Saint John's Outdoor University Field Trip Overview

The Secret Life of Trees (Pilot Test)

Objective: Students will investigate trees, doing a series of activities that examine the exterior, interior and root system of trees. By completing science education-based activities students will investigate the question "how are trees shaped by and how do they shape their environments?"

Field Activities

Tree Sleuthing: Students will observe trees to hypothesize how they've been impacted by their environments.

Wood Cookie Decoding: Students will interpret the life of a tree using a wood cookie and guidebook.

Mycorrhizal Messaging: Students will understand how trees use mycelium formed mycorrhizal networks to transfer nutrients by transporting golf balls through pipes.

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 delicate nature of insects and be careful when handling or observing them.

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 activities will be included throughout the field trip.

Wonder – Sample questions that may be discussed:

- How do you think the surrounding area impacted the tree?
- What major events occurred through your trees life?
- Why do you think it's important for trees to be able to share nutrients?

Minnesota K-12 Academic Standards addressed in activities:

Grade	Strand	Substrand	Standard	Content Area	Benchmark
7	3 Developing possible explanations of phenomena or designing solutions to engineering problems	3.2 Constructing explanations and designing solutions	3.2.1 Students will be able to apply scientific principles and empirical evidence (primary or secondary) to explain the causes of phenomena or identify weaknesses in explanations developed by the students or others.	LS: From Molecules to Organisms: Structures And Processes	7L.3.2.1.1 Construct an explanation based on evidence for How environmental and genetic factors influence the growth of organisms and/or populations. (P: 6, CC: 2, CI: LS1, ETS2)

7	3 Developing possible explanations of phenomena or designing solutions to engineering problems	3.2 Constructing explanations and designing solutions	3.2.1 Students will be able to apply scientific principles and empirical evidence (primary or secondary) to explain the causes of phenomena or identify weaknesses in explanations developed by the students or others	LS: Biological Evolution: Unity and Diversity	7L.3.2.1.3 Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships. (P: 6, CC: 1, CI: LS4)
7	4 Communicating reasons, arguments and ideas to others	4.1 Engaging in argument from evidence	4.1.2 Students will be able to argue from evidence to justify the best solution to a problem or to compare and evaluate competing designs, ideas, or methods.*	LS: Ecosystems: Interactions, Energy, and Dynamics	7L.4.1.2.2 Evaluate competing design solutions for maintaining biodiversity or ecosystem services.* (P: 7, CC: 2, CI: LS2, ETS2)
7	4 Communicating reasons, arguments and ideas to others	4.2 Obtaining, evaluating and communicating information	4.2.2 Students will be able to gather information about and communicate the methods that are used by various cultures, especially those of Minnesota American Indian Tribes and communities, to develop explanations of phenomena and design solutions to problems.	LS: Ecosystems: Interactions, Energy, and Dynamics	7L.4.2.2.1 Gather multiple sources of information and communicate how Minnesota American Indian Tribes and communities and other cultures use knowledge to predict or interpret patterns of interactions among organisms across multiple ecosystems. (P: 8, CC: 1, CI: LS2, ETS2)