Grade 6 Science Curriculum Links to Sustainability Education and Action

Topic A: Air and Aerodynamics

Describe properties of air and the interactions of air with objects in flight.

Links to Place and Nature

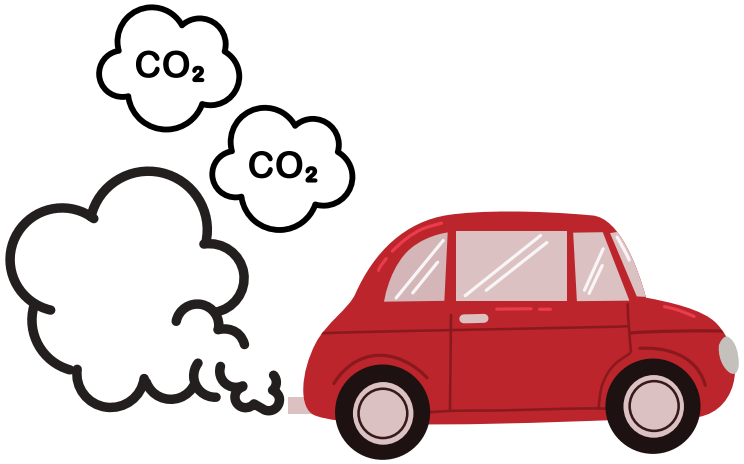
- What is the air we breathe composed of?
- What components of the air are essential to plants and animals (including humans?)
- What factors affect air quality?
- How do pollutants move around in the atmosphere?
- What are the dominant wind patterns in my area and how are they created?

Links to Climate Change

- What is the greenhouse gas effect and how do humans contribute to it?
- Which gases are responsible for global warming?
- How are greenhouse gases produced?
- What can we do to decrease greenhouse gas emissions?

Links to Indigenous Perspectives

- What was the significance of the wind in the lives of Indigenous peoples in my area?



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Topic B: Flights

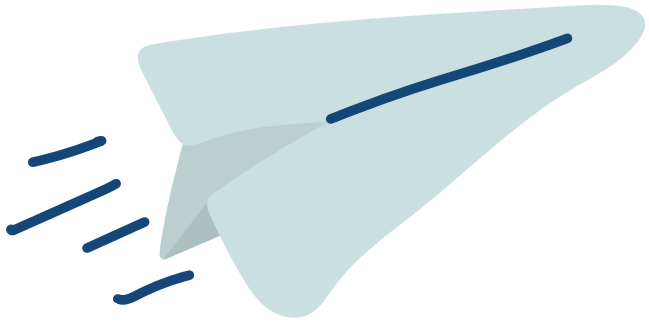
Construct devices that move through air, and identify adaptations for controlling flight.

Links to Place and Nature

- How do birds and other aerial flying animals glide or fly?
- What structures and adaptations enable certain flying animals to glide or fly?
- What are similarities and differences between birds and airplanes?

Links to Climate Change

- How are airplanes and jets powered?
- How does flying contribute to climate change?
- What can we (individuals, flight industry, governments) do to reduce greenhouse gas emissions related to flying?



Grade 6 Science Curriculum Links to Sustainability Education and Action

Topic C: Sky Science

Observe, describe and interpret the movement of objects in the sky; and identify pattern and order in these movements.

Links to Place and Nature

- How is Planet Earth unique compared to other planets in the solar system?
- How do the movements of Earth, moon and sun affect daily and seasonal patterns?
- How do the movements of the sun, earth and moon affect plants and animals (including humans) and ecosystems?
- How can we use the sun or the stars (e.g. the North Star) for navigation?

Links to Indigenous Perspectives

- What are the main elements of Indigenous knowledge of the sky?
- How do Indigenous peoples in my area view their connectedness to the sky?
- How did Indigenous peoples use the sun, the moon, and the stars for navigation?
- How were Indigenous peoples in my area their lives affected by the movements of the sun and moon?

Links to Climate Change

- What is the sun's and Earth's role in global warming?
- How does climate change affect conditions on Planet Earth?
- How do changing conditions on Earth affect humans?

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Topic D: Evidence and Investigation

Apply observation and inference skills to recognize and interpret patterns and to distinguish a specific pattern from a group of similar patterns. Apply knowledge of the properties and interactions of materials to the investigation and identify of a material sample.

Links to Place and Nature

- What evidence of animal activity can be found in the schoolyard, neighbourhood or nearby natural area?
- What is the difference between an observation and an inference?
- How can we be water quality detectives and assess water quality of nearby water bodies (e.g. pH, dissolved O2, turbidity)?

Links to Climate Change

- What evidence exists to show the earth is warming and the climate changing?
- What evidence exists for possible drivers of climate change?
- What evidence suggests that climate change is caused by humans and their activities?

Links to Indigenous Perspectives

- What evidence did Indigenous peoples rely on to develop knowledge of the plants and animals around them?
- How was this knowledge transferred from generation to generation?

Grade 6 Science Curriculum Links to Sustainability Education and Action

Topic E: Trees and Forests

Describe characteristics of trees and the interaction of trees with other living things in the local environment.

Links to Place and Nature

- What species of trees grow in my schoolyard, neighbourhood or nearby natural area?
- What different types of forest ecosystems exist in my area?
- What is the role of trees in the water, rock, and carbon cycles?
- What are the different components and processes of a forest ecosystem?
- How do trees and forests benefit humans?
- Why are forests important for biodiversity?

Links to Climate Change

- How are trees and forests affected by climate change?
- How do trees and forests help combat climate change?
- How do multi-year droughts make trees more susceptible to pests and diseases?
- How does climate change increase the risk of wildfires?
- How do wildfires contribute to climate change?
- What actions can I take to help preserve trees and forests in my community and province?

Links to Indigenous Perspectives

- See **Learn Alberta grade 6 sample lesson plan (1)** for this unit.
- What is the importance or significance of trees and forests to Indigenous peoples?
- Why do many Indigenous peoples consider forests sacred?

Grade 6 Science Curriculum Links to Sustainability Education and Action

Topic E: Trees and Forests (cont'd)

Describe characteristics of trees and the interaction of trees with other living things in the local environment.

Links to City of Calgary Environmental and Climate Strategies

- **Climate Resilience Strategy (2):** Natural assets include wetlands, river banks, trees, and other green infrastructure that provide similar services to hard infrastructure. In addition to providing a critical role in preparing for climate change, trees and other green infrastructure help by sequestering carbon dioxide and reducing building energy use through cooling and shading in summer and lessening heat loss in winter (p.50).
    - **Climate Mitigation Action Plan, Program 9: Green Spaces and Natural Areas to Support Mitigation (p.51):** Actions in this Program aim to coordinate efforts across multiple City Business Units to develop processes to conserve and understand the mitigation properties of The City's natural assets in conjunction with the climate change adaptation work.
    - **Adaptation Action Plan, Program 6: Natural Assets Management (p.84-85):** Natural infrastructure can serve two different purposes: 1) everyday service provision (e.g. park space, water conveyance), 2) adaptation to climate change (tree canopy shading, absorption of stormwater).
- **Our BiodiverCity Calgary's 10-year biodiversity strategic plan (6):** Our BiodiverCity aims to provide a framework for City staff to foster more resilient, biologically diverse open space and neighbourhoods that support positive outcomes for Calgarians, visitors, wildlife and plant communities. Additionally, the introductory sections are meant for everyone, to engage people with nature and biodiversity in the context of our city ("In brief" section). For more information about supporting biodiversity in Calgary, please visit **Calgary's Biodiversity (3).**
- **Calgary…A City of Trees: Parks Urban Forest Strategic Plan (5):** The Parks Urban Forest Strategic Plan provides vision and strategic direction for the growth, sustainability, preservation, and enhancement of the urban forest (p.8). In this plan are 15 guiding principles that provide context for outcome-based policies, strategies, and key action steps. The approach is organized into three focus areas: Achieve and Maintain Healthy Trees, Collaborate with the Community, and Resource to Manage and Measure the Asset (p.7).
- For more information about trees and forests in Calgary, please visit **Calgary's Trees (4)**

Grade 6 Science Curriculum Links to Sustainability Education and Action

References

(1) Alberta Education. (2020). Sample Lesson Plans: Science. Retrieved from LearnAlberta http://www.learnalberta.ca/content/fnmilp/science.html

(2) City of Calgary. (2018). Climate Resilience Strategy: Mitigation & Adaptation Action Plans [PDF]. Retrieved from https://www.calgary.ca/content/dam/www/uep/esm/documents/esm-documents/climate-resilience-plan.pdf

(3) City of Calgary. (2020). Calgary's Biodiversity. Retrieved from https://www.calgary.ca/csps/parks/planning-and-operations/biodiversity.html

(4) City of Calgary. (2020). Calgary's trees. Retrieved from https://www.calgary.ca/SitePages/cocis/Scripts/subcategory-calgarystrees-grid.aspx

(5) City of Calgary Parks. (2007). Calgary… A City of Trees: Parks Urban Forest Strategic Plan [PDF]. Retrieved from https://www.calgary.ca/CSPS/Parks/Documents/Management-Plans/Urban-Forestry-Strategic-Plan.pdf?noredirect=1

(6) City of Calgary Parks. (2015). Our BiodiverCity: Calgary's 10-year biodiversity strategic plan [PDF]. Retrieved from https://www.calgary.ca/content/dam/www/csps/parks/documents/planning-and-operations/biodivercity-strategic-plan.pdf