



Big Freeze

Class Outline

Brief Synopsis: While we are snug in our heated homes, plants and animals are surviving outside in the cold and snow. Search for signs of life to discover the interesting (and sometimes seemingly strange) ways plants and animals have adapted to endure the harsh conditions of a Minnesota winter. Conduct a winter weather experiment to determine which insulators and conditions are most effective for local animals surviving cold temperatures.

Outcomes:

1. Students will be able to describe the celestial processes that cause seasonal change and why winter occurs in Minnesota.
2. Students will be able to list and define the many adaptations unique to plants and animals that live in seasonally variable climates.
3. Students will explore the properties of insulation through experimentation utilizing the cold temperatures of winter.
4. Students will compare Minnesota plants and animals to contrast the variety of winter adaptations and understand why many adaptations are specific to certain species.

Outline:

I. Why Winter? (15 minutes)

Minnesota has four distinct seasons each year. Students will take on the roles of the Sun and the Earth as they move through space to explore the reasons behind seasonal change.

II. Surviving Winter (1 hour and 30 minutes)

The woods and fields around Eagle Bluff are teeming with life, even in the winter! Students study several local plants and animals through exploration, experiments, games and readings to discover how these species have adapted to survive Minnesota's harsh winter.

III. Warm Bodies (20 minutes)

During an experiment on insulation, students must protect their own "creature" as best as they can from the elements of winter. By comparing the beginning and ending temperatures of their creatures students will discuss what constitutes the most successful insulators and conditions for their creatures. Students are asked to relate these survival techniques to local creatures' physical and behavioral winter adaptations.

IV. Steal the Adaptation (20 minutes)

To review and conclude the class, students are divided into two teams competing to "Steal the Adaptation." Through active play, students review and are quizzed on the multitude of adaptations used by Minnesota plants and animals to thrive in our drastically seasonal environment. Quick decision making, running and tagging determines who "survives" this fast-paced activity!

Quick Facts

Class Length: 3 hours

Ages: Designed for 4-6th grade

Season offered:

December through February

Time outside: 1 hour 30 minutes

Hike length/physical activity:

1 mile, moderate physical level

Pre-requisite/prior knowledge:

No special skills required

Minnesota Academic Standards:

Science: 7.IV.B.2, 8.III.C.2,
9-12.III.B.3

Math: 4.IV.B.2

Language Arts: 4.I.A.1&2, 4.I.B.1,
4.I.C.1, 4.III.A.1-2, 5.I.A.3,
5.I.B.1, 5.I.C.1, 5.III.A.1-2,
6.I.A.2&3, 6.III.A.1, 7.I.A.1-3,
7.I.B.1, 7.III.A.1, 8.I.B.1,
8.III.A.1, 2&7