they think happened. Break students into groups and allow them to discuss the different ideas that they came up with of how the water ended up in the cup. As a class, discuss *how did the water ended up in the cup?* (Answer: The heat of the sun, caused the water in the container to evaporate. The water vapors rose until they touched a colder surface, which in this case was the Saran Wrap. The water vapors formed into water droplets and clung to the Saran Wrap. Gravity caused the water droplets to travel towards the center of the Saran Wrap, where the rock was placed. As many droplets accumulated in the center, they became too heavy to cling to the Saran Wrap so they became precipitation and therefore they dropped into the cup below.)

**Exploration: (Day 2 - 10 Minutes)** Ask the students *If we thinking about this experiment as our atmosphere, where would the precipitation come from?* (Answer: Clouds) *We are going to explore the different types of clouds today that exists. I want you to listen very carefully as I read the following book as we are going to do an activity after.* Read The Cloud Book. After the story ask the students to give you examples of clouds that they heard about in the book. Write their responses on the board.

**Elaboration: (Day 2 - 15 Minutes)** After this provide each student with a sheet of blue paper. *We are going to create different types of clouds on this blue piece of paper. I want you to use some cotton balls and white crayons and pencil crayons to create 3 different kinds of clouds. Below your drawing or creation, you will write the name of the cloud and what it looks likes (An example would be white and fluffy like a cotton ball)* Give the students 10-15 minutes to create their clouds.

**Evaluation/Assessment: (5 Minutes)** Ask students to share their creations with the class and hand them in to you.

## Lesson 5: Measuring Weather

**Subject:** Science

**Grade:** Grade 5

**Time:** 2 Class Period of 45 Minutes

**Parts of the Learning Cycle Included:** Engagement, Exploration, Explanation, Elaboration, Evaluation

**Learning Objective and Lesson Purpose:** Students will demonstrate their understanding of data that is currently collected with current instruments by creating their own weather data collection instruments. The purpose of this lesson is to give students a hands on experience with how weather work.

**About/ In/ For the Environment:** Student will create instruments to measure weather. this allows them to gain a better understanding of why looking at weather is important for our daily lives. Students will be able to use these items outside to gain general results.

**Outcomes & Indicators:**

- **WE5.1 Measure and represent local weather, including temperature, wind speed and direction, amount of sunlight, precipitation, relative humidity, and cloud cover. [CP, SI, TPS]**
  - Use a technological problem-solving process to design and construct simple weather instruments (e.g., wind vane, rain gauge, thermometer, barometer, and anemometer).



- Explain the function and purpose of simple weather instruments.

### Content Background:

- “Temperature is measured with a *thermometer* usually made of a glass tube with colored alcohol. As the air gets hotter, the level of the liquid rises and, as the air gets cooler, the level falls. The temperature of the air is always changing. Air temperature is a very important part of weather measurement. It is recommended to begin by giving each group a thermometer and let each student practice reading the indoor temperature. Students should look straight at the thermometer at eye level.” ([Ciese.org](http://Ciese.org))
- “Students can use tap water to practice reading the measurement of the rain gauge in the classroom. They will be taking measurements to the nearest 1/4" (5mm). If there is a safe spot outside, the students can leave the gauge outside and take a reading after each rainfall, remembering to empty the jar after each reading. If the gauge can't be left outside, the students should place it outside on each rainy day.” ([Ciese.org](http://Ciese.org))
- “Air pressure is the result of the weight of tiny particles of air (*air molecules*) pushing down on an area. While invisible to the naked eye (i.e. microscopic), they nevertheless take up space and have weight. For example, take a deep breath while holding your hand on your ribs and observe what happens. Did you feel your chest expand? Why did it expand?”
- “Air pressure expands because the air molecules take up space in your lungs, causing your chest to expand. Furthermore, air can be compressed to fit in a smaller volume since there's a lot of *empty* space between the air molecules. When compressed, air is placed under high pressure. Meteorologists measure these changes in the air to forecast weather, and the tool they use is a **barometer**. The common units of measurement that barometers use are *millibars* (mb) or *inches of mercury* ” ([Ciese.org](http://Ciese.org))
- Knowing the direction of the wind is an important part of predicting weather because wind brings us our weather. A *wind vane*, also called a weather vane, is a tool for measuring wind direction and was probably one of the first weather instruments ever used. To determine wind direction, a wind vane spins and points in the direction from which the wind is coming and generally has two parts, or ends: one that is usually shaped like an arrow and turns into the wind and one end that is wider so that it catches the breeze. The arrow will point to the direction the wind is blowing from so if it is pointing to the east, it means the wind is coming from the east. Additionally, wind direction is where the wind is blowing from. Therefore a west wind is blowing from the west. To use a wind vane, you must know where north, south, east, and west are. ([Ciese.org](http://Ciese.org))

**Processes Developed:** Observation, Communication, Measurement, Prediction, Recording, Creating

**Adaptive Dimensions:** If time and materials are available. Each student could make each kind of weather instrument.

**Cross Curricular Competencies (CCC's):** Developing Thinking: To think and learn contextually, critically and creatively.

**Prerequisite Learnings:**

- Properties of Air
- Precipitation Types

**Materials/ Equipment/ Safety:**

- [Precipitation Video](#)
- 30 index card (1 per student)
- [Weather Instrument Instructions](#)

**Advanced Preparation:**

- Load Precipitation Video
- Gather materials to make thermometer, barometer, wind vane and rain gauge in separate containers or bags.
- Print off 30 copies of the weather instrument instructions. (1 copy for each student)

**Lesson Procedure:**

**Engagement: (Day 1 - 10 Minutes)** *We are going to look at different forms of precipitation and how they are formed. Does anyone remember what precipitation is and what are the four different kinds of precipitation?* (Answer: Precipitation is moisture that falls from clouds in various forms such as: snow, rain, sleet or hail.) Provide each student with a index card. *As we watch this video, I want you to fill out this index card with something new that you have learned about precipitation. You can use words, pictures, poems, or whatever helps you explain your new learning.* Play the Precipitation Video. After the students to share any new learnings that they had. Ask the students *we are learning about precipitation, but does anyone know who measures weather patterns such as precipitation?* (Answer: Meteorologists)

**Exploration: (Day 1 - 35 Minutes)** The next portion of the lesson will be set up in station format. Students will be broken into 4 groups and each have 30 minutes to create the weather instrument that they are looking at. *We are going to do a few activities today, to create instruments to help us measure different parts of weather around us. Can anyone give me an example of an instrument that we use to measure weather?* (Answer: Thermometer, Barometer, Wind Vane, Rain Gauge etc) *We are going to break into 4 groups make four different types of weather instruments.* Set supplies out for creating each weather instrument. Break up groups and hand out copies of worksheets and instructions to each group. When there is 5 minutes left in the

class, ask students to help clean up the stations and hand their worksheets into you. *We will discuss these instruments further in the next science class.*

**Explanation (Day 2 - 25 Minutes)** Provide students with an iPad or computer access. Give students the presentation prompt sheet. Students will have 10 minutes to get together with their group and complete their presentation prompts. *Each group will now have 3 minutes to tell the class what is their weather instrument, what is it used to measure and how does it work.*

**Elaboration: (Day 2 - 20 minutes)** Students will be given an opportunity to respond to the following prompts in their weather journals. Present the prompts using a projector or if technology is not available, write the prompts on the whiteboard.

1. What do you think of when you hear the word weather?
2. How does weather affect our daily lives? (Ex. what kinds of clothes do you wear, outdoor activities that you do, etc.)
3. What kinds of things would you look for if you wanted to describe the weather of a particular day to someone else?
4. What kinds of information are important to collect?
5. Temperature: What does temperature have to do with weather?
6. Wind: How can you describe wind? Are there different types of wind? Can you measure where its blowing to?
7. Precipitation: Are there different types of precipitation?; How could rain be measured?
8. Air pressure: What is air pressure? Why should we measure it? What does air pressure have to do with weather?

**Extensions/ Modifications:** Students could each spend a week measuring using their instrument that they created and then share how realistic the results are.

**Assessment:** Have student hand in their weather journals when they have completed these prompts.

## Lesson 6: The Weather Around Us

**Subject:** Science

**Grade:** Grade 5

**Time:** 45 Minutes

**Parts of the Learning Cycle Included:** Engagement, Exploration

**Learning Objective and Lesson Purpose:** Students will record and analyze weather data personally collected using standard and nonstandard weather instruments. The purpose of this lesson is to provide students with the opportunity to look at the weather around them, record the data and analyze it.

**About/ In/ For the Environment:** This lesson will take place outside so that students are able to use instruments to record weather data.

**Outcomes & Indicators:**

- **WE5.1 Measure and represent local weather, including temperature, wind speed and direction, amount of sunlight, precipitation, relative humidity, and cloud cover. [CP, SI, TPS]**
  - Compile and display local weather data (e.g., temperature, wind speed and direction, amount of sunlight, precipitation, relative humidity, and cloud cover) for a given time interval (e.g., hourly throughout the day, daily for one week, and weekly for one month) using a weather journal, tables, charts, diagrams, and graphs.
- **WE5.3 Analyze the impact of weather on society and the environment, including technologies that help humans address weather conditions. [DM]**
  - Explain why forecasting, measuring, and understanding weather is important for humans.

**Content Background:**

- Measuring weather is complex and involves many different instruments and units. Some of the weather conditions that are measured include: humidity, wind speed and direction, temperature, air pressure and precipitation amount. *Humidity* is the amount of moisture in the air and it is measured with a hydrometer. *Wind speed* is how fast wind is moving and it is measured anemometer. *Wind direction* is the direction that the wind is blowing. Wind direction is measured by a wind vane. *Temperature* is how hot or how cold the air is. Temperature is measured using a thermometer that has mercury inside of it. *Air pressure* is how heavy the atmospheric pressure is and it is measured by a barometer. *Lastly*, the amount of rain or snow that has fallen from the sky is called the *precipitation amount*. Precipitation such as rain can be measured using a rain gauge.

**Processes Developed:** Observation, Communication, Measurement, Recording, Experimenting

**Adaptive Dimensions:** Some students could complete this data collection using only non-standard instruments and the compare it to standard measurements of other students data collection. This could create conversation about how useful the nonstandard instruments are.

**Cross Curricular Competencies (CCC's):** Developing Thinking: To think and learn contextually, critically and creatively.

**Interdisciplinary Connections:**

- **SP5.1 Differentiate between first-hand and second-hand data. [C, R, T, V]**

**Prerequisite Learnings:**

- Weather instruments and what they measure

**Materials/ Equipment/ Safety:**

- [Data collection sheet](#)
- Thermometer

- Rain Gauge
- Student created wind vane
- Student created rain gauge
- Ipad or phone camera

**Advanced Preparation:**

- Copy 30 copies of the data collection sheet

**Lesson Procedure:**

**Engagement:** *Can anyone tell me what we were learning about in our last science lesson? (Answer: Types of instruments used to measure weather.) We are going to start a week long project today. We are going to use a mixture of the instruments that you created and manufactured instruments to record weather data each day for the next 7 days.*

**Exploration:** Hand out a weather collection sheet to each student. Gather the different weather instruments (Thermometer, rain gauge and wind vane) as well as a camera (ipad or phone camera) Take the students outside and complete the step by step process of filling out the data collection sheet together. Set out a time for the next 7 days for students to collect weather data at the same time everyday. some data will be collected at school and other data collected at home. **Assessment:** After seven days, revisit this data and discuss with students what they noticed about the data

**Extensions/ Modifications:** Save a satellite map or a live photo from each data of the data collection around your community. Use this as a part of the discussion of the data that was collected by the students. This will help students understand how their observations are coming to life. This 7 day record could be extended if time permits to give student a better set of data to analyze.

## Lesson 7: Air Pressure

**Subject:** Science

**Grade:** Grade 5

**Time:** 45 Minutes

Parts of the Learning Cycle Included:

**Learning Objective and Lesson Purpose:** Students will describe and draw how wind and and the high and low air pressure are connected. The purpose of this lesson is to explain air pressure to students and help them make the connection between air pressure and wind.

**About/ In/ For the Environment:** Students will look how air pressure impacts weather conditions.

**Outcomes & Indicators:**

- **WE5.2 Investigate local, national, and global weather conditions, including the role of air movement and solar energy transfer. [SI]**

**Content Background:**

- "An important characteristic of the Earth's atmosphere is its pressure as it often determines wind and weather patterns across the globe. By definition, atmospheric or air pressure is the force per unit of area exerted on the Earth's surface by the weight of the air above the surface. The force exerted by an air mass is created by the molecules that make it up and their size, motion, and number present in the air.
- These are important factors because they determine the temperature and density of the air and thus its pressure.
- Molecules are significant for measuring air pressure because if the number of air molecules above a surface increases, there are more molecules to exert pressure on a surface and total atmospheric pressure increases. By contrast, if the number of molecules decreases, so too does the air pressure.
- Today, air pressure is measured with a mercury or aneroid barometer. A mercury barometer measures the height of a mercury column in a vertical glass tube. As air pressure changes, the height of the mercury column does as well- it drops when pressure falls and rises when it increases." ([geography.about.com](http://geography.about.com))

**Processes Developed:** Observation, Communication, Inference, Prediction, Hypothesizing, Recording, Experimenting

**Adaptive Dimensions:** With proper safety training and supervision, allow students to light matches and complete boiled egg trick on their own.

**Cross Curricular Competencies (CCC's):** Developing Thinking: To think and learn contextually, critically and creatively.

**Prerequisite Learnings:**

- Weather Conditions
- Predicting and recording results

**Materials/ Equipment/ Safety:**

- [Video about Weather Forecasting](#)
- [Video about High Pressure v.s. Low Pressure](#)
- Hardboiled Egg
- Empty glass bottle
- Matches

**Advanced Preparation:**

- Preload Weather Forecasting Video
- Load High Pressure v.s Low Pressure Video

**Lesson Procedure:**

**Engagement: (15 Minutes)** Start off the class with showing students the short video about weather forecasting. After the video ask *does anyone have an idea about what we are learning about today?* (Answer: Air Pressure, its movement and how it impacts weather) *Let's figure out how high pressure and low pressure air work and how they impact weather.* Play high pressure v.s. low pressure air. Let's watch that video

one more time so that we understand what the difference between high and low pressure is.

**Exploration:** *Let's do an experiment to talk about high and low level pressure. Can anyone tell me how I can get a hardboiled egg into this glass bottle without wrecking it? We are going to see if we can get this egg into the glass bottle using only matches. I want you to each pull out your weather journals and make a prediction what will happen to the egg. Do you think it will get stuck in the bottle? Peel the hardboiled egg and set it to the side. Light a few matches and drop them into the bottle. After lighting 6 matches, set the peeled hardboiled egg on top of the mouth of the bottle. (Eventually as the matches go out due to lack of air, the air will cool and condense and therefore will take up less space. The greater air pressure outside of the bottle will cause the egg to get sucked into the bottle.)*

**Explanation:** Ask the students *why did the bottle get sucked into the bottle? We did not push the egg into the bottle, do you have any ideas of what did?* Get the students to write their answer in their weather journal and then discuss as a class. (Answer: Higher air pressure outside of the bottle than inside the bottle. Sucks the egg into the bottle to fill the empty air.)

**Assessment:** Take in weather journals to look at student responses

## Lesson 8: Guess What's Next: Forecasting

**Subject:** Science

**Grade:** Grade 5

**Time:** 2 Class Periods of 45 Minutes

**Parts of the Learning Cycle Included:** Engagement, Exploration, Explanation, Elaboration, Evaluation

**Learning Objective and Lesson Purpose:** Students will explore what it means to forecast something and what is the importance of forecasting in relation to weather. The purpose of this activity is to give student an opportunity to learn about meteorologists and the forecasting that they do. An extension from this activity is an



opportunity for students to show what they understand about weather, by forecasting the weather.

**About/ In/ For the Environment:** Forecasting requires students to look at the weather around them and use information about how weather patterns work in order to predict the upcoming weather.

**Outcomes & Indicators:**

- **WE5.2 Investigate local, national, and global weather conditions, including the role of air movement and solar energy transfer. [SI]**
  - Predict patterns in local, regional, and global weather over a given time frame (e.g., a day, a week, a month, and a year).
- **WE5.3 Analyze the impact of weather on society and the environment, including technologies that help humans address weather conditions. [DM]**
  - Explain why forecasting, measuring, and understanding weather is important for humans.

**Content Background:**

- Weather watchers use many instruments to predict weather data. Satellite and radar data have become very popular in the forecasting of weather as they create a visual image of the weather that is being produced. Before the time of technology, weather was predicted by watching nature.

**Processes Developed:** Observation, Communication, Prediction, Recording, Designing

**Adaptive Dimensions:** This lesson could be done as a whole. The class could create a weather map as a whole on the board. Students could elaborate from this experience by creating their own weather map after.

**Cross Curricular Competencies (CCC's):** Developing Thinking: To think and learn contextually, critically and creatively.

**Interdisciplinary Connections:**

- **P5.1 Represent, analyse, and apply patterns using mathematical language and notation. [C, CN, PS, R, V]**

**Prerequisite Learnings:**

- Basic Mapping Skills
- Understanding of the Geography of Saskatchewan

**Materials/ Equipment/ Safety:**

- [Weather Map Activity and Worksheet](#)
- Projector
- [Weather Network Radar and Satellite Weather Map](#)
- [Create your own Forecast and Weather Map Activity](#)
- Optional:
  - iPad or Computer
  - [FunBrain Weather Quiz](#)

**Advanced Preparation:**

- Print off 30 copies of the Weather Map Activity and Worksheet
- Preload Weather Network Radar Weather map for your area.

**Lesson Procedure:**

**Day 1 - Engagement: (10 Minutes)** Pull up the Weather Network website and take a look at the current weather map for your area. Show the students what is predicted for the next few hours. Leave this website up to use as a supplement to the What is a Weather Map information sheet. Read with the class what a Weather Map is.

**Day 1 - Exploration: (20 Minutes)** Provide time for students to analyze the weather map that is on their worksheet. Students may work in a group or by themselves. When students are done, if technology is available, they can check out the weather quiz on the FunBrain website. Get students to see how many they can get right.

**Day 1 - Explanation:** When all student are done, go through the worksheet with the students.

**Day 2 - Elaboration:** Provide an opportunity for students to take on the role of a meteorologist and create a forecast like in the news. The students will each be able to make a 7 day weather forecast for Saskatchewan. Once the students have decided what their forecast will look like, they will write a paragraph about what instruments they would use to figure out this data as well as select one day of their forecast and create a weather map to represent the weather they are forecasting.

**Day 2 - Evaluation:** Have the students share what weather forecast they created and the weather map that corresponds with it. If time permits, have a discussion about the commonalities and differences.

**Extensions/ Modifications:**

**Assessment:** Use weather predictions to see what students are considering as a part of their weather forecast. Have students hand in the weather map and forecast.

## Lesson 9: Out of Control: Disasters

**Subject:** Science

**Grade:** Grade 5

**Time:** 45 Minutes

**Parts of the Learning Cycle Included:** Engagement, Exploration, Explanation, Elaboration

**Learning Objective and Lesson Purpose:** Students will be able to describe different types of disasters and weather events and what impact they have on human lives. The purpose of this activity is to open students eyes to the different weather extremes that occur around the world and how they impact the lives of humans, animals and nature.

**About/ In/ For the Environment:** When students discuss the extreme weather forms, they must discuss the environment that they take place in and the way that these storms affects the environment.

**Outcomes & Indicators:**

- **WE5.2 Investigate local, national, and global weather conditions, including the role of air movement and solar energy transfer. [SI]**
  - Describe the characteristics of severe weather events, such as hurricanes, tornadoes, blizzards, hailstorms, droughts, and tropical cyclones, including the role of air movement and solar energy transfer in those events.

**Content Background:**

- **Tornadoes**
  - “How do tornadoes form? That is pretty easy to answer since there has been a large amount of study into the subject. They are usually the extreme result of a supercell thunderstorm. During the storm cold air and warm air combine in a set pattern: the cold air drops as the warm air rises. The warm air eventually twists into a spiral and forms the funnel cloud that we all associate with a tornado.
  - The formation of a tornado follows a clear set of steps. First there a change in wind direction and an increase in wind speed. This change occurs at an increasing altitude and creates an invisible horizontal spinning effect in the lower atmosphere. Next, rising air within the thunderstorm’s updraft tilts the rotating air from horizontal to vertical. Third, an area of rotation, 3-10 km wide is contained within a vast majority of the storm. This is where the strongest tornadoes form. Then a lower cloud base in the center of the storm becomes a rotating wall cloud. This area can be nearly rain-free. Lastly, a tornado develops and starts to wreak its destruction.
  - Once a tornado has formed, it follows a predictable life cycle. First, the mesocyclone(rotating air), along with the rear flank downdraft( RFD), starts moving towards the ground. A small funnel appears to build up at the bottom of a wall cloud. As the RFD reaches the ground, the surrounding dirt rises up, causing damage even to heavy objects. The funnel touches the ground immediately after the RFD, forming a tornado.
  - During the next stage the tornado’s main source of energy, the RFD, begins to cool. The distance the tornado covers, depends on the rate at which the RFD cools. If the RFD cannot further provide any more warm air to the tornado, it begins to die.
  - Lastly, with the tornado’s warm air supply cut, the vortex begins to weaken and shrivel away. As the tornado weakens, the mesocyclone also starts to dissipate, but a new mesocyclone can start very close to the dying one. Those are the basics of tornado formation and life.” ([Universtoday.com](http://Universtoday.com))
- **Hurricanes**
  - “Hurricanes are the most awesome, violent storms on Earth. They form near the equator over warm ocean waters. Actually, the term hurricane is

used only for the large storms that form over the Atlantic Ocean or eastern Pacific Ocean.

- The generic, scientific term for these storms, wherever they occur, is tropical cyclone. Other names they are given, depending on where in the world they are born, are typhoons, cyclones, severe tropical cyclones, or severe cyclonic storms. Whatever they are called, the same forces and conditions are at work in forming these giant storms, any of which can cause damage or devastation when they hit land where people live.
- Tropical cyclones are like engines that require warm, moist air as fuel. So the first ingredient needed for a tropical cyclone is warm ocean water. That is why tropical cyclones form only in tropical regions where the ocean is at least 80 degrees F for at least the top 50 meters (about 165 feet) below the surface.
- The second ingredient for a tropical cyclone is wind. In the case of hurricanes that form in the Atlantic Ocean, the wind blowing westward across the Atlantic from Africa provides the necessary ingredient. As the wind passes over the ocean's surface, water evaporates (turns into water vapor) and rises. As it rises, the water vapor cools, and condenses back into large water droplets, forming large cumulonimbus clouds. These clouds are just the beginning." ([Nasa.gov](http://Nasa.gov))

**Processes Developed:** Observation, Communication, Classification

**Adaptive Dimensions:** This lesson could be adapted to be set up in stations. Each station would give the students the opportunity to explore one kind of extreme weather. By the end of the lesson, the students would then have a basic understanding of various extreme weather conditions and their impact on human life.

**Cross Curricular Competencies (CCC's):** Developing Thinking: To think and learn contextually, critically and creatively.

**Prerequisite Learnings:**

- Basic use of an iPad
- Weather can be good or bad

**Materials/ Equipment/ Safety:**

- Classroom set of Ipads
- Extreme Weather by KIDS DISCOVER (iPad App)

**Advanced Preparation:**

- Purchase Extreme Weather by KIDS DISCOVER iPad App (Costs \$4.59 in the App store)

**Lesson Procedure:**

**Engagement and Exploration (30 Minutes)** Students will be given an Ipad and given time to explore the Extreme Weather by KIDS DISCOVER. The teacher's job is to walk around and discuss with students what they are learning. This is a free exploration time where students can explore in groups or on their own.

**Explanation: (5 Minutes)** When students start to seem unengaged with the app or 30 minutes has passed, regroup the students and ask the following questions. What is one example of extreme weather? What would they do to protect yourself from that weather?

**Elaboration (10 Minutes)** Have students take out their weather journals and answer the following prompt: What impact does extreme weather have on human life, animal life and nature?

**Extensions/ Modifications:** If you have a iPad to HDMI cable, this exploration could be done as a whole class, but with only one iPad.

**Assessment:** Ask students what is one example of extreme weather and what would they do to protect themselves from that weather. Take in the weather journals to see responses to the prompt about how extreme weather impacts life.

## Lesson 10: The Changing Climate

**Subject:** Science

**Grade:** Grade 5

**Time:** 45 Minutes

**Parts of the Learning Cycle Included:** Engagement, Exploration, Elaboration, Evaluation

**Learning Objective and Lesson Purpose:** Students will analyze at how the weather extreme of Global Warming, impacts humans, animals and nature. The purpose of this activity is to introduce students to climate change.

**About/ In/ For the Environment:** The topic of global warming cannot be discussed without looking at the impacts that it has on humans, animals and nature. This lesson provides students with an opportunity to look at how they currently behave and decided

if there is anything different that they would like to do in order to help degree global warming.

**Outcomes & Indicators:**

- **WE5.3 Analyze the impact of weather on society and the environment, including technologies that help humans address weather conditions. [DM]**

**Content Background:**

- Global Warming affects everyone on this earth. Animals are greatly affected by global warming as habitats are being destroyed. Greenhouse gases play a large role in the development of global warming. As the greenhouse gases eat away at the ozone layer, the ozone is not able to protect earth from the harmful UV rays from the sun. The greenhouse gases also trap heat from the earth's surface in towards the earth which causes the earth's temperature to rise.

**Processes Developed:** Observation, Communication, Classification, Prediction, Planning

**Adaptive Dimensions:** This lesson could be adapted to allow for students to take a look at the endangered animals and species caused by global warming.

**Cross Curricular Competencies (CCC's):** Develop Social Responsibility by using moral reasoning, engaging in conversation and discussion as well as take social action.

**Prerequisite Learnings:**

- Layers of the Atmosphere
- Air Movement
- Solar Rays

**Materials/ Equipment/ Safety:**

- "Earth Feeling the Heat" - A Book by Brenda Z. Guiberson
- Weather Journals

**Advanced Preparation: N/A**

**Lesson Procedure:**

**Engagement and Exploration: (15 Minutes)** Read the story book "Earth Feeling the Heat" and after, ask the students, what global issue is affecting the animals in this book? (Answer: Global Warming) What has caused Global Warming? (Answer: A gradual warming of the earth's atmosphere due to pollution and greenhouse gases. *How do you think that we can help these animals?* Record students answers on the board. Go through the last page of the book with the students to discuss different ways that you can help these animal.

**Elaboration: (15 Minutes)** Have student take out their weather journals and choose one way that they can help these animals and reduce global warming. *I want each of you to write in your weather journal about which one of these ideas would you implement in your life and why? We have been talking about weather this unit and I want you to write in your journal, how you think global warming is connected to weather.*

**Assessment:** Take in the weather journals and look at the student's response to how they think that global warming is connected to weather.

## Lesson 11: Weather Around Canada

**Subject:** Science

**Grade:** 5

**Time:** 2 Class periods of 45 Minutes

**Parts of the Learning Cycle Included:** Engagement, Exploration, Explanation, Elaboration, Evaluation

**Learning Objective and Lesson Purpose:** Students will present research about an area of Canada and create a small presentation on the weather of that region. The purpose of this activity is to get students to think about the weather diversity in Canada.

**About/ In/ For the Environment:** The weather in Canada is very important as it plays a crucial role in the way that we live our daily lives. Our weather is based on the environment that we live in. If we were to live in a different environment, then our

weather would be different. Some of these differences are evident in this lesson about different weather around Canada.

**Outcomes & Indicators:**

- **WE5.2 Investigate local, national, and global weather conditions, including the role of air movement and solar energy transfer. [SI]**
  - Compare weather conditions locally, regionally, and across Canada at various times throughout the year.

**Content Background:**

- Weather across the country of Canada has a wide range of variation. The geographical area of different places in Canada as well as the environment that is there, plays a role in the weather that occurs there. This lesson is an exploration activity where little content background is required as you can use this opportunity to let the students teach you.

**Processes Developed:** Comparing, Recording, Responding

**Cross Curricular Competencies (CCC's):** Developing Thinking: To think and learn contextually, critically and creatively.

**Prerequisite Learnings:**

- Geography of Canada
- Different Weather Conditions

**Materials/ Equipment/ Safety:**

- [Living in Canada Climate Comparison](#)
- [Canadian Cities Climate Comparison Prompt Sheet](#)
- Classroom Set of iPad

**Advanced Preparation:**

- Print out 30 Canadian Cities Climate Comparison sheets.
- Ensure that the classroom set of iPads is charged.

**Lesson Procedure:**

**Day 1 - Engagement: (10 Minutes)** By this time, the 7 day weather data collection should be complete. Take a few minutes to go over the data that students collected and ask the students *what did you notice about the weather data that you collected?* Conclude this portion by collecting the weather data collection sheets from the students.

**Day 1 - Exploration: (30 Minutes)** *The data that we collected represents the weather that occurred over the past 7 days here in our community. If we spent a longer time period researching the weather in our community, we would discover a long term pattern that would establish the climate of our area. Today, we are going to look at the climate of different communities around Canada. Each of you will receive a sheet with a community on it. Once I hand out these sheet, it is your job to read your sheet and figure out what your community is and then find your buddy or buddies who also have*



*the same community.* The sheets will be randomized to make the groups. Give the students 25 minutes to use an iPad and answer their prompts.

**Day 2 - Explanation: (25 Minutes)** Students will present the information that they found about their region with the class. As a group, create a compare and contrast charge between the different regions of Canada.

**Elaboration: (10 Minutes)** Student will use their weather journals and write down any similarities and differences between other regions of Canada and Saskatchewan.

**Assessment:** Group assessment to see how students are understanding the similarities and differences between different places in Canada.

## Lesson 12: Surviving the Elements

**Subject:** Science

**Grade:** 5

**Time:** 3 class periods of 45 Minutes

**Parts of the Learning Cycle Included:** Engagement, Exploration, Explanation, Evaluation

**Learning Objective and Lesson Purpose:** Students will apply knowledge that they have gained over this unit and use it to create a weather survival kit.

**About/ In/ For the Environment:** The survival kits are developed through the understanding of what we need through our environment around us in order to survive.

**Outcomes & Indicators:**

- **WE5.3 Analyze the impact of weather on society and the environment, including technologies that help humans address weather conditions. [DM]**

**Content Background:**

- A survival kit is a collection of items that could help someone in a particular situation.

**Processes Developed:** Planning, Designing, Creating

**Adaptive Dimensions:** Students are able to pick whatever format that they would like

**Cross Curricular Competencies (CCC's):** Developing Thinking: To think and learn contextually, critically and creatively.

**Prerequisite Learnings:**

- Previous learnings in the Weather Unit

**Materials/ Equipment/ Safety:**

- Internet access or books
- [Instruction Sheet for Students](#)

**Lesson Procedure:**

**Engagement: (15 Minutes)** *Can anyone tell me what a survival kit is? (A pack of items that will help someone in a particular situation) We have been talking about extreme weather and weather around the Canada. We are going to start a project today where each of you will research and create a survival kit for surviving a particular type of weather. A few examples include a survival kit to survive Winter in Saskatchewan or a Hurricane or even a rainy day. The choice for what type of weather you would like to create a survival kit for, is up to you.*

**Exploration: (Day 1- 25 Minutes & Day 2 - 45 Minutes)** Each student will explore their selected area or weather type and create a weather survival kit that helps anyone who is faced with that type of weather survive. Students will have

**Explanation:(Day 3 - 45 Minutes)** Students will each take a couple of minutes to explain/ present their survival kit to the class. Students who do not feel comfortable presenting to the class will be able to present to the teacher one on one after.

**Evaluation:** [Rubric for Weather Survival Kit](#)

## Resources

### Lesson 1:

- [Manitoba Unit Plan](#)
- Weatherwise by Jonathan D. Kahl - Content Background
- Weather By Fiona Macdonald

### Lesson 2:

- [Skittles or M&M's Climate v.s. Weather Activity](#)
- Weatherwise by Jonathan D. Kahl - Content Background

### Lesson 3:

- [Air Song](#)
- [Air is Matter](#)
- [Properties of Air](#)
- Weatherwise by Jonathan D. Kahl - Content Background
- Weather by Tamara B. Orr

### Lesson 4:

- [Three Main Cloud Types Video](#)
- [All About Clouds Video](#)
- Let's Investigate Science: The Weather by Robin Kerrod
- Weatherwise: Learning About the Weather: By Jonathan D. Kahl
- Weather By Tamra B Orr
- Weather By Fiona Macdonald
- [Activity with the Atmosphere](#)

### Lesson 5:

- [Forms of Precipitation Video](#)
- [Rain Gauge Activity and Background Content](#)
- [Wind Vane Activity and Background Content](#)
- [Barometer Activity and Background Content](#)
- [Thermometer Activity and Background Content](#)
- [Student Weather Center Worksheet](#)

### Lesson 6:

- [Lesson Idea](#)
- The Weather by Robin Kerrod - Content Background

### Lesson 7:

- [High and Low Air Pressure](#) - Content Background
- [Marshmallow Distortion Activity](#)
- [Various Experiments and Demonstrations](#)
- [Egg in a Bottle Activity](#)

### Lesson 8:

- [FunBrain Weather Quiz](#)
- [Forecasting - Content Background](#)
- [Weather Forecast Template](#)

- [Weather Map Example](#)
- [Reading Weather Maps](#)
- Weather By Fiona Macdonald - Content Background

**Lesson 9:**

- Weather Explained by Derek Elsum
- [Tornadoes - Extreme Weather Condition](#) - Content Background
- [Hurricanes - Extreme Weather Condition](#) - Content Background

**Lesson 10:**

- Earth Feeling the Heat by Brenda Z. Guiberson - Story Book

**Lesson 11:**

- Canada's Weather by Chris St. Clair - Content Background

**Lesson 12:****Other Resources**

<http://lessonplanspage.com/scienceweathernet-htm/>

**Extra Assignments/ Activities:**

- [Weather Journal Prompts for Entire Unit](#)
- [Weather Journal Rubric](#)
- Color/ Decorate the front of their weather journals
- <http://www.allkidsnetwork.com/worksheets/weather/> (Wordsearch)