

# Grade 1 Science Curriculum Links to Sustainability Education and Action

## Topic A: Creating Colour

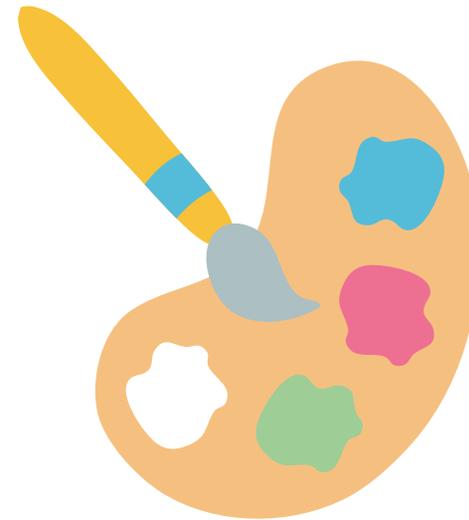
Identify and evaluate methods for creating colour and for applying colours to different materials.

### Links to Place and Nature

- What colours exist in my schoolyard? In nature?
- How are these colours created?
- How do colours change with the seasons?

### Links to Indigenous Perspectives

- How did Indigenous peoples create colours from natural materials?
- What colours are significant to Indigenous peoples?



# Grade 1 Science Curriculum Links to Sustainability Education and Action

## Topic B: Seasonal Changes

Describe seasonal changes, and interpret the effects of seasonal changes on living things.

### Links to Place and Nature

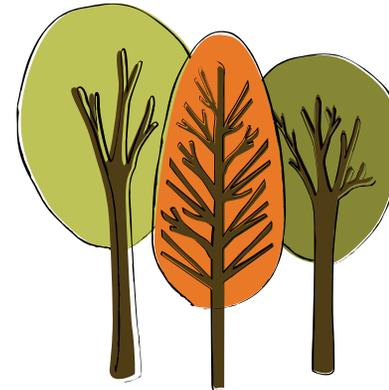
- What characterizes each of the seasons in my area?
- How do the sun and amount of daylight vary among seasons?
- What causes the seasons?
- How does my backyard, schoolyard, or favourite park or natural area change through the seasons?
- How do we adapt to different seasons?
- What activities and special events are associated with each season?
- How do local animals and plants adapt to the changing seasons?

### Links to Climate Change

- What is climate change and how will it impact the seasons in my area? How will these changes affect my family and community?
- What can I do to combat climate change?

### Links to Indigenous Perspectives

- What are Indigenous perspectives on seasonal changes?
- How did traditional activities by Indigenous peoples vary with the seasons?
- How did local Indigenous peoples understand and use **seasonal rounds** (10)?



# Grade 1 Science Curriculum Links to Sustainability Education and Action

## Topic B: Seasonal Changes (cont'd)

Describe seasonal changes, and interpret the effects of seasonal changes on living things.

### Links to City of Calgary Environmental and Climate Strategies

- **Climate Resilience Strategy (CRS) (3):** Climate change is altering the seasons that we experience in Calgary, and this will have various impacts on living things. Due to climate change we are experiencing, and will continue to experience (p.65-72):
  - More snow in winter
  - Less rain in summer
  - More heat waves
  - Increased average annual temperature
  - More intense summer storms
  - Multi-year drought
  - Increase in pests, diseases, and invasive species due to changes in seasonality
  - Spring will arrive earlier, Summer will last longer, Fall will arrive later, and Winter will be shorter.
- This will have impacts on the life cycles of species in nature that depend on each other, for example birds migration patterns being altered, and pollinators emerging before plants are ready to be pollinated (see pages 66 and 67 of the CRS for more detail).
- The CRS includes actions that The City will take to adapt and prepare for these impacts, such as:
  - Finding ways to keep our homes, schools, and playgrounds cool in summer (p.79).
  - Increase treed areas to provide shade (p. 85).
  - Managing extreme heat, including installing shade structures and water stations in public parks (p. 79).
- **City Programs for Citizens:** Installing rain barrels at your school is a great way to help prevent stormwater flooding when it's rainy and store water for dry periods. Visit [calgary.ca/YardSmart](http://calgary.ca/YardSmart) (6) to learn more about purchasing a rain barrel and planting climate resilient species.
- By taking actions to reduce greenhouse gas emissions, we are reducing our contribution to climate change. In this way we can help to reduce the severity of change that we experience. Visit [calgary.ca/ClimateAction](http://calgary.ca/ClimateAction) (5) to learn more about what you can do to reduce your personal contribution to climate change. Visit [Calgary.ca/ClimateProgram](http://Calgary.ca/ClimateProgram) (7) to learn more about what The City is doing to reduce greenhouse gas emissions.
- The City of Calgary also has a **stormwater management program** (9) and a **drought management program** (8) with resources and strategies to deal with anticipated changes from climate change



# Grade 1 Science Curriculum Links to Sustainability Education and Action

## Topic C: Building Things

Construct objects and models of objects, using a variety of different materials. Identify the purpose or different components in a personally constructed object or model, and identify corresponding components in a related object or model.

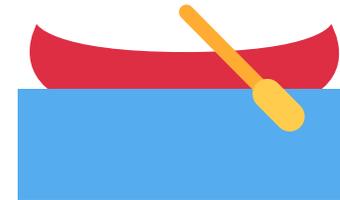
### Links to Place and Nature

- How can I build a shelter to protect myself from the elements (e.g. wind, rain)?
- What are the components that make a good shelter?
- How are shelters and homes similar or different?
- What materials are used for different parts of my house? My school? Where do these materials come from?



### Links to Indigenous Perspectives

- What different types of dwellings were used by Indigenous peoples? What are some similarities and differences? How do these compare to modern houses?
- What other objects were built by Indigenous peoples? What were they used for? What materials were they made from? Where did these materials come from?
- How do traditional building materials compare to materials used today?



# Grade 1 Science Curriculum Links to Sustainability Education and Action

## Topic C: Building Things (cont'd)

Construct objects and models of objects, using a variety of different materials. Identify the purpose or different components in a personally constructed object or model, and identify corresponding components in a related object or model.

### Links to City of Calgary Environmental and Climate Strategies

- **Climate Resilience Strategy (3):** Currently, emissions associated with transporting people and goods account for one third of Calgary's emissions. Emissions from the transportation sector come from the use of two main transportation fuels: diesel and gasoline. To reduce these emissions there are three broad approaches: 1) switch vehicle fuels to a cleaner, 2) lower carbon vehicle fuel; switch to transportation modes that use less energy; and 3) build city infrastructure to minimize travel distances (p. 40).
  - **Climate Mitigation Action Plan, Program 4: Electric and Low-Emissions Vehicles (p.41-42):** While many of the Plan's actions support the need to reduce auto travel, cars will remain part of our transportation modes. In addition, the number of transit trips will grow. Therefore, it is important that we reduce the impacts of remaining cars, buses, and trucks through cleaner vehicles and fuels. Actions within this Program relate to 1) supporting and enabling the uptake of electric vehicles, and to 2) supporting and enabling the uptake of low emissions vehicles in commercial fleets.
- **Electric Vehicle Strategy (4):** The EV Strategy was developed as part of the Climate Resilience Program, since it represents one of the greatest opportunities to reduce greenhouse gas emissions from transportation. The objectives of the EV Strategy are to (p.19):
  - respond to the growing demand for electric vehicle infrastructure and services,
  - encourage/support faster adoption of electric vehicles to aid in reducing greenhouse gas emissions,
  - align The City's approach to policies from other levels of government,
  - build partnerships across Alberta to provide an electric vehicle charging network within the province that connects to other provinces or states,
  - establish what role The City, partner organizations and the private sector should play in providing electric vehicle infrastructure and services, and
  - increase awareness and create enthusiasm amongst the public and industry about electric vehicles.
- **imagineCALGARY (2):** By 2036 there is a 50% reduction from 1990 levels in pollution (greenhouse gases) associated with automobiles. By 2036 we increase peak period transit, walking and cycling and carpool travel to downtown by 50%, 40% and 20% respectively (p. 6).



# Grade 1 Science Curriculum Links to Sustainability Education and Action

## Topic D: Senses

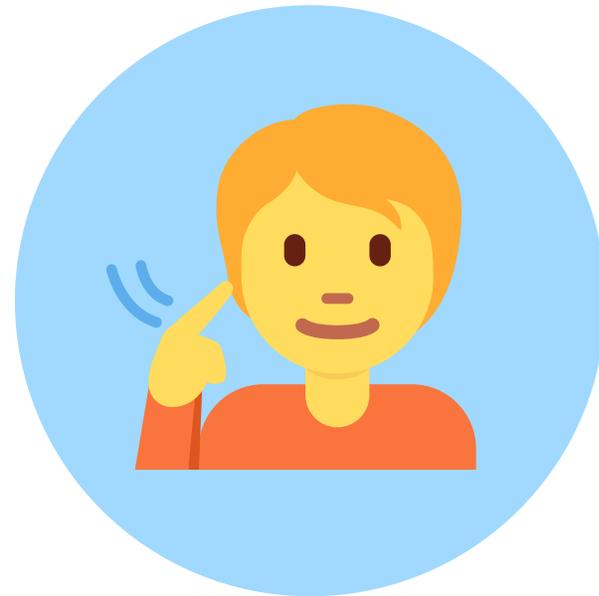
Use the senses to make general and specific observations, and communicate observations orally and by producing captioned pictures. Describe the role of human senses and the sense of other living things, in enabling perception and action.

### Links to Place and Nature

- What do I see, hear, smell, feel in my school yard? in a walk in my neighbourhood? In a walk in nature?
- What senses do we rely on for different functions or situations?
- Which senses do plants and animals use?

### Links to Indigenous Perspectives

- How did Indigenous peoples use their different senses for hunting and gathering?



# Grade 1 Science Curriculum Links to Sustainability Education and Action

## Topic E: Needs of Animals and Plants

Describe some common living things, and identify needs of those living things.

### Links to Place and Nature

- What plants and animals are found in my schoolyard? In my neighbourhood? In a nearby natural area?
- What are their needs in terms of water, food, shelter and breeding?
- What can we do to make sure local plants and animals have what they need?

### Links to Indigenous Perspectives

- See [Learn Alberta grade 1 sample lesson plan \(1\)](#) for this unit
- Why and how should or can I take care of other living things, including Mother Earth?
- How are all living things, including myself, interrelated?

### Links to Climate Change

- How might climate change affect the ability of plants and animals to find food, water, shelter and space?
- What can we do to help plants and animals thrive in our community, particularly in light of climate change?

### Links to City of Calgary Environmental and Climate Strategies

- **Climate Resilience Strategy (3)**: In Calgary we expect, and have already begun to experience, changes to our climate that impacts plants and animals. For example (p. 65-72):
  - Increased average annual temperature
  - Increase in the amount and severity of very hot days
  - Increased change of multi-year drought
  - Changes in precipitation patterns
  - Increase in the amount of pests, diseases and invasive species
- The **Climate Adaptation Action Plan (3)** highlights actions that we can take to help plants and animals adapt to the impacts of climate change (p. 85-86):
  - Plant natural vegetation to benefit plants and animals
  - Plant local plant species that do well in Calgary's environment and are resilient to climate change.



# Grade 1 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. (2006). imagineCALGARY: Calgary's plan for long range urban sustainability [PDF]. Retrieved from [https://publicaccess.calgary.ca/lldm01/livelink.exe?func=ccpa\\_general&msgID=RTTTTtryTsAK&msgAction=Download](https://publicaccess.calgary.ca/lldm01/livelink.exe?func=ccpa_general&msgID=RTTTTtryTsAK&msgAction=Download)
- (3) 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>
- (4) City of Calgary. (2019). Electric and Low-Emissions Vehicles Strategy [PDF]. Retrieved from <https://www.calgary.ca/content/dam/www/transportation/tp/documents/strategy/electric-vehicle-strategy/electric-vehicle-strategy-report.pdf>
- (5) City of Calgary. (2020). Actions you can take for the climate. Retrieved from <https://www.calgary.ca/uep/esm/climate-change/for-the-climate.html?redirect=/climateaction>
- (6) City of Calgary. (2020). Be YardSmart. Retrieved from <https://www.calgary.ca/uep/water/water-conservation/lawn-and-garden/water-wise-gardening-and-plants/yardsmart.html?redirect=/yardsmart>
- (7) City of Calgary. (2020). Calgary's Climate Program. Retrieved from <https://www.calgary.ca/uep/esm/energy-savings/climate-change.html?redirect=/climateprogram>
- (8) City of Calgary. (2020). Drought. Retrieved from <https://www.calgary.ca/uep/water/water-conservation/drought.html>
- (9) City of Calgary. (2020). Stormwater management. Retrieved from <https://www.calgary.ca/uep/water/water-and-wastewater-systems/storm-drainage-system/storm-drainage-system.html>
- (10) Province of British Columbia. (2020). My Seasonal Round: An Integrated Unit for Elementary Social Studies and Science [PDF]. Retrieved from Open School BC [https://www.openschool.bc.ca/elementary/my\\_seasonal\\_round/teacher\\_area.html](https://www.openschool.bc.ca/elementary/my_seasonal_round/teacher_area.html)

