

FOREST LITERACY BY GRADE LEVEL

GRADES 9-12

High school students are able to use sophisticated reasoning with difficult concepts, particularly when the learning context is familiar to them. Using forests as a context for learning is beneficial for students this age, as it provides them with a real-world basis for applying new knowledge.

Many high school students still have difficulty proposing explanations based on logic and evidence instead of on their prior conceptions of the natural world. Providing opportunities to collect evidence and develop explanations based on that evidence can help them develop this skill. Forest literacy activities at the high school level may explore:

- What factors contribute to the biodiversity of different types of forests?
- How do people manage forests to achieve desired forest outcomes and ensure the sustainability of our forests?
- What role do foresters and natural resource professionals, governments, private companies, and individuals play in managing and sustaining our forests locally and globally?
- What career opportunities are available in the forest and conservation sector?

At this level, forests can become the focus of more and more sophisticated research, in which students use data to drive their decisions. Forests can also provide a meaningful context for high school students to examine the implications of issues on a variety of levels, locally and globally.



KEY FOREST LITERACY PLAN CONCEPTS FOR GRADES 9-12



The following concepts from the Forest Literacy Framework have direct connections to Next Generation Science Standards (NGSS) in the United States, to provincial science standards in Canada and to Social Studies standards in both countries. Note that many concepts also support English Language Arts, and Mathematics standards as well.

<i>Forest Literacy Framework Concept</i>	Subject	Topic	Core Idea	Standard (If Applicable)
Theme 1, C.4	Science	Ecosystem Dynamics, Function, and Resilience	A complex set of interactions can keep ecosystems relatively stable over long periods of time. Extreme fluctuations in conditions can challenge the functioning of ecosystems.	NGSS: <u>HS-LS2-6</u>
Theme 2, A,3	Science	Cycles of Matter and Energy Transfer in Ecosystems	Photosynthesis and cellular respiration are important components of the carbon cycle, in which carbon is exchanged among the biosphere, atmosphere, oceans, and geosphere through chemical, physical, geological, and biological processes.	NGSS: <u>HS-ESS2-6</u>
Theme 3, C.5	Social Studies	Civics: Civic and Political Institutions	Institutions help to address social and political problems at the local, state, tribal, national, and international levels.	See local standards
Theme 3, B.5	Science	Human Impacts on Earth Systems	We must responsibly manage our natural resources in order to ensure the sustainability of human societies and the biodiversity that supports them.	NGSS: <u>HS-ESS3-3</u>

<i>Forest Literacy Framework Concept</i>	Subject	Topic	Core Idea	Standard (If Applicable)
Theme 3, E.6	Social Studies	Economics: Exchange and Markets	Incentives can influence what is produced and distributed in a market system.	See local standards
Theme 4, B.1	Science	Designing Solutions to Engineering Problems	When evaluating solutions, it is important to take into account a range of constraints, including cost, safety, reliability, and aesthetics, and to consider social, cultural, and environmental impacts.	NGSS: <u>HS-ESS3-R</u>
Theme 4, B.2	Science	Ecosystem Dynamics, Functioning and Resilience	Anthropogenic changes in the environment can disrupt an ecosystem and threaten the survival of some species.	NGSS: <u>HS-LS27</u>

SAMPLE FOREST LITERACY ACTIVITIES

GRADES 9-12

- Lead students in conducting a tree survey of the school grounds, identifying the genus of each tree and measuring the diameter at breast height and the height of each tree. The activity “**Monitoring Forest Health**” in PLT Canada’s ***Green Jobs: Exploring Forest Careers*** includes details for these and other monitoring activities. [Theme 1, B. Trees as Part of the Forest]
- Study the process of succession, first by reading about the reestablishment of ecological communities following the eruption of Mount St. Helens in 1980. Then have students conduct an investigation by roping off three areas on or near the school grounds that represent different stages of succession and observing them at regular intervals over the school term. [Theme 1, C. Forests as Ecosystems]
- Challenge students to explore the connection between forests and water through a soil filtration experiment using 2-liter plastic bottles or other simple materials. Students can compare the absorption rates of forest soil and other types of soil, and the quantity and quality of water that runs off the various soils. Encourage students to research their community’s drinking water to find out what watershed it comes from and how its source might depend on forests. [Theme 2, A. Environmental Importance]
- Show videos depicting real-life people in different forestry jobs using ***PLT Canada Day In The Life*** videos highlighting 12 different career opportunities. Invite students to explore forest-related careers by conducting internet research or through informational interviews. Encourage them to find out what education, experience, skills, and personal qualities are required or helpful for their chosen career. [Theme 2, C. Economic Importance]

5. Explore the role of prescribed burns in managing fire-prone forest ecosystems. Have students conduct a wildfire safety assessment of their home or school and make recommendations for increasing wildfire safety. [Theme 3, B. Forest Management]
6. Examine together Canada's statistics for the UN Sustainable Development Goals. Direct students to identify connections between forests and each of the 17 goals, and areas where progress is or isn't being made toward sustainability in Canada. Students might also interview forest landowners or forest managers to find out what challenges they face in meeting sustainability goals at the local level. [Theme 3, C. Forest Management Policy]
7. Invite students to carry out a project to deepen their connection with forests. For example, they might conduct an opinion survey to determine the community's view on forests and forest management issues. Or they might create an interpretive trail that goes through a local forest, working with government agencies and businesses to plan the trail, and researching and creating signs or a brochure. [Theme 4, A. Our Connection to Our Forests]
8. Help students take a leadership role in the community by planning and presenting a Forest Day with a nearby elementary school classroom. Have students identify forest-related topics that would help younger children understand the importance of trees and sustainably managed forests. Then assist them in designing fun and interesting activities for the elementary students, using PLT Canada's [Free Worksheets](#) available at pltcanada.org as a possible starting point. [Theme 4, B. Working for the Future of Our Forests]



REAL WORLD CONNECTIONS

Ground classroom work and discussions in real world conservation and education projects. Encourage students to deepen their understanding of forests and forest management by exploring resources such as:

[Go Inside the Carbon Vault: Why it's Critical to Know What's Beneath the Boreal Forest](#)
(Treehugger)

[Estimating Carbon Sequestration in Wetlands](#)

(Ducks Unlimited Canada – National Boreal Program)

[Project Showcase: Managing Our Forests for Carbon](#)

(American Forests)

[Why Use the SFI Logo](#)

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