

Blubber and Books

A story time about winter

LESSON PLAN

The goal of this lesson is to have children think about the various adaptations that animals make to the cold of winter (i.e. some migrate, some hibernate, some adapt through changing their behavior or appearance, and some, like marine mammals, have blubber). The lesson includes an experiment that helps demonstrate how blubber allows animals to stay warm in cold water. Children will use the scientific method by: forming a hypothesis (making a prediction) about whether or not extra fat (the blubber glove) helps people and animals adapt



to icy water; testing the prediction through keeping times of hands (bare hand versus blubber glove) in icy water; recording the results in a log; and talking about whether the results support the prediction.

This lesson plan works very well with children preschool through second grade. The lesson lasts between 45 minutes to an hour, based on the number of books read. To orient the children to what it means to be a scientist, think scientifically and “do science,” use the **“A Scientist Is. . .”** and **“Scientific Method”** handouts available at the end of this lesson plan.

SING

Begin with your favorite welcome song.

SCIENCE CHAT

Begin a theme on winter at circle time by freestyle asking the children what fun things they are doing in winter. Perhaps continue the conversation by asking about what they love and don't love about winter.

HOW DO WE STAY WARM IN WINTER? BRAINSTORM

What happens outside in winter? How does winter make us feel?

What kinds of things to kids & grown-ups do in winter so we don't feel cold?

What about ANIMALS? What do animals do? (MIGRATE, HIBERNATE, ADAPT, BLUBBER!)

– **MIGRATE** (go to warmer places): Birds, Fish, Butterflies, Elk/Caribou

– **HIBERNATE** (sleep, lower heartrate): Bears, Skunks, Chipmunks, Snakes

– **ADAPT** (change behavior or appearance):

- Squirrels grow a thicker coat of fur
- Snowshoe Rabbits change the color of their fur so they can hide in the snow
- They both (along with other animals) look for warm places to sleep like holes in logs
- Some animals even sleep underground (like bees!)

– **BLUBBER** (thick layer of fat, also called adipose tissue, directly under the skin of all marine mammals)

- Covers the entire body of seals, whales, walruses (except for fins, flippers, and flukes!)

READ ALOUD

Suggestions from the Wisconsin Water Librarians, but feel free to swap out with your own OR visit our **Subject specific reading list: [Winter Fun](#)**

All book descriptions are quoted with permission from the Cooperative Children's Book Center (CCBC) or Kirkus Reviews (KR).

READ: [Snow \(2002\)](#) by Manya Stojic.

"Stojic paints this gentle anticipation and enjoyment of a snowfall in breezy, broad strokes. On each spread, an animal comments on the upcoming weather event..." (KR)

For ages 2-5.

READ: [Big Snow \(2013\)](#) by Jonathan Bean.

"David tries to help his mother with Christmas housecleaning, but his mind swirls with thoughts of the big snow predicted to fall that afternoon... Winter's chills, rituals and resulting familial closeness, rendered in simple, surprisingly poignant drawings, make this a perennial read at first frost."(KR)

For ages 2-6.

READ: [Snowmen at Night \(2004\)](#) by Carolyn Buehner illustrated by Mark Buehner.

"... In a delightful story about the nocturnal activities of snowmen that is refreshingly original and visually sparkling, Buehner imagines why snowmen may not look the same as they had the day before... Primary colors delicately form the winter wonderland where the secret, active life of these frozen friends is grinningly revealed." (KR)

For ages 2-6.

READ: [Winter Eyes \(1999\)](#) by Douglas Florian.

"Florian gives young readers a strong sense of winter through icy images and subdued illustrations rendered in watercolors and colored pencils. His childlike perspective on the snowy season includes poems about sledding, icicles, tracks, snowmen, ice fishing and skating." (CCBC)

For ages 4-10, poetry.

READ: [Time to Sleep \(1997\)](#) by Denise Fleming.

"Bear knows it's time to crawl into a cave and fall asleep, but first Snail must be told. Snail feels compelled to inform Skunk. Following that pattern Turtle, Woodchuck, and Ladybug also find out that autumn is over. A gentle surprise ending precedes the quiet final page on which all settle into hibernation with a round of 'good nights.'" (CCBC)

For ages 2-5, Highly Commended, Charlotte Zolotow Award.

[Winter Bees and Other Poems of the Cold \(2014\)](#) by Joyce Sidman, illustrated by Rick Allen.

"Tundra swan, snake, snowflake. Bees in their hive, a vole under snow, the fly-high raven and the earth-bound wolf. The lives of these and other creatures in winter are the subject of poems by Joyce Sidman that crackle with cold and sing with warmth." (CCBC)

For ages 6-10, poetry.

[Iguanas in the Snow and Other Winter Poems = Iguanas en la nieve e otros poemas de invierno \(2001\)](#)

by Francisco X. Alarcon, Illustrated by Maya Christina Gonzalez.

"Alarcón writes with playful humor and a full heart about his beloved city of San Francisco, and about winter in the snow-laden Sierra Nevada. Specificity of place does not limit the poems' accessibility, however. They are vibrant, welcoming, and child-friendly. Maya Christina Gonzalez's energetic, joyful artwork is a perfect accompaniment." (CCBC)

For ages 5-9, poetry, bilingual [Spanish/English].

[Winter Poems \(1994\)](#) selected by Barbara Rogansky, Illustrated Trina Schart Hyman.

"Twenty-five poems evoke possibilities of the season - its weather, bird-watching, skiing, moon, deer, geese, even its germs, as well as its indoor warmth. It's the warmth that readers of this incomparable anthology can experience, the warmth resulting from reading or hearing superb classic poetry in many voices and forms..." (CCBC)

For ages 5-14, poetry.

[The Long, Long Journey: the Godwit's Amazing Migration \(2013\)](#) by Sandra Markle, illustrated by Mia Posada

"Exemplary writing and gorgeous illustrations distinguish an informational picture book about the bar-tailed godwit, whose amazing migratory flight is first undertaken when it's four months old..." (CCBC)

For ages 5-8.

[North: the Amazing Story of Artic Migration \(2011\)](#) by Nick Dowson, illustrated by Patrick Benson.

"Although few animals other than polar bears and arctic foxes remain in the Arctic through the winter, they are joined by many other species that migrate to the region during the milder seasons. Whales travel from Mexican lagoons, cranes fly from China, caribou come from Canada, and terns begin their migration in far-away Antarctica." (CCBC)

For ages 5-10.

[Old Bear \(2008\)](#) by Kevin Henkes.

"'By the time Old Bear fell asleep for the winter, it was snowing hard.' But soon Old Bear is dreaming of spring, and in his sleep he is a young bear again, frolicking in colorful flowers. Old Bear's journey through the seasons and into his youth continues as he sleeps. When he finally awakens, it is to a world made new again by the real arrival of spring, and Old Bear is ready to enjoy it." (CCBC)

For ages 2-6, Highly Commended, 2009 Charlotte Zolotow Award.

[Sleep Tight, Little Bear](#) by Britta Teckentrup.

"As winter sets in, a momma bear and baby bear get ready for their long winter's sleep. Teckentrup's blocky, graphic illustrations, which appear to be a combination of cut-paper collage and digital renderings, gently reveal the autumnal forest and all the bears' forest friends... A closing note with additional facts about animal hibernation makes this a good choice for science-themed storytimes." (Booklist Online)

For ages 4-7.

[When Winter Comes \(2000\)](#) by Nancy Van Laan, illustrated by Susan Gaber.

"What happens to leaves and flowers, caterpillars and songbirds, field mice and fish, and other living things "when winter comes and the cold wind blows"? In a series of lyrical question-and-response verses, Nancy Van Laan conveys ways in which the natural world changes and adapts when the cold and snow arrive." (CCBC)

For ages 3-6.

[Under the Snow \(2009\)](#) by Melissa Stewart, illustrated by Constance R. Bergum.

"While humans engage in winter activities above the snow, all kinds of concealed animal activity takes place beneath." (CCBC)

For ages 4-8, Highly Commended 2010 Charlotte Zolotow Award.

[Where Do They Go? Insects in the Winter \(1982\)](#) by Millicent E. Selsam, illustrated by Arabelle Wheatley.

"Very simple and accurate explanations of the various ways insects cope with the cold winter months facilitate easy reading of a colorfully illustrated book of information supplying answers to the common questions about migration and hibernation." (CCBC)

For ages 7-9.

[Into Winter: Discovering a Season \(1982\)](#) by William P. Nestor, illustrated by Susan Banta.

"A guide to the winter environment written by a naturalist-educator suggests projects and collections ... Extensive resources are appended." (CCBC)

For ages 7-13.

SING

Use any song you like adapted to the theme of winter. Here are two suggestions:

Snowman Hokey-Pokey

You take your right mitten out.
You put your right mitten in,
then you shake it all about.
You do the winter pokey, (shiver)
and you turn yourself around.
That's what it's all about!

*Then continue exchanging "right mitten" for the following in separate verses:
Left mitten... Boots... Scarf... Warm hat... Snow suit...*

Snowman Song (Tune: I'm a Little Teapot)

I'm a little snowman, round and fat. (Point to tummy)
Here are my mittens (wiggle fingers), here is my hat. (Point to head)
When the sun comes out I melt away. See you next year on a snowy day.

I'm a happy fellow, here's my nose. (Smile and point to nose)
I'm all snow from my head to my toes. (Point to head and to toes.)
When the sun comes out, I melt away. See you next year, on a sunny day.

I have two bright eyes so I can see. (Point to eyes.)
All the snow falling down on me. (Wiggle fingers downward.)
When the sun comes out, I melt away. See you next year, on a sunny day.

When the weather's cold, I am strong and tall (stand tall)
but when it's warm, I get very small (crouch down)
When the sun comes out, I melt away. See you next year, on a sunny day.

DO SCIENCE – THE BLUBBER GLOVE

Simulate the insulating effect of blubber by making this blubber glove adapted from Steve Spangler Science: <http://www.stevespanglerscience.com/lab/experiments/blubber-gloves>



YOU NEED

2 large Ziplocs
Shortening
Spoon
Duct tape
Cold water

Ice bucket
Clipboards/pencil
Timer

Make the blubber glove by putting two cups of Crisco (or similar shortening) into a large Ziploc bag. Put your hand inside a second Ziploc bag of the same size as the first and push it into the shortening-filled bag. Spread the shortening around the bags so the inside bag is mostly covered by shortening. Fold the tops of the inside and the outside bags outward (forming a lip) and duct tape the folded part to seal in the shortening.

Run the experiment by first looking at the **scientific methods handouts** at the end of this lesson. Explain to the kids that this experiment is imitating the effect of a nice layer of fat or blubber that some animals have who live in cold environments, and then testing to see if fat really makes a difference.

Have them **form a hypothesis** as to whether wearing the blubber glove will make a difference in how long they'll be able to keep their hand in the ice water (see the hypothesis at the top of the Blubber Glove Record Log).

Test the hypothesis by having the children put their bare hand in the bucket of ice water and **timing** how long they can keep it there.

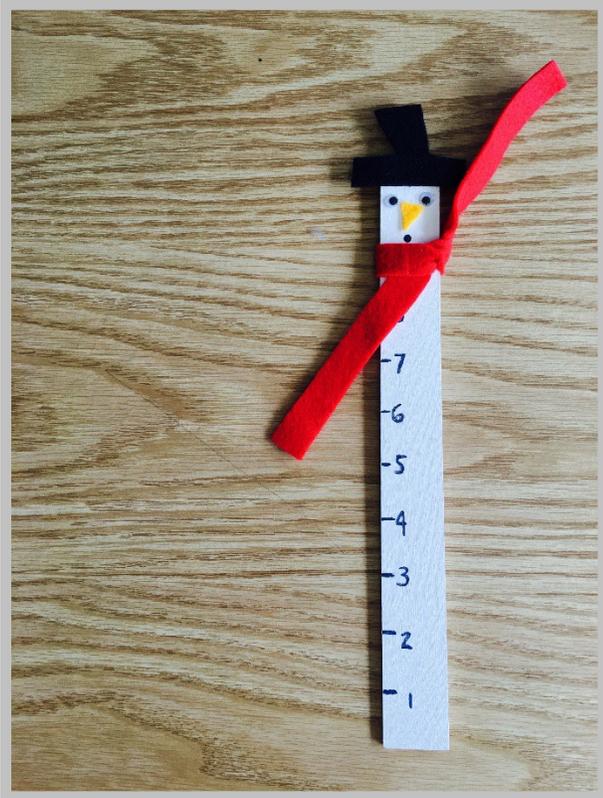
Record results on the **record log** that follows. Repeat the process using the blubber glove!

(Note: If you have lots of kids in your group consider choosing 5 or 6 volunteers to test the hypothesis and have some of the others participate by timing the volunteers or recording the times in the log).

BLUBBER GLOVE/HYPOTHERMIA EXPERIMENT RECORD LOG

| SUBJECT # | Hypothesis: Which hand do you think you can hold in the ice water the longest? | Test: Record how long you kept your bare hand in ice water | Test: Record how long you kept your blubber glove hand in ice water | Result: Which hand were you able to hold in ice water the longest? |
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CREATE – SNOWMAN RULER *for measuring snow and other things.*



Supplies needed:

Wooden craft sticks white paint
Sponge paint brushes tacky glue
Rulers scissors googly eyes
Black markers

How To:

- paint sticks and let them dry (maybe ahead of time)
- cut out felt pieces for hat, scarf, and nose
- have children measure out and mark inches on the sticks
- glue and tie felt pieces on
- add googly eye

TO LEARN MORE ABOUT ANIMAL ADAPTATIONS AND WINTER

1. Michigan State University Extension's web information on animal adaptations for winter: http://msue.anr.msu.edu/news/animal_adaptations_for_winter.
2. Science Made Simple website – How Do Animals Survive the Winter? Hibernation, Migration, Adaptation: <http://www.sciencemadesimple.com/animals.html>.
3. BBC Nature's website (last updated 2014) which features videos and information on animal and plant adaptations and behaviors, including adaptations to extremes: <http://www.bbc.co.uk/nature/adaptations>.
4. National Geographic Society's website collection on animal migration: <https://www.nationalgeographic.org/topics/animal-migration/>
5. National Geographic's Teaching Resources and Activities webpages which can be filtered by grade levels, type of activity, and subject [e.g. biology, current events, etc.]: <https://www.nationalgeographic.org/activity/>).
6. The Smithsonian website for educators can be searched by grade levels and subjects: <http://www.smithsonianeducation.org/educators/>.



A SCIENTIST IS SOMEONE WHO...

- Observes and wonders
- Asks questions
- Listens to ideas of others
- Conducts experiments
- Shares his/her ideas and discoveries
- Explores the world around him/her
- Uses tools to solve problems

A SCIENTISTS SAYS...

- I agree with you because...
- I disagree with you because...
- Why do you think that?
- So, what you're saying is...
- Can you tell me more?
- Can you give me an example?
- How could we test that?
- That reminds me of...



DOES IT SINK OR FLOAT? SCIENTIFIC METHOD

THINK LIKE A SCIENTIST

