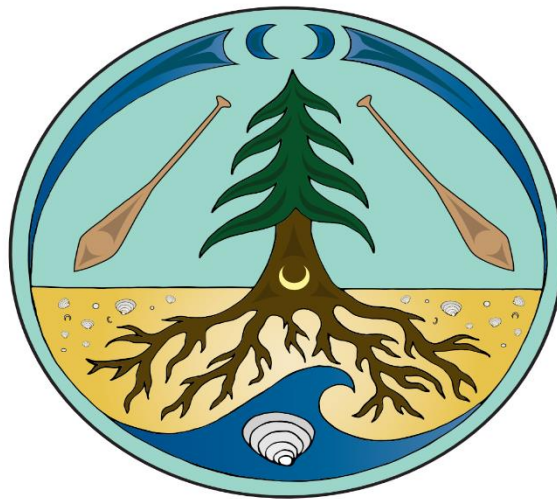


Connecting Ecocultural Restoration, Science Education and Indigenous
Knowledges Inventory (Includes In-School, University-Community-School
Partnerships, Community/NGO and First Nations Community-Driven Resources)



The Living Lab Project

April 20, 2022

This inventory was developed for The Living Lab Partnership project. It is intended to be used as a guide to provide information about existing regional/provincial/national curriculum and learning resources that connect ecocultural restoration, science education and Indigenous knowledges. The resources highlighted in the inventory are delivered by schools, universities and First Nations communities as well as community organizations/NGOS. The inventory does not represent an exhaustive list and is based on available information as of April 2022. The inventory can be updated periodically as additional information becomes available and/or if there are changes to existing resources. Please visit the web links included below to access the most up-to-date information on projects and resources.

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I. In-School Initiatives

ÁLENENEŁ

ÁLENENEŁ, meaning, “Learning from the homeland”, is a land-based curriculum model that connects people and place together using the SENĆOFEN language and culturally significant places on W̱SÁNEĆ territory.

<https://pressbooks.bccampus.ca/knowinghome2/chapter/chapter-9/>

Ecoleague

Ecoleague engages Action Teams formed by 1-2 teachers and 5 students from participating schools in a region in a full day of learning and action pertaining to ecological restoration. Successful projects inspired by Ecoleague learning include a community garden, paper recycling program and bicycle repair program.

http://resources4rethinking.ca/en/ecoleague?utm_source=R4R&utm_medium=Link&utm_campaign=TakeAction

Get Outdoors Teacher Guide

This educator resource guide is linked to many prescribed learning outcomes within the K-12 BC curriculum. Activities include cultural mapping connected to specific places, hands-on mapping and secondary level projects.

<http://www.metrovancouver.org/events/school-programs/K12publications/GetOutdoors.pdf>

Hartley Bay School

First Nations instructor and curriculum developer, Judy Thompson, created six lesson plans on traditional plant knowledge. Using a series of questions students themselves become researchers by ditching conventional chalkboard lessons for field interviews with local elders in the community. Each student is assigned a culturally important plant, armed with the tasks of uncovering the traditional, botanical and common names while recording its uses (medicinal, food, material or ceremonial). The findings were eventually used to create a Gitga’at plant booklet.

<http://www.ecoknow.ca/documents/tekUnit2.pdf>

Hidden Valley School

This elementary school in the Yukon territory uses place-based education to situate students’ learning within the local heritage, culture and natural environment. As an extension of the conventional classroom, place-based learning is a reciprocal process that weaves the curriculum with the natural environment.

<http://hve.yukonschools.ca/learning.html>

Role Model Program

The role model program offered through SD85, connects classroom teachers and students with ‘Elders in Residence’ who can present a wide range of cultural wisdom and knowledge in various First Nations approaches to learning and are paid an honorarium for their contributions.

<http://www.sd85.bc.ca/wordpress/elders-in-residence-program/>

Sooke Elementary Principles of Learning Program

This project engaged grade 5 students from SD62 in experiential learning guided by the First Peoples Principles of Learning. The students explored traditional ecological knowledge (TEK), nature and sustainable development.

<https://www.uvic.ca/ideafest/events/events/2016ined.html>

Species at Risk in the Classroom

This resource guide offers three modules exploring amphibians and reptiles, protecting biodiversity and discovering ecological communities at risk in the south coast region of BC, to be utilized within classrooms.

<http://www.sccp.ca/resources/species-risk-classroom-resource-educators>

Walking with the Earth- Pimohtiwin

This educator resource guide offers lesson for secondary school students by incorporating the objectives from the unit called Life Science: Sustainability of Ecosystems in the Science 10 BC curriculum guide. This material is based upon visits to an outdoor education site located near Saskatoon. Students are accompanied by a local First Nations Elder during these visits.

<https://www.stf.sk.ca/unit-plan/walking-earth-pimohtiwin-lessons-support-science-10>

II. University-School-Community Partnerships

Carcross On-the-Land Science Course

In this new course accredited by Yukon College offers students a chance to obtain the equivalent of a grade 10 high school science course in 10 days with a student enrollment cap at 12. This course is framed using ‘two-eyed seeing’ so that students learn about biology and chemistry from both the perspectives of Western and Indigenous Science.

<https://www.cbc.ca/news/canada/north/two-eyed-seeing-carcross-tries-on-the-land-science-class-1.5131247>

Clam Garden Network

This collaborative partnership is a diverse community of First Nations, academics and researchers who are interested in the cultural and ecological significance of clam gardens and traditional clam management.

<https://clamgarden.com/about/>

Institute for Integrative Science and Health

This university-community initiated website provides educators with a diverse range of activities combined of a mix of research, applications, education and outreach, pertaining to Integrative science guided by the principles of 'two-eyed seeing'.

<http://www.integrativescience.ca/Activities/>

Forests of the Future

Forests of the Future is a University of British Columbia project that focuses on forest resources restoration in partnership with Northern BC First Nations communities. In addition to research and community collaborations this project offers educational materials in a seven-unit lesson plan for public download in pdf format.

<http://www.ecoknow.ca/curriculum.html>

Natural Curiosity

This University of Toronto project was created to demonstrate how an inquiry-based approach can be used to meet the Ministry expectations to include environmental education throughout the Ontario curriculum. The four-branch framework was created with a transformative vision of environmental education that combines, inquiry-based learning, experiential learning, integrated learning and stewardship. More than 20,000 copies of the First Edition of have been distributed to date. The Second Edition has evolved to include an extensive collaboration with Indigenous and ally scholars and focuses on ways in which students can engage meaningfully with the natural world.

<https://wordpress.oise.utoronto.ca/naturalcuriosity/aboutus/>

Next Generation Naturalists

This project will bring together youth who have an interest in providing environmental leadership through capacity building within themselves their communities in support of positive environmental changes. Raising awareness on important issues by hosting guest speaker events and public engagement through social media this project also includes the development of a 'Master Naturalist' program that trains people in citizen science and the natural history of the Kamloops region, including its first peoples. Employing the skills, they develop, youth will work with the community to create and implement this environmental restoration project

<https://kamloopsnaturalistclub.com/nextgen/>

University of Saskatchewan Cradleboard Initiative Resources

This resource collection is a work in progress that will change over time. Educators can access lesson plans, activities and videos pertaining to various subjects including the diversity of life, physical science, fishing, ecology, traditional science etc.

<http://www.usask.ca/cradleboardsk/sci-resources/index.php>

Red fish School of Change

This is a non-profit program created for people who wish to be leaders in ecological sustainability and social equity in their communities. This partnership between the University of Victoria, GreenLearning

Canada, Western Washington University and the Centre for Canadian American Studies, creates an eclectic fusion of experiential, sea-based and academic learning every summer.

[https://www.schoolofchange.ca/about-the-program/Voices of the Canoe](https://www.schoolofchange.ca/about-the-program/Voices%20of%20the%20Canoe)

Voices of the Canoe

This website offers a range of contemporary and historical documents to assist educators and students in learning about the history and ongoing relevancy of Indigenous peoples' canoe traditions. The framework for this site is grounded in Indigenous knowledge describes as experiential, contextual and holistic. Themed unit plans are available for download by educators on the topics surrounding evidence, cultural expressions of the canoe, mapping and the colonialism of the canoe.

<http://www2.moa.ubc.ca/voicesofthecanoe/for-teachers/index.html>

Youth 4 Action

This program supports high school youth to develop the skills and knowledge required to inspire sustainability through place-based inquiry-learning, leadership and collaborative action. Educator resources including teacher workshops and field trip organization are also can also be accessed through this link.

<http://www.metrovancouver.org/events/youth-leadership/Pages/default.aspx>

III. NGOs/Community Organization-led Initiatives

Bumblebee Watch

This community science project is a collaborative effort to track and conserve North America's bumble bee population by inviting individuals to upload photos to a virtual collection, help locate rare or endangered bees, connect with other community scientists and more.

<https://www.bumblebeewatch.org/about/>

Ecospark School Watch

This program educates teachers on how to lead citizen science projects on school grounds. School Watch also offers educator Pro-D and student activities and environmental projects linked to the K-12 curriculum such as tree inventories and bird surveys.

<https://www.ecospark.ca/school-watch>

Elephant Thoughts

This Northern Canada science outreach program offers support to educators in the form of teacher training as well as student workshops. Elephant thoughts also develops curriculum and Indigenous science camps.

<https://www.elephantthoughts.com/steam-education/indigenous-school-programs/>

Environmental Youth Alliance

The project will engage 40 Indigenous high school youth to lead a three-year civic ecology and citizen science project to create and monitor the impact of native wildflower lawns on urban invertebrate biodiversity. Youth will develop and test the effectiveness of wildflower lawns as a habitat strategy and raise public awareness of the importance of creating habitat for insect species beyond pollinators, while deepening nature connectivity and developing skills in civic engagement and community leadership. Fieldwork will be braided with land-based teachings from an Indigenous Elder and local Indigenous knowledge keeper.

<http://eya.ca/wp-content/uploads/2017/01/EYA-2017-Program-Guide.pdf>

First Nations, Metis & Inuit Education Assoc. of Ontario: Indigenous Knowledge & Science

This website offers multiple Indigenous Science based resources, including lessons on relationships with the land and sustainability reciprocity.

<http://www.fnmieao.com/resources/indigenous-knowledge-and-science.php>

Green Teacher

This non-profit organized magazine offers several webinars to educators on subjects related to sustainability, invasive species, place-based education, biodiversity and ecology, water and climate change and energy.

<https://greenteacher.com/webinars/past-webinars/>

Indigenous Observation Network (ION)

The ION is one of the largest international Indigenous initiative combining Indigenous science and Western science to research, aiming to sustain and protect the Yukon River Watershed and its resources and cultures through citizen science participation.

<https://yukon.fieldscope.org/>

InSTEM: Indigenous Youth in STEM

This customized and community-based approach to engaging First Nations, Metis, and Inuit (FNIM) youth in locally and culturally relevant STEM education programs. Each year network members and outreach team partner with Indigenous community groups, Friendship Centres in the engagement of over 30 000 FNIM youth in over 200 communities, urban centres and reserves.

<https://actua.ca/en/programs/national-aboriginal-outreach-program>

Lost Ladybug Project

This citizen science project invites individuals to provide detailed information regarding the nine spotted ladybug and other ladybug species and their habitat, by submitting photo documentation.

<http://www.lostladybug.org/participate.php>

Native Plant Inspirations

This new education program is centred around the Nuts'a'maat Forage Forest, a garden and restoration learning space, at the Millard Learning centre. Here, students are introduced to a variety of native and naturalized plants while they are invited to work together in groups doing restoration work and planting in this site, guided by Indigenous and Western agricultural techniques.

<https://galianoconservancy.ca/inspired-by-native-plants/>

Nature Guardians Youth Program

This Ontario-based program aims to support secondary school aged youth by offering community involvement through outdoor events, tools and strategies to create lasting change through conservation action.

<https://ontarionature.org/programs/nature-guardians/>

Nature Kids BC

This stewardship and citizen science initiative engages youth by offering small grants to nature clubs for things like tools, seeds, plants and equipment. By selecting specific projects on an annual basis, resources and tools are provided to make it simple for members to engage in real science that helps them learn new things about their surrounding world.

<https://www.naturekidsbc.ca/be-a-naturekid/stewardship-citizen-science/>

Sea Smart School

Commencing this fall 2019, this project offers hands-on and solutions-oriented conservation workshops educating about threatened Southern resident killer whales, Steller sea lions, leatherback turtles and basking sharks. Sea smart trained staff are comprised of marine biologists and environmental educators who will visit schools and deliver a series of three inquiry-based workshops for grades 4-6 and 8-11. Classes with the most impactful projects will win a trip to do a shoreline cleanup near the Salish Sea. Workshop 1 focuses on species and threats they face (September-October). Workshop 2 is a facilitated brainstorming process guided by Sea Smart Educators (October- November). Workshop 3 is an opportunity for students to present their project and results to their class (February).

<https://seasmartschool.com/speciesatrisk>

Symbiosis

Symbiosis is a BC-based STEAM learning network/ecosystem that aims to weave together both formal and informal education with equitable access for all learners. The aims of this project are trifold: 1) increase numbers of qualified STEAM mentors 2) Connect mentors and youth within communities through networking opportunities and 3) host a digital hub, library of learning resources and connect children to these educational opportunities.

<https://www.symbiosis.ca/about-us.html>

Tend, Gather & Grow

This project aims to build food security and facilitate connections to the earth by educating youth about wild medicinal and edible plants and the rich cultural traditions that are connected to them. They offer a teaching toolkit on Northwest plants and provide teacher training.

<https://www.goodgrub.org/tend-gather-grow>

Tracking Change

The broad project aim is to collaboratively document and mobilize local and traditional knowledge about social-ecological change in the Mackenzie, Mekong and Amazon and determine its' role in watershed governance. This SSHRC funded research initiative will fund local and traditional knowledge research

activities, particularly, those engaged in tracking the changes of fishing in these areas. Youth engagement is organized through the Youth Knowledge Fair, connecting high school aged youth in Edmonton for three days of educational activities including keynote presentations, tours of the University of Alberta and educational workshops.

<http://www.trackingchange.ca/knowledge-mobilization/knowledge-mobilization-activities/>

Turtle Island Curriculum Bundle

This turtle island conservation bundle offers an Ontario curriculum-linked exploration of water preservation and biodiversity of wetlands creatures that inhabit these sacred places and spaces through a First Nations cultural lens for students in grades 4, 5 & 6.

<http://www.torontozoo.com/conservation/tic.asp?pg=Walking>

YYC's Young Citizens Scientists Program

This program engages the Alberta curriculum by bringing youth outdoors and onto the land, offering a natural framework for connecting Indigenous perspectives to their learning. Principles of Respect, Relationship and Reciprocity are woven throughout the entire program.

<https://www.greencalgary.org/green-kids/yycs-young-citizen-scientists-program/indigenous-connections>

IV. Initiatives by/with First Nations Communities

Generative Curriculum Model

Developed by the First Nations Partnership program, this model is used to train specialists in Early Childhood Care and Development using community specific knowledge in rural BC communities along with western approaches to education. The curriculum is not pre-determined and is generated at the time of program delivery so that it may reflect the unique indigenous knowledge and needs of each participating community.

http://www.fnpp.org/documents/Ball_Pence_Generative_Curriculum.pdf

Great Bear Sea

This resource collection offers a fully downloadable elementary cross-curricular unit for grades 4-7, secondary units for social studies 11 & 12 and Environmental Science 11 & 12 and a post-secondary resource for instructors. These thematic course resources use film, research data and place-based local knowledge to explore Indigenous knowledge, collaborative science, biodiversity and marine stewardship entirely linked to the New BC Curriculum.

<https://greatbearsea.net/elementary-curriculum/>

FNESC Science First Peoples Teacher Resource Guide

These resource guides offer background information pertaining to how unappropriated First Peoples' knowledge and perspectives in science can be recognized and included in science inquiry for both

elementary and secondary school lessons. They offer examples of wholly developed units that correspond with the Big Ideas and Learning Standards for curriculum in grades 5-8 and 10-12.

<http://www.fnesc.ca/wp/wp-content/uploads/2015/08/PUBLICATION-61496-Science-First-Peoples-2016-Full-F-WEB.pdf>

<http://www.fnesc.ca/wp/wp-content/uploads/2019/08/PUBLICATION-SCIENCE-FIRST-PEOPLES-Secondary-TRG-2019.pdf>

PEPÁKEN HÁUTW

This project offers weekly participatory and hands-on native plant and garden workshops for students as well as participation in ecological restoration projects in their traditional territory.

<http://pepakenhautw.com/>

SNIDŽEŁ Resiliency Project

This project actively is actively engaged in sharing and learning about traditional foods and medicines as a key component to food sovereignty and WŚÁNEĆ cultural revitalization through the professional development and cultural skill building of the project crew.

<http://pepakenhautw.com/restoration/>

Species are Sacred

This document shares the Sto:lo worldview regarding the sacred and threatened species of the Coast Salish territory.

<http://www.sccp.ca/sites/default/files/resources/documents/species%20at%20risk%20are%20sacred%20-%20stolo%20world%20view%20on%20SAR%20cl%20victor%202013.pdf>

Uu-a-thluk

Sponsors science camps and clubs for elementary school students in remote Nuu-chah-nulth communities. Additionally, Uu-a-thluk work with SD70's Role-Models-In-the-Schools program to give Nuu-chah-nulth youth an opportunity to interact with Nuu-chah-nulth role models employed in resource management related careers.

<https://uuathluk.ca/activities-2/capacity-development/>

Xaxli'p Community Forest

Through several projects aimed at eco-cultural restoration, this initiative hopes to achieve culturally sustainable land use by educating youth and others in *Ntsuwa'Ihkalha Tl'ákmen* and applying this way of life across Xaxli'p Survival Territory.

<https://www.xcfc.ca/mission-statement>

Xwaaqw'um

This Quw'utsun-led project aims to connect youth and community to the Hul'q'imi'num ways of being from local Coast Salish Elders and knowledge keepers.

<http://www.xwaaqwum.com/>

13 Moons of the WSÁNEĆ

Information and lessons based upon the seasonal moons from the perspective and traditional ways of the WSÁNEĆ. These lessons are provided by Race Rocks Ecological Reserve.

<http://www.racerocks.ca/the-13-moons-of-the-wsanec/>