

WINTER IN THE WOODS

Third Grade - Rahr Memorial School Forest

ENDURING UNDERSTANDING

Animals have adaptations that help them to survive the winter. Snowshoeing is a winter sport that can be done for recreation and fun. The winter season happens for very distinct reasons.

ASSESSMENT

Students will be able to demonstrate their understanding by explaining how a variety of WI animals survive the winter, using snowshoes to hike through the forest, creating a winter shelter, and explaining why we have winter.

WISCONSIN'S MODEL ACADEMIC STANDARDS

Math: ??

Science: ??

Environmental Education: ??

CLASS OUTLINE

- I. Set-up
- II. Sample schedule
- III. Introduction
- IV. Snowshoeing
- V. Animal survival
- VI. Quinzee building
- VII. Winter ecology
- VIII. Conclusion
- IX. Clean-up

Safety

Optional/ Rainy Day Activities

Additional Information

Resources

School Forest map

MATERIALS

- Hot chocolate
- Cups
- Plastic spoons
- Percolator w/ hot water

Snowshoeing

- Directions
- Snowshoes
- Key for snowshoe shelter

Animal Survival

- Tracking guide books
- "Who's Been Here" storybook
- Animal furs
- Animal photos

Quinzee Building

- Overhead projector
- Overhead markers
- Overheads – building a quinzee
- Shovels
- Crate of supplies
- Thermometers (2)

Winter Ecology

- Inflatable globe
- Table lamp
- Extension cord
- Table
- Chalkboard and chalk
- Icy Acts Information cards
- Masking tape (for nametags)
- Markers
- "When Winter Comes" storybook

CLASS PROCEDURES

I. Set-up

After setting up a date with the School Forest coordinator, teachers are also responsible for submitting a field trip request form. Teachers may schedule a time when the School Forest coordinator can meet with them at school to discuss the visit. Teachers will be asked to teach or co-teach one of the activities while the student groups rotate through the activities during the day. The School Forest coordinator may also teach at one of the stations during the day. Preparation time will be needed to review the activity.

All of the materials needed for these activities will be set-up at the School Forest.

Teachers will need to bring a few things from school: first aid kits, emergency contact information, extra clothing, the School Forest key from school, a snack (if needed), and any additional activities they feel necessary for the class. Students will need to bring a bag lunch (with a drink and nothing that needs a microwave) and adequate winter clothing for the day.

II. Sample Schedule:

9:00	Depart from School
9:30	Arrive at School Forest
9:30 – 9:50	Welcome and Introduction
9:50 – 10:45	rotation 1
10:50 – 11:45	rotation 2
11:45- 12:20	Lunch
12:20- 1:15	rotation 3
1:20 – 2:10	rotation 4
2:15 – 2:25	Conclusion
2:30	Depart from school forest
3:00	Arrive at school

III. Introduction

Many people hide in their homes during the winter and don't take the time to enjoy what winter has to offer. This day is designed to help students better understand WHY we have winter, how animals survive it, and how we can enjoy being outdoors in winter.

Review the rules and expectations of the class for their visit.

IV. Snowshoeing

A. Why do we use snowshoes?

Discuss why we might want to use snowshoes. (They help us stay on top of the snow, they make hiking easier in the winter, snowshoeing is good exercise, and it can be a fun activity.) The first snowshoes were created by Native Americans. They were made of wood and sinew. Now some snowshoes are still made of wood, but most are made with aluminum, metal, or plastic.

B. Snowshoeing

The snowshoes are stored in the shelter south of the Ehlert Lodge (near the wildflower garden). The 3rd grade students should use the "Little Bear" snowshoes that can be found in the baskets. If a student's boots are too large to fit in the larger

set, then they should wear a small adult (Tubbs brand) snowshoe. The students should open the bindings completely, put the toe of their boot in the front of the bindings, and slide the heel of their boots into the back cup. Now, the binding can be closed around their boots. *You may need to help the students buckle their snowshoes so try to have extra adult help.* The adults can wear the “Tubbs” brand snowshoes that are hanging on the wall in the shelter.

When walking (or running) in snowshoes, there are a few things to remember:

- stay on snow (gravel and concrete can ruin the snowshoes)
- walk wide (like a duck) and lift your toes
- DO NOT step on uneven terrain, logs, or branches (the snowshoes can break)
- give the person in front of you a lot of space so you do not step on their snowshoes

Take the students around the forest. If there is enough snow, play games in the dunes or open areas. Take your time and enjoy. Also, watch for animal tracks.

C. Game Ideas:

- Tag
- Hide and seek
- Thicket/ Predator & Prey
- Soccer
- Volleyball

X. **Animal Survival**

A. Coping with the cold

The animals in Wisconsin cope with the cold using several different survival strategies. Ask the students to brainstorm ways that animals at the School Forest might deal with the cold weather. Discuss eating habits, predator-prey relationships, and sleeping areas. (For example: squirrels hide acorns in the fall so they have food throughout the winter; mice hide from predators by living under the insulating snow; and deer find sleeping areas in a group of evergreen trees because these trees keep more snow off of them, which keeps them warmer.)

You may also discuss migration and hibernation if you have time. At the School Forest, many of our birds migrate south for the winter so that they can find food, but we also have birds that migrate from the north to the School Forest area, like dark-eyed juncos. Snakes hibernate together in areas that are below the frost line or well protected from the cold. Why would a snake want to hibernate in an area where it is warmer? (Snakes are cold-blooded and cannot produce their own body heat.) Ask students to imagine they are a squirrel.

B. Insulation experiment

How do animals stay warm in the winter? Test this by keeping a glove or mitten on one of your hands. Hold a ball of snow in the gloved hand and snow in your bare hand. Do this for 5 seconds. Notice how cold the snow makes each hand feel. Animals do not wear gloves or hats or even jackets, but they do have feathers and fur that keep them warm. Your glove, just like fur and feathers, protects from the cold. The skin on your hand is waterproof, but is not very good at protecting against the

cold. Animal skin is the same way. Animals need their fur and feathers for protection.

D. Animal insulation touch and feel

Use the animal skin props to examine the thickness and texture of different animal fur. Students may *carefully* touch the furs. Discuss what it would feel like to wear a fur coat every day, all year. Animal fur becomes thicker and warmer in the winter in order to provide more insulation. Deer hair becomes hollow in order to provide better insulation (show how our winter coats are puffy and full of air). Discuss what type of animal the students would like to be at the School Forest.

E. Tracking

The animals that are active in the winter leave signs behind of their activity. You can look for: tracks, trails, urine, scat, homes, eating areas, and maybe even body parts. Head outside and explore. When a student finds something interesting, you may want to gather together to discuss their findings. As the teacher, you do not need to know all of the tracks, ask the kids to make predictions, gather information, use their books, and maybe if it is really tricky take a photo and do research back at school.

See if the students can find a place where they could stay warm if they were an animal and look for food sources. Also, stop at the bird feeders (behind the Information Center) to watch for birds that may be present. While you are walking around, look for mouse holes in the snow. (Mice spend most of the winter in tunnels under the snow.)

If there is time, read the story “In the Winter: Who’s Been Here.” The student can try to use their new knowledge to figure out the different animals in the story. (You may choose to read this before going on your hike to get the kids thinking about what to look for.)

V. Quinzee Building

A. What is a quinzee

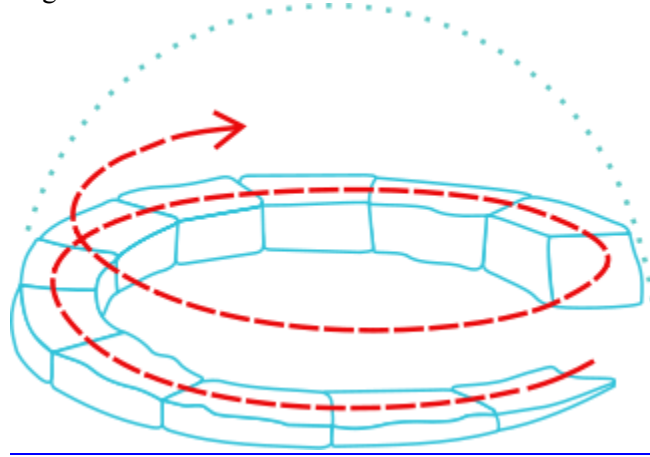
Spend some time looking at the overhead images of quinzees and igloos. Why do people make these structures? For shelter and warmth. What is the difference between a quinzee and an igloo? A quinzee is a snow structure made from a pile of snow that has been dug out. An igloo is made of blocks of snow. Look at the details of how they are made.

Quinzee building:

1. Locate a relatively flat area
2. Do not use snow that had been piled up by the wind or snowplows
3. Pile snow to the desired height (6-10 feet)
4. Let it settle (3-4 hours)
5. A smaller inside is better because then the heat stays close to the occupant. They are usually built to sit inside not stand.
6. Put sticks in the roof and wall (about 10 inches in) these will provide a guide when digging out and air holes once complete
7. Dig until the sticks are reached
8. Dangers: quinzees often collapse from people climbing on them.
Collapse can cause suffocation to people inside. An adult should always be next to and supervising the quinzee construction. Students

should dig while on their knees, not on their back. People should never climb on snow structures because they may damage the internal structure.

Igloo building:



Now, bundle up and head outside to the “quinzee town.” (The coordinator can tell you where it is located this year.)

B. Quinzee building

Split the group so that some people are starting a new pile of snow for a quinzee and some people are working on hollowing out a quinzee. An adult should supervise the student digging at all times. Make sure the kids are taking turns and being safe. Students should NEVER climb on the snow shelters because it weakens them and they could collapse.

C. Igloo building

If the snow is packable, hand out the block making tools and have a group of students work on building an igloo.

D. Temperature

If you have time, measure the air temperature outside and then inside of a completed quinzee after someone has sat/laid inside for about 5 minutes. Compare your results.

VI. Winter Ecology

A. Where is there snow?

Many people have never seen snow. It snows on only one-third of the Earth every year. In some areas (polar regions), it snows all year. In tropical climates, it snows just on top of very high mountains. In temperate climates (like Wisconsin), it usually only snows in the winter. But you won't find snow in all temperate areas at the same time because winter comes to the northern part of the world in December and to the southern part in June.

B. Why?

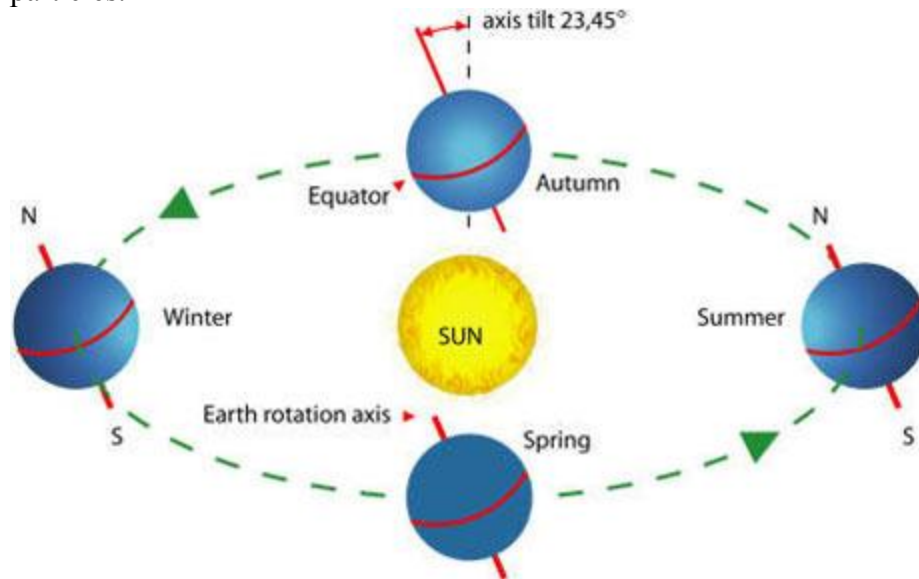
Ask the class to brainstorm their ideas about why there is only snow in parts of the world and why the north and south have snow at different times.

It takes 24 hours for the Earth to spin all the way around. While the Earth is spinning it is also traveling around the Sun. It takes one year for the Earth to travel all the way around the Sun.

The Earth also spins on a axis that is tilted 23.56° . Due to this tilt, the Sun does not always hit the same area of the planet with the same intensity.

During half of the year, the top of the Earth (the Arctic) tilts towards the Sun and the bottom of the Earth (the Antarctic) leans away from the Sun. This is when the Arctic has 24 hours of sunlight and the Antarctic is dark for 24 hours (it is also the time when we have summer). During the other half of the year, the Earth's tilt allows for the opposite to be true.

The amount of solar radiation that hits the Earth varies with latitude. The sun's energy is more concentrated at the equator than at the poles. At high latitudes the solar rays travel over a longer path through the atmosphere. The longer the path the more energy is absorbed and reflected by bases and particles.



C. Experiment

In order to demonstrate this idea, try this experiment:

1. Set-up table lamp without shade on a table
2. Turn off classroom lights
3. Ask kids to stand or sit away from the light so that you can move around it
4. Hold the globe at an angle to the "sun"
5. Move the globe slowly around the lamp. While you move the globe, keep it tilted in the same direction.
6. Ask the students to make observations

- a. Does the lamp shine on different parts of the globe?
 - When the top of the globe leans towards the lamp, it is always dark on bottom of the globe. (our summer)
- b. What does the experiment look like to show our winter?
 - When the top of the globe is leanings away from the lamp.

D. Icy Acts

We are now going to explore and examine the different processes that form various types of frozen precipitation.

Arrange the student in four groups. Give each group an information card that describes how one type of frozen precipitation is formed. Then, they work on creating a skit that shows how their precipitation is formed and how it affects our lives.

- Snow
- Freezing Rain
- Hail
- Sleet

The words on the cards that are in bold may be made into nametags and assigned as roles for the children to act out.

Each group presents their skit and the other children try to guess what type of precipitation is being dramatized. Afterwards, use the diagrams to review the steps.

E. Wrap-up

Spend some time reviewing what was learned about why we have winter and how snow is made.

If there is a little time left, read the book “When Winter Comes.”

VII. Conclusion

Today at the School Forest, we all learned a lot about winter, how snow is made, animal survival, snowshoeing, and building snow structures. Ask the students to share what they learned during the day. Follow up with connecting activities at school.

VIII. Clean-up

- Return supplies to building
- Take garbage out to dumpster
- Close windows, shut off all lights and water, lock doors, shut driveway gate
- Give the School Forest coordinator feedback on how to make this trip better in the future.

Safety

While at the School Forest, teachers should carry first aid kits. You can bring these from your school or use the ones at the School Forest. The first aid stations can be found in the Ehlert Lodge office, ELC classroom, and upstairs of the Krejcarek Building. Please report any safety issues to the School Forest Coordinator.

Students should be supervised at all times. If you decide to go off trail, go in a clear area where branches cannot swing back and hit someone.

Optional / Indoor Activities

Invisible for a day: Ask the students to pretend they were so well camouflaged for one day that they can move around without being seen. Write a story about what might happen.

Stranger in the Woods Movie

Make a Track:

Pass out rulers, paper, and crayons to all of the students. Ask them to use the flash guides and tracking books to help them draw an animal track to scale by using their rulers. They can color it and draw a picture next to the track of the animal that the track belongs to. Write a sentence about the animal and where it lives.

(Materials: rulers, paper, pencils, crayons, colored pencils, scissors, glue, tracking flash guides, tracking books, rubber track molds)

Migration Marathon:

For this game, most of the students will become hummingbirds from Wisconsin that are traveling south for the winter. Talk more about migration with the students before playing this game. All birds have different things that they do when the temperatures start to drop. Many birds from our area migrate south. Some birds go to the East Coast, some fly to Florida, and some fly all the way to Mexico. Hummingbirds, although very small, travel some of the furthest distances. Ruby-throated hummingbirds migrate over 2,000 miles to Mexico, Panama, and the Gulf States.

Set-up: Establish a playing field (one side of the volleyball court would work well) and set out the habitat pieces face down. Have students line up on one side of the field facing the field. Pick one student to be the Danger (a predator, storm, car) and pull them off to the side of the playing field. The students are now going to migrate across the field. As they migrate they should try to pick up as many habitat pieces as possible. While the hummingbirds are migrating the Danger student should run into the migration area and tag students (you can limit the amount of people the Danger can tag). Those students tagged by the Danger are pulled out of the game.

After all of the students have either reached the other side of the migration area or been tagged by the danger, stop and have the students count their habitat pieces. Those with ten or more pieces will survive till the next migration season; those that picked up less than ten will be pulled out of the game.

Talk with the students about the dangers of migration. The game pieces represent food, water, and shelter. If a hummingbird does not receive enough of one of these, it will die during migration. You can play more rounds of the game if you have time. Variations include: adding more danger, taking away some of the habitat pieces, making the migration area larger or smaller, or adding a new hummingbird for every two that make it across the playing field twice. You can also keep track of the amount of hummingbirds between the rounds for discussion.

Additional Information

Tracks and Traces- more information from [Hands-On Nature](#) and [Project Seasons](#) on the following pages

Check out this website: http://www.nfb.ca/film/How_to_Build_an_Igloo

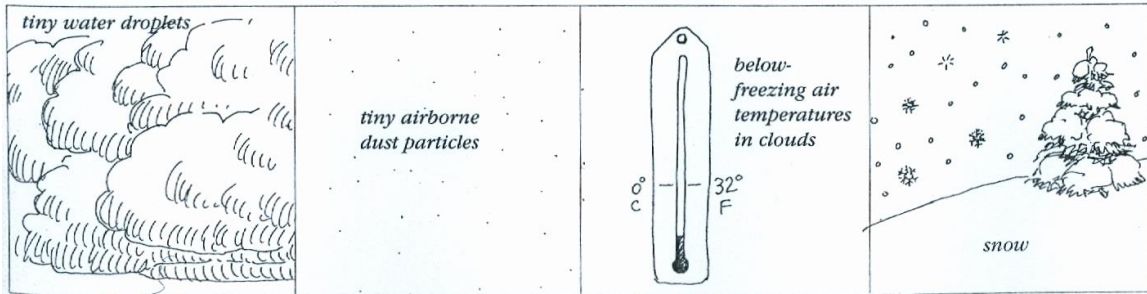
Resources

- Cornell, Joseph. Sharing Nature With Children. Ananda Publications, 1979.
- Eagle Bluff ELC curriculum. The Big Freeze. Lanesboro, MN. December, 2001.
- Lindelbach, Jenepher and Lisa Purcell. Hands-On Nature. Vermont Institute of Natural Science, Woodstock, Vermont. 2000.
- Nations Online website. <http://www.nationsonline.org/oneworld/earth.htm> January 20, 2010.
- Parrella, Deborah. Project Seasons. Shelburne Farms, Vermont. 1995.

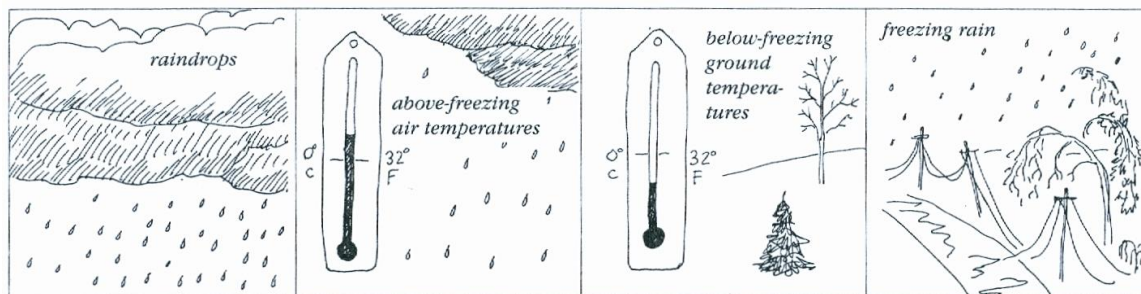
Lesson Plan written by Patty Brodeen Maher, School Forest Coordinator, Manitowoc Public School District, January 2010.

Icy Acts Information Cards

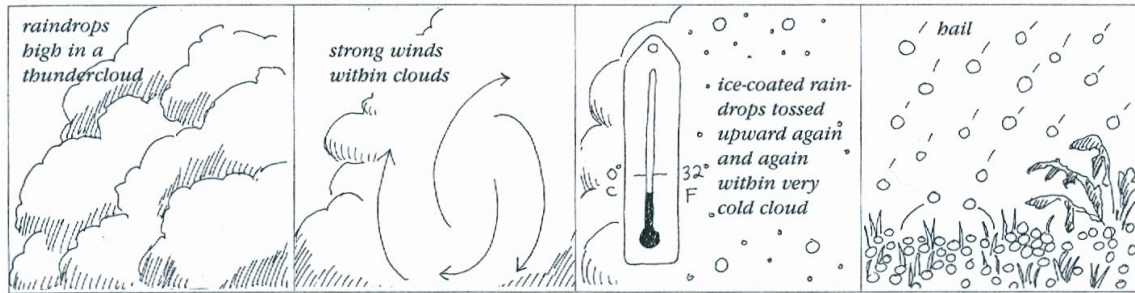
Snow: All snowflakes start with **water vapor** freezing around a **small speck of dust**, salt, or even pollen. When the temperature is just right (anywhere from **32°F to -39°F**), water vapor cools very rapidly and crystallizes, forming a snow crystal. A **snowflake** may be one snow crystal or a cluster of many crystals joined together.



Freezing Rain: Freezing rain isn't frozen when it falls from the sky. It comes down as liquid **raindrops**, passing through relatively **warm air temperatures** (above freezing). It passes through a shallow layer of below-freezing air near the ground, and the raindrops freeze as they touch the **frozen ground** or other cold surfaces.



Hail: Hail starts out as **raindrops**, but **strong winds** toss the raindrops up into the very cold upper air where **freezing temperatures** can be found even in spring and summer. As the wind blows the raindrops upward, they freeze and then fall down, only to be blown back upward again and again. This continues until the original rain drops, now coated with many layers of ice, become so heavy they fall to the ground as **hail**. Hailstones can be very large – even the size of golf balls!



Sleet: Sleet starts out as liquid **raindrops**. However, as this rain passes through a deep layer of **very cold air**. It freezes into tiny particles of **sleet** before hitting the ground.

