## Saint John's Outdoor University Field Trip Overview

## Water in Winter

**Objective:** Students will understand the changes that water goes through in winter. Students will collect data on how temperature changes can affect water. Students will explore how animals find sources of drinking water in harsh winter conditions. Students will understand how water changes depending on its current state of matter. Students will observe how the density of water changes.

## **Field Activities:**

**Snow Jar:** Students will collect snow in a container and form a hypothesis on how much water will be in the container once it melts.

A Cold Drink: Students will act out how animals find water in the middle of winter. By rolling dice they will discover sources of drinking water or become dehydrated due to physical activity.

**Please Be Specific:** Students will use thermometers to take temperature readings of different water sources such as lakes and snowbanks. Students will record and compare data to understand the changes water goes through at different temperatures.

Water We Doing?: Students will assume the role of water molecules and form atomic bonds together. Through acting students will understand the impact temperature and weather changes can have on water molecules.

**Nature Explorer Connections:** All students have the ability to be nature explorers. Nature explorers respect the natural world, observe using their senses, and wonder by asking questions about their observations.

Respect – Ways we will demonstrate respect:

- What lives in nature stays in nature. We will not take anything home with us unless it is allowed on the field trip.
- We will understand the vulnerability of plants during the winter and will minimize our impact on them as we explore.

**Observe** – Observational activities included throughout the field trip:

- Student observation will be recorded throughout the field trip and brought back to the classroom for further study.
- Observation games will be included throughout the field trip.

Wonder - Sample Questions that may be discussed:

- How did your hypothesis differ from the results?
- Why do some sources of water hydrate us more than others?
- How would you improve this experiment if you could do it again?

• Are there any factors other than temperature that you think can change waters current state of matter?

Grade	Strand	Substrand	Standard	Content Area	Benchmark
4	1 Exploring	1.2 Planning	1.2.1 Students will	Earth and	4E.1.2.1.1
	phenomena	and carrying	be able to	Space	Make
	or	out	design and conduct	Science	observations
	engineering	investigations	investigations in the		and
	problems		classroom,		measurements
			laboratory, and/or		to provide
			field to test		evidence of
			students' ideas		the effects of
			and questions, and		weathering or
			will		the rate of
			organize and collect		erosion
			data to		by the forces
			provide evidence to		of water, ice,
			support		wind, or
			claims the students		vegetation.*
			make		(P: 3, CC: 2,
			about phenomena		CI: ESS2)
4	3 Developing	3.1	3.1.1 Students will	Earth and	4E.3.1.1.1
	possible	Developing	be able to	Space	Develop a
	explanations	and using	develop, revise, and	Science	model based
	of	models	use		in part on
	phenomena		models to represent		student
	or designing		the		observations
	solutions to		students'		or data to
	engineering		understanding of		describe ways
	problems		phenomena or		the
			systems as they		geosphere,
			develop questions,		biosphere,
			predictions		hydrosphere,
			and/or		and
			explanations, and		atmosphere
			communicate ideas		interact. (P: 2,
			to others.		CC:
					4, CI: ESS2)
4	3 Developing	3.2	3.2.1 Students will	Earth and	4E.3.2.1.1
	possible	Constructing	be able to	Space	Identity
	explanations	explanation	apply scientific	Science	evidence
	of	s and	principles and		from patterns
	phenomena	designing	empirical evidence		in rock
	or designing	solutions	(primary or		formations
	solutions to				

Minnesota K-12 Academic Standards addressed and focused on during activities:

engineering	secondary) to	and fossils in
problems	explain the	rock layers to
	causes of	support an
	phenomena or	explanation
	identify weaknesses	for
	in	changes in a
	explanations	landscape
	developed by the	over time. (P:
	students or others	6, CC: 1, CI:
		ESS1)