

Climate Change Education: a research & hope-based approach

Connecting Students to local Climate Solutions

Boundary Bay, a vibrant ecosystem along the Pacific Flyway, faces increasing challenges from climate change. Rising sea levels, shifting temperatures, and invasive species threaten its rich biodiversity. However, young learners have a unique opportunity to learn more about and become stewards of this essential habitat while cultivating hope and agency in addressing climate change. It is increasingly important to take a hopeful lens when discussing climate change, especially with young people. Research is showing that this more positive, yet factual and research-based approach, is most likely to instill a sense of agency and combat doomism. Visit Dr. Elin Kelsey's Website for some publications, videos and more information on this approach. <https://www.elinkelsey.org/>

For some Sustainability Education videos and webinars (aimed at secondary & post-secondary students and teachers), including an interview with Dr. Elin Kelsey, visit the UBC Faculty of Education Project "Landed Learning" Website. Volunteers with our society have been pleased to participate in this project alongside faculty at UBC by donating time and photo resources towards production. You'll see videos with Dr. David Boyd (The Rights of the Environment), Dr. Chris Harley (Ecological Solutions to Climate Change) and others! <https://landedlearning.educ.ubc.ca/resources/video/>



A Free downloadable Climate Change PPT and PDF are available via our friends at Seaquaria in the Schools: <https://bit.ly/3Ee8K2p>



Students can become familiar with the UN Sustainability Goals as a starting point to an inquiry and action research-based approach to climate science education. <https://sdgs.un.org/goals>

Why Teach Climate Change in our local context?

- **Biodiversity Hotspot:** Boundary bay, on the Pacific Flyway, is a designated Important Bird Area (IBA) <https://www.ibacanada.com/> and is home to over 333 bird species, to eelgrass meadows, and mudflats,
- **Local Relevance:** Students can learn about and observe environmental changes firsthand. By understanding the impacts of climate change on their local environment and learning about local initiatives to help preserve and rehabilitate the local ecosystem, learning can be more meaningful and memorable. When students participate in local action, they become increasingly connected to their communities.
- **Community Science:** Participating in hands-on activities such as shoreline, parks or school community cleanups, native plantings or invasive species removals, students gain meaningful experience and knowledge as well as a sense of impact leading to hope.
- **Cultural Importance:** For millennia, the Coast Salish peoples have been connected to and cared for these lands. Learning about the cultural significance



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of local environments (past and present) offers essential Indigenous perspectives on sustainability, science and environmental stewardship.

Some of the climate challenges facing Boundary Bay:

- **Rising Sea Levels** — Coastal flooding threatens eelgrass beds, which are critical for not only juvenile salmon but many other keystone species. Eelgrass beds are the ‘nursery’ of the intertidal.
- **Increasing Ocean Acidification** – students can learn about the effects of CO₂ on our oceans and waterways through hands-on experiments <https://climatekids.nasa.gov/acid-ocean/> and follow the scientific method or a design thinking process to plan for actions (including advocacy) to help mitigate or combat the effects (<https://climatekids.nasa.gov/how-to-help/>)
- **Invasive Species** –
 - European Green Crab damages habitats by uprooting eelgrass. Learn more on our website <https://www.birdsonthebay.ca/marine-projects> (<https://bit.ly/4gkN6GW>) and on the DFO website <https://bit.ly/42DjOjw>
 - Students might conduct their own inquiry into local invasive plants; learning about ways to combat the problem and also ways in which we can utilize the plants we are removing (example Himalayan Blackberry can be used for weaving strong rope!). The Invasive Species Council is an excellent resource and includes a “Find an Invasive” function <https://bcinvasives.ca/take-action/identify/>
- **Biodiversity Loss & Species at Risk**
 - **Species at Risk in the Classroom by the South Coast Conservation Program** <https://bit.ly/3WAE1Tm> is a downloadable teaching guide that has modules on Amphibians & Reptiles, Protecting Biodiversity and Discovering Ecological Communities at Risk in the South Coast. It includes teaching resources including lessons, resource links and ideas to help your students get involved <https://sccp.ca/resources/citizen-science>
 - Migratory birds like the Western Sandpiper face shrinking habitats due to warming trends. IBA’s help to protect key stopovers and food sources.



Additional Resources to help you get started:



- **Learn about the UN Sustainability Goals.** <https://bit.ly/40Qghxi>
 - Specifically SDG 13 (Climate Action), 14 (Life Below Water) and 15 (Life on Land). Various resources including infographics, videos and links available on the UN SDG Website. (Find student resources including the ‘Act Now’ and ‘Climate Action Superhero’ program under the ‘Get Involved’ Menu)
 - Students might conduct inquiries into the impacts of the sustainability issues on the local community and local ecosystem. They can use a design thinking process to plan ways to engage with the issues to help mitigate the impacts of climate change.



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- Survey the community or a local natural area to look for evidence of challenges and solutions to climate change.
- Plan or join an event (ex. World Ocean's Day in June) to help raise awareness within the school or larger community. Educational Resources and information available:
<https://unworldoceansday.org/>

• Stories of Hope:

- Discover local (Including Boundary Bay!) National or International adaptation plans/measures & projects via the Changing Climate Map.  
<https://changingclimate.ca/map/> (site includes case studies, interactive maps and links to the Government of Canada's Climate Action Plan and Map! <https://bit.ly/3E6UwQH>)
- Students might conduct research or inquire into stories of hope in their local environment or tell their own stories based on what they are learning about a particular issue or adaptation.
 - What issues created by climate change have been or are being addressed?
 - An example from the Pacific Coast might be the 'comeback' of the humpback whale or the birth of a calf in the endangered J-Pod Orca group.
- Municipal Government websites will contain information and resources about climate change and climate action plans in the local context. Students might learn about what their local government is doing (or NOT doing) and write letters or make a plan to raise awareness. They might create more visual resources to share with the school or larger community.
 - The City of Delta Climate Action Plan <https://bit.ly/4ay6UFu> (includes infographics)
 - The City of Surrey Sustainability Strategy: <https://bit.ly/3PT0aZm> (includes a Climate Action Tracker)

Research by **Elin Kelsey** and Dr. **David Boyd** emphasizes the importance of **empowering young people** with positive, solutions-based approaches. Educators can engage students in activities such as the following:

- **Shoreline Cleanups**
 - Join the **Great Canadian Shoreline Cleanup** to reduce plastic pollution and protect marine life. [Find a cleanup near you.](#)
 - The **Friends of Semiahmoo Bay Society (FOSBS)** offers public cleanups in April, September, and other times throughout the year. Check their [event calendar](#) for details.
- **Community Science Projects**
 - **Bird Monitoring:** Participate in programs like [eBird](#) to track migratory patterns.
 - **Bioblitz Activities:** Plan and conduct a biodiversity survey using [iNaturalist](#).
 - **Ecosystem Exploration:** Use [Birds on the Bay](#) resources to study local species and their habitats.
- **Restoration Projects** (*requires specialized knowledge, partnerships & permissions*)
 - **Plant Native Vegetation:** Help stabilize shorelines and create wildlife habitats.
 - **Monitor & Report Invasive Species:** Contribute to efforts tracking the **European Green Crab** by emailing sightings to AISPACIFIC@DFO-MPO.GC.CA.

