

Katie Walcott
Shalee Frakell
Liz Freeman
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Introduction Lesson

“The Rain Stick Collages”

Abstract: During the winter season we might just think of snow and how it is a cold season. Also during the winter season it does rain. However, can we hear the snow? The teacher will use a piece of tissue, to represent snow, and drop the tissue to see if any students can hear it. Snow is difficult to imitate for the winter season so we will imitate the sound of rain during the winter season.

Students will be able to imitate the sound of rain. We will start off imitating rain using our hands, desks, and our mouth. Then students will be able to make their own rain stick to imitate the sound of rain. Students will also put together collages of what the winter season looks like. The collages can be put on the rain stick or on construction paper.

Grade Level: 2nd grade

Utah State Core Curriculum Standards:

Core Standard III: Students will develop an understanding of their environment.

Objective 2: Observe and describe the weather

d. Draw pictures and create dances and sounds that represent weather features (e.g., clouds, storms, snowfall).

Instructional Time: 50 minutes

Materials: Construction Paper

Scissors

Glue

Colored Pencils/Markers

Cardboard tubes/ with masking tape/ and flat head nails already in the tubes

Pictures of rain forest and/or desert communities

Sand

Beans

Rice

Completed Rain Stick to demonstrate to the students

Terminology: Imitate, Seasons, Winter, Clouds, Storms, Snowfall, Rain (introduce in the beginning of the lesson: see below).

ILO: Demonstrate a positive learning attitude.

-Apply prior knowledge and processes to construct new knowledge.

Background Information: Many students will have experienced the four different seasons (depending where they live). The seasons are spring, summer, autumn/fall, and winter. For this particular lesson the students to clarify that winter is a season and not a month. We also want students to be able to identify the changes in their environment when winter occurs. Students will hopefully have the background knowledge of the temperature differences in the different seasons, especially in winter, different colors in the plants for each season and the different animals you might see in the winter season. However, this is an introduction lesson and we want to focus on the weather during the winter season especially the rain.

Experiencing different types of weather will help students understand the different types of sounds you might hear. The background knowledge students need here is to understand that some weather can make a noise. We would ask students what type of weather can make a noise. Students will probably answer by saying “thunderstorm and/or rain.” Students then need to know what kind of weather occurs during the winter season. Students should understand that snow is not the only type of weather that can occur during winter but also rain.

To imitate the sound of rain, students need to use their background knowledge of how they might have heard rain. Some students may hear rain to be a hard sound, or a soft sound, some might think that rain does not make a sound at all when it hits the ground. Overall, students need to understand that rain can make sound depending where it hits.

The rain sticks is a product of the environment. People could create rain sticks using different types of sticks like bamboo and used sticks (instead of nails) to make the sound of rain.

Invitation to learn: Students can find a variety of things in the classroom that can imitate the sound of the weather. Their voices, hands, and objects can make these sounds. Ask students to list sounds from the natural environment. Have students listen to some music that imitate natural sounds.

Prior Knowledge Assessment: -Students may be aware of what the season winter looks like. Students can find pictures in their surroundings that resemble the winter season.

-Students may be aware of rhythm or sound producing instruments, such as drums, wooden flutes, or rattles that imitate natural sounds. Students may already have made the connection that diverse cultures produce certain instruments that resemble certain sounds such as rain. From the discussion it can be determined what a student understands and does not understand.

Instructional Procedures: *Beginning:*

Start off by asking the following questions: What is imitating, winter, clouds, storms and seasons (depending on time)? What are some things in nature that let us all know when winter has arrived? What happens when the leaves fall off the trees? Is there a temperature difference when this happens? What are some sounds we can hear during the winter season? Does it rain during the winter season? What does rain sound like? Some students might answer by saying: Yes it does snow during the winter season but mostly snows especially in our state (environment). Places like California have mostly rain and not snow.

Play my rain stick for the students so they can hear the sound. Ask the students what the sound resembles/ predict the sound they hear. Ask the students to predict how the rain stick is constructed and what materials we would use to make it. How would using different fill materials affect the sound? Too much or too little affect the sound? Ask students to predict what the rain stick may sound like with the material we used to put in the rain stick. Have students suggest other material from their environment that could be used to make rain sticks. Explain the instructions and demonstrate how to design a rain stick.

Instructions to make a rain stick:

The nails are already inserted for each of you so your job is to use what is in your environment to put in your rain stick. I have beans, sand, and rice that you can use to make an imitation of rain. After you have filled your rain stick with the materials you want, you can decorate your rain stick with colored markers/pencils, glitter, and cut out pictures of the winter or rain forest. Students can use clippings from magazines or just draw pictures to resemble winter.

Students will be able to decorate their rain stick with clippings from magazines or just draw pictures that resemble winter. The students can also use construction paper to draw on or glue magazine pictures on the piece of paper. Then you tilt the rain stick slowly and you can hear the sound of rain. If not then predict what you need to do to make the sound of rain (take more materials out or put more in).

Early finishers will start on collages on construction paper. The students can use construction paper to draw on or glue magazine pictures on the piece of paper.

Instructions to do collages:

Students can pick their own colored construction paper to do a collage on. Students can then use magazines and cut out pictures that resemble winter or pictures that make the student think it is winter.

Cut/glue and color pictures on the piece of construction paper. The collages will be hung up out in the hallway.

Middle:

Have the students start to make their own rain sticks and collages of the winter season!

Closing:

Have students present their rain sticks to the classroom. Express the personal significance or special meaning of their rain sticks and their collages.

Adaptations: Have students work in pairs to build a rain stick that will be left in the classroom. Students will be able to help decorate and use certain material for the sound of rain.

Assessment: Ask students what the seasons are. What are some signs (in the weather) in each season? Predict the sound a rain stick will produce based on its construction and fill materials. Students will also be asked to present if there is a personal significance in/on their rain stick. Students may talk about their culture background and environment.

Rubric:

CATEGORY	3	2	1
Understanding what the Seasons are	Understand each season.	Understand a little bit about the seasons.	Have no idea what the seasons are.
Use their environment to build rains sticks	Start to understand that there are things in the environment that can be used to build a rain stick.	Use some things in their environment.	Do not use anything in the environment.
Make Predictions	Can make predictions and give a reason for their predictions.	Can Predict but can't give a reason for their prediction.	Does not give a prediction.

Activities: Posted on UEN. Org
<http://www.wunderground.com/>

*Lesson adapted from Project Wet curriculum
 Project Wet: Water Education for Teachers-International
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Works Cited

Nelson, Cook, Unser, Cummings, and Lunde (1995)

Shalee Fackwell
Katie Walcott
Liz Freedman
Spring, 2005

Sleepy Bear

Abstract: Science Activity that teaches students what hibernation is and how animals know it is time to hibernate. Students will measure their own heart rate before and after a physical activity and compare it to a bear hibernating.

Grade Level: Second Grade

Utah State Core Curriculum Standards:

Objective 1

Investigate relationships between plants and animals and how living things change during their lives.

Observe and describe relationships between plants and animals.

Describe the life cycle of local plants and animals using diagrams and pictures.

Create pictures and stories about real animals and compare them to make-believe

Objective 2

Observe and describe weather.

Describe how weather affects people and animals.

Instructional Time: One hour

Materials: - Clock – candy – thermometers- pencils - paper

Science Activity that teaches students what hibernation is and how animals know it is time to hibernate. Students will measure their own heart rate before and after a physical activity and compare it to a bear hibernating.

Vocabulary:

Adaptation: a physical characteristic that helps an animal use its habitat more efficiently.

Habitat: The arrangement of food, water, shelter and space suitable to animals' needs.

Hibernation: A state of some animals that occurs when they slow their metabolism, body temperature, and breathing rates to low levels during winter months to help conserve energy.

Background Information: Winter Sleep

~ American black bears go into dens for at least part of the winter. Hibernation allows them to live in places where food is not abundant year round. Hibernation also benefits pregnant females in conserving energy and nurturing helpless newborns. That is why female black bears hibernate for part of the winter.

~ Contrary to popular belief, weather doesn't seem to affect the time that bears go into their dens. They are just as likely to begin hibernating on a warm December day as during a blizzard. If food is scarce, bears might den earlier. If food is abundant, they might delay denning so they can continue feeding.

~ Like other hibernators such as chipmunks, a bear's respiration rate drops to as slow as eight breaths a minute during deepest sleep. Unlike other hibernators, though, a bear's body temperature falls only slightly perhaps because of the bear's large body size and the fact that it metabolizes fat reserves while hibernating.

~ Bears also don't need to wake up to eliminate body wastes and eat from food they have stored in their dens. Instead, they metabolize their body wastes into useable products and obtain the food they need from their fat reserves.

~ Black bears begin moving to their dens in mid-October and may sleep for 4-7 months. In general, male black bears are the last to begin hibernating and the first to emerge in the spring. Females with new cubs are the last to emerge from their winter homes.

Adapted from: www.teachers.net/lessons/

Invitation to Learn:

All week long we have been talking about the changing seasons and the kind of weather that goes with each season. Today we will talk about the winter weather; it is getting cold outside we can tell from the snow on the mountain tips. How do animals prepare for the changing temperature? Next I will hand out stuffed bears; which will lead the conversation into hibernation. I will ask the children to describe the physical characteristics of the bears. We will discuss the bears diet (nuts, fruit, fish, plants) I will point out that a bears food source does not exist in the winter so they must take a nice long nap and sleep all winter and this is called hibernation.

Prior Knowledge Assessment: Ask students how people prepare for the winter. Examples include, warm clothes, heat, staying inside, and building a fire. Lead the discussion to how do animals prepare for cold weather. Ask the students if they know what hibernation means? What types of animals hibernate?

I will be using my student's answers to assess their prior knowledge about hibernation. From the discussion I will know how much I need to prepare them for the following activities.

Procedures:

- 1) Get the students to relax. (Play music; tell them to rest, and to take deep breaths.)
- 2) Have the students place their hands on their heart to feel how fast their heart is beating.
- 3) The students also check their breath rate by holding their hand in front of their faces and counting their breaths per minute. They record the information.
- 4) The students can either take their temperature with a thermometer or feel their forehead and record hot, warm, or cold.
- 5) After everything is recorded, have the students get up and run in place one minute to warm up.
- 6) Tell the students there is candy hidden in the room.

- 7) The students have two to four minutes to gather the food. They are to find as much food as they can. If they find real food, they should eat it before looking for more.
- 8) Stop the students and immediately take pulse, breath, and temperatures. Record these.
- 9) After the students have sat down, begin a discussion of what they did and hibernation of bears. Ask "Who got food? How much? If this were your only food source, what would happen now that you have used it up?" (Possible responses- look for more, die, or hibernate)
- 10) Compare before-and-after measurements. Lead to conclusion that less energy (food) is needed when resting. When animals or humans are resting we are not using energy so we do not need to eat as much food. This is why when we go exercise we are very hungry afterwards because we have used a lot of energy or calories to exercise.
- 11) Ask students to give examples in nature where animals rest to survive with little or no food for long periods of time. (Bears, squirrels...etc.)
- 12) Define hibernation. Qualify hibernation for bears. (Some people don't think bears hibernate.) Hibernation: The act of passing the winter or a portion of it in the state of sleep; a torpid or resting state.
Include other characteristics of hibernation -no defecation, urination, or food intake.
- 13) Students will then write in their journals about hibernation
- 14) Make sure each student understands how the weather affects animals differently. Some animals migrate and other go into hibernation.

Adaptations and Modifications for Special Learning Needs:

I will adapt this lesson for students with special needs by allowing them to work with a classmate and give them more time when they are responding to answers. I will also be paying special attention to them and providing them with extra attention.

Assessment:

Students will be assessed informally, active listening, questions, sharing. They will also be recording questions and facts in their journals. Please see attached rubric.

Grading Rubric

Name _____

Date _____

	Beginning 1	Developing 2	Accomplished 3	Magnificent 4	Score
Student follow Directions	Does not follow directions	Follows very few directions	follows most of the directions	follows all of the directions	
Communicates how the winter weather affects animals differently.	Hardly contributes to the conversation.	Understands very little about hibernation.	Offers some important information about animals and the changing seasons	Offers a lot of important information about how the weather affects animals differently.	
Journaling	Does very little work.	Usually needs help writing in the journal.	Usually does record in journal without help.	Always records in journal without help.	
Self-Evaluates	Is not able to tell what was done well and what could be done to improve.	With help is able to tell what was done well and what could be done to improve.	Usually is able to tell what was done well and what could be done to improve.	Always is able to tell what was done well and what could be done to improve.	

Shalee Fackrell
Katie Walcott
Liz Freedman
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Winter Air Temperature

Abstract:

In this lesson students will take the winter temperature outside in various locations across the playground. Students will record their data and compare it to their predictions and indications that lead them to their predictions about the various air temperatures. Students will then create a graph of the specific locations and the temperatures in order from the warmest to the coldest locations.

Grade Level: 2nd

Utah State Core Curriculum Standards:

Standard III: Students will develop an understanding of their environment.

Objective 2: Observe and describe weather.

b) Measure, record, graph, and report changes in local weather.

Materials:

- Thermometers
- Science Journals
- Graphing Charts
- Playground or area

Terminology:

The weather is made up of temperature, air pressure, moisture in the air, and wind velocity. The many different combinations of these components create a variety of weather conditions. It is important for students to become familiar with these weather terms because they affect their daily lives. Weather influences recreational and work activities, clothing, and the types of homes in which people live.

Intended Learning Outcomes:

Students will enhance their understanding of different types of weather by predicting, observing, charting, and graphing air temperatures in various locations in the environment.

Background Information:

(Air Temperature) Usually most people generate their own concept about the air temperature. Someone might describe the temperature by how hot or cold it seems to them. Physically observable signs of the temperature include when it is sunny it's generally warmer and if it's cloudy or rainy it's colder. So it's important for the student to have a good concept of temperature that is linked to their accurate observations - this is what we are trying to teach students.

The temperature of the air is directly related to the amount of energy which is a result of the sun's solar radiation. The higher the temperature is, the higher the amount of energy in the air is going to be. Temperature is measured using a thermometer (discussed below) with units in degrees Celsius (or Fahrenheit under the imperial system). The higher the temperature is, the higher the measurement is going to be.

(Thermometer)

A thermometer measures temperature. Liquid-in-glass thermometers are the most common types of thermometers because they are easy to read and inexpensive to make. These types of thermometers are made from glass and consist of a glass bulb that is attached to a tube that is marked with a temperature scale- in both Fahrenheit and Celsius. The liquid in the thermometer is usually alcohol or mercury. When this liquid warms up, the molecules in the liquid move faster taking up more space and the volume expands or the red mercury line goes up. And where the line stops indicates the temperature. When the liquid cools, it does not take up as much space and the red line or mercury moves back down the bulb, indicating a lower temperature (see reference below).

Invitation to Learn:

Begin by reading any kind of a “weather warm-up” book such as, *Magic Monsters Learn About Weather* by Sylvia Tester (see reference below). This book is pretty easy to understand and does a good job explaining basic weather concepts. After the book briefly discuss why it would be important for people to know or care about winter weather, what ways winter weather has affect their lives, and what about winter weather interests them the most

Prior Knowledge Assessment:

Before beginning the lesson take the students through a KWL chart. Ask the students what they already know regarding air temperatures, thermometers, and graphing – then also what they would like to learn or what interests them the most as well. This information will guide my introduction by way of more thoroughly explaining some areas of air pressure and thermometers or hitting topics of student interest that I had not incorporated into the lesson.

Procedures:

Level 1- Students need to learn how to properly use, read and understand what a thermometer does. Show students thermometer and introduce some basic background information in background section. Be sure to explain that as liquid warms up, the molecules are moving faster which causes the volume to rise or red line in thermometer to go up. Model an example by taking the temperature of the classroom near the hallway door, show students exactly how to read the thermometer, and then record the results on the board. Discuss the two different ways to record temperatures (Fahrenheit and Celsius) and how to show these symbolically. Discuss air temperature and what kinds of indications lead us to believe how warm or cold the weather/air temperature might be. Use air temperature information to talk about the relation between the temperature and the amount of energy in the air which is also related to the sun's solar radiation. Ask students things like “How and why do you know it's warm or cold” “What physical

signs of this have you observed in nature and yourself personally” “Do you ever sweat or get goose bumps” “What kinds of cloths do you wear for certain weather/temperatures” and so on. Address any question in the KWL that have not been addressed at this time

Level 2- Ask the class to predict if they think the temperature near the window will be warmer or colder than the temperature taken by the hallway. Write students predictions on the board and ask them what indications lead them to their predictions. Check student understanding of the process by asking students to help you take and record the temperature in the classroom near a window. Ask students to draw conclusions about from the data and the indications they previously expressed. Then model the process of graphing the recorded information into a bar graph from the warmest to coldest location in the classroom on chart paper (there will only be two locations).

Level 3- Ask students to predict the temperature of five locations in the playground (depending on the setup of the student’s playground) and record their predictions in their math journals. Students need to write what indications lead them to their predictions as well. Have students graph their results in the same manner the class graphed the classroom temperatures above in level 2.

Adaptations and Modifications for Special Learning Needs:

Students can color a thermometer to show and record the correct temperature data.

Teacher request is available.

Manipulative and visuals are incorporated.

Students may be paired up to assist one another.

Assessment:

-Have students complete what they have learned in the KWL chart in their science journals.

-Students are able to make predictions along with indications that lead them to their predictions.

-Students accurately record temperature at five playground locations.

-Students graphs are complete and contain accurate information form the warmest to coldest locations on the playground.

Rubric

Assessment Task	Outstanding	Well-done	In Progress
KWL Charts	Chart has at least two or more main ideas in all three sections	Chart has at least one main idea in all three sections	Not all three sections are complete in chart
Prediction and Indications	Clear prediction with at least two or more indications of prediction	Clear prediction with at least one indication of prediction	Prediction with no indications of prediction
Recorded Temperatures	Temperatures are accurately recorded at all five locations	Temperatures are accurately recorded at least three of the five locations	Only one temperature is recorded accurately out of the five locations
Graphs	Graph contains accurate information listed from the warmest to coldest locations	Graph contains accurate information and is not listed from the warmest to coldest location	Graph contains inaccurate information and is not listed from the warmest to coldest location

Extensions:

Have students record the temperatures for the entire month and make a class graph of the data collected.

“Activities”:

Available on my website @ <http://my.uen.org198395>

References:

Weather Books - <http://www.amazon.com>

Thermometer Info. - http://www.cimms.ou.edu/~cortinas/1014/110_2.html

Air Temperature Info. - <http://australiasevereweather.com/techniques/simple/airtemp.htm>