**GRADE K-1 SUMMARY EARTH AND SPACE DRAFT**

**Grade K-1 Learning Standards (From BCEd Curriculum)**

**K: Daily and seasonal changes affect all living things.**

* What daily and seasonal changes can you see or feel?
* How are plants and animals affected by daily and seasonal changes?

**Grade 1:**

* the knowledge of First Peoples
	+ shared First Peoples knowledge of the sky
	+ **local First Peoples** knowledge of the local landscape, plants and animals
	+ local First Peoples understanding and use of **seasonal rounds**
* **local patterns** that occur on Earth and in the sky

**WHAT DO K’s and Grade 1’s need to know about the seasons and the sky?**

K:

* **weather:**
	+ temperature: cold, hot, cool, warm
	+ cloud cover: clear, cloudy, partly cloudy, foggy
	+ precipitation: rain, snow, hail, freezing rain
	+ wind: calm, breezy, windy
* **seasonal changes:**
	+ seasons: spring, summer, fall, winter
	+ plant life cycle
* **living things make changes:** living things may make physical and behavioural changes to survive in different conditions (e.g., migration, hibernation, thickening fur, changing colour, dropping leaves etc.)

**Grade 1:**

* **common objects in the sky:**
	+ the appearance of the moon and stars at night
	+ sunrise/set, moonrise/set
	+ the sun and the moon are important in different cultures, with respect to customs and traditions
* **local First Peoples:** e.g., may include oral history with Elder—origins and local stories
* **seasonal rounds:** Seasonal rounds refers to a pattern of movement from one resource-gathering area to another in a cycle that is followed each year
* **local patterns:** the relationship of local weather to the four seasons in terms of temperature, cloud cover, precipitation, and wind

**CURRICULAR COMPETENCIES**

Questioning and predicting-ask questions about what causes weather, seasons, temperatures, precipitation

Planning and conducting—how can we gather information about weather, seasons, temperatures, etc?

Processing and analyzing data and information—this big idea is really useful for repeated observation and recording data. Keep track of the weather, the clouds, the sun, the moon…

Evaluating—How can we explain what we observe?

Applying and innovating—how can we creatively answer questions or design solutions?

Communicating-draw, write or speak to show your understanding.

**WHY IS IT IMPORTANT?**

Understanding weather and seasons connects students to place. The ability to make predictions about the weather is important. Understanding the seasonal nature of plant and animal cycles connects students to place. Learning to observe, ask questions and make reasonable predictions about the weather and impacts on the surrounding environment is key.

**KEY VOCABULARY (include definitions coming soon)**

**SOME INQUIRY QUESTIONS**

* Why do we have different seasons?
* How do plants and animals act in different seasons?
* Is the sun the same all day? All year?
* Is the moon the same all day? All month? All year?

**SUGGESTED PROVOCATIONS/ACTIVITIES/EXPERIMENTS**

Observe weather patterns by using thermometers, rain gauges, sky and weather cards. Record and look for patterns in our local weather and sky. Wind, rain, shadow and sunny day play for creating real life experiences.

Engage students by going on I Wonder Walks in the local area as seasons change (local swamp, airpark, river, creek, forest, field). Look for signs for each season. Have students describe things they notice using their senses. Students can sketch the local area. This could be done as seasons change and children should review and compare previous sketches. Notice which creatures and plants are observable during each season. Make a cloud-viewer: <https://scied.ucar.edu/sites/default/files/files/activity_files/cloudviewer.pdf>

On a rainy day, go on a walk to your local area and watch where rain water goes and what it does. Students can observe puddle formations, what happens when you dam the water (relate this to beavers, natural dams in rivers and streams due to logs/sticks, human made dams for electricity). Go for walks during windy days, sunny days, etc. and observe the effects of the weather on our clothing, on animals we are able to observe. Use magnifying glasses, binoculars to make observations as well.

Look at a variety of clothing. Sort clothing based on season and draw conclusions about why we dress as we do for daily weather patterns and seasons.

Using flashlight and a ball, model how the Earth’s movements around the sun create the seasons. This provides a key understanding of why we have seasons in our local area (several links below have ideas for ways to do this).

Adopt a tree in the neighbourhood and observe and draw changes monthly.

Make a cloud in a bottle. Instructions and video available at: <http://www.planet-science.com/categories/experiments/weather/2011/03/make-a-cloud-in-a-bottle.aspx>

**Gr 1**

Make observations of the appearance of the moon and stars at night; sunrise/sunset, cloud formations as weather and /or seasonal indicators. Events that occur in the local sky such as fog, wind changes, storm watching, snow and other weather. Create drawings based on these observations. Do this over a period of a few days so changes can be noted.

Moon—learn the phases of the moon by charting them: <https://www.mensaforkids.org/MFK2/assets/File/Teach/LessonPlans/Lesson_Moon.pdf>

Daily Sunrise and Sunset times: Recording the daily Sunrise and Sunset times is a wonderful everyday morning meeting activity. Each day a student or you can research the Sunrise and Sunset times from the local paper or website. Chart the times to notice patterns and an order to the Sun’s time spent moving across our sky. Additionally, add to the chart the high temperature of the day and see if they discover any patterns. These data can be graphed and interpreted to better understand the Sun’s Path diagram.

Shadow Tracking: Track the Sun’s movement by tracking a stick’s shadow each hour. Much like the Sun tracking groups each hour have a group track the stick’s size, shape and direction each hour. Check out http://hea-www.harvard.edu/ECT/Stick/stick.html#intro for a great lesson that helps your students record the smooth arced motion of the Sun across the southern horizon.

Getting more ambitious? Consider making a human sundial: <https://www.sciencefriday.com/educational-resources/a-human-sundial/>

Or

<http://solarschoolhouse.org/wp-content/uploads/2016/05/SSH_Sundial_Guide_WEB.pdf>

**CROSS-CURRICULAR CONNECTIONS**

**Literacy:**Read ***The Next Time You See a Sunset*** and try some of these activities: <https://www.nsta.org/publications/press/extras/sunset.aspx>

Art—draw pictures of the sky, sunrise, sunset or shadow.

**INDIGENOUS PERSPECTIVES**

As Wilfred Buck, Manitoba Cree educator, writes: “All cultures on Mother Earth have their own understandings of the stars. No matter where one was located on Earth, all one has to do was look up into an evening sky and a myriad of stories can be revealed. As human beings made sense of their world and established a sense of belonging, stories were told and connections between people and the environment were established.”

How do daily and seasonal changes affect First People’s use of plants and animals ? (e.g. seasonal food sources, hunting resources, changes in their clothing, changes in shelter)

This resource, the 13 Moons of the WSANEC, is made into an educational resource by the JASON project: <http://www.racerocks.com/racerock/firstnations/13moons/13moons.htm>

Skytellers DVD: Seasons by Lunar and Planetary Institute

Possible books: My Seasonal Round , Solomon’s Tree Andrea Spalding Teacher background knowledge: www.sacredrelationship.ca (short video clips that really help show this aboriginal world view in relation to science)

Seasonal Rounds resource: <https://www.openschool.bc.ca/elementary/my_seasonal_round/pdf/SeasonalRound_unit.pdf>

<https://www.slideshare.net/jessidildy/122-aboriginal-astronomy>

**RESOURCES**

4 seasons in a year video: https://www.youtube.com/watch?v=\_0zKV6j1MDg

SD 71 Has curated great resources, including some in French:
<https://portal.sd71.bc.ca/group/wyhzgr4/earthspace/kindergarten/Pages/kinderearthteacher.aspx>

Following the sun crash course video: <https://www.youtube.com/watch?v=1SN1BOpLZAs>

Explains shadow length changes (probably for teachers only)

British weather

<http://www.metlink.org/primary/key-stage-1/>

Archived environment canada site about clouds:

<https://ec.gc.ca/meteoaloeil-skywatchers/default.asp?lang=En&n=5A0D647D-1>