Photo by Aaron Burden on Unsplash

New SCIENCE Curriculum

Earth Systems Grade 5

October 18, 2023

Facilitator: Chris Zarski & Ted Zarowny

Alberta Regional Professional Development Consortia
Adult learning for students' sake

Acknowledgment of Land and People

In the spirit of reconciliation, we want to acknowledge that this gathering is taking place on traditional lands across the province of Alberta, home to many diverse First Nations, Métis and Inuit peoples. We acknowledge that this land is a traditional meeting ground giving voice to its original peoples and the story of creation of this country in a way that history has forgotten.

The Honorable Harvest - Robin Kimmerer

Photo by Chris Lawton on Unsplash

Agenda

1. Spiraling Curriculum - Concepts
2. Spiraling Curriculum - Skills and Procedures
3. Spiraling Curriculum - Understanding
4. Spiraling Curriculum - Transfer
5. Teaching for Transfer
6. Surface Level Activities
7. Deep Level Activities
8. Transfer and Assessment
9. Resources

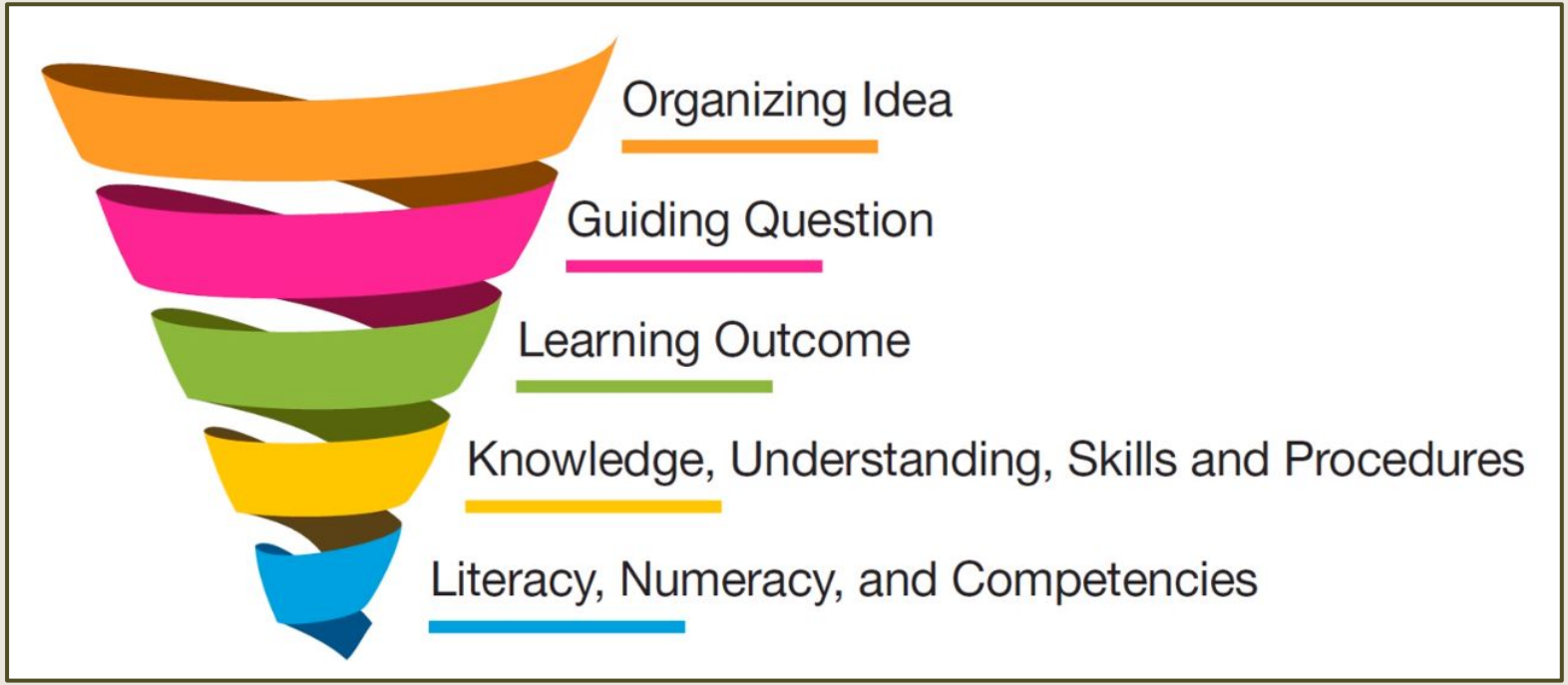
01

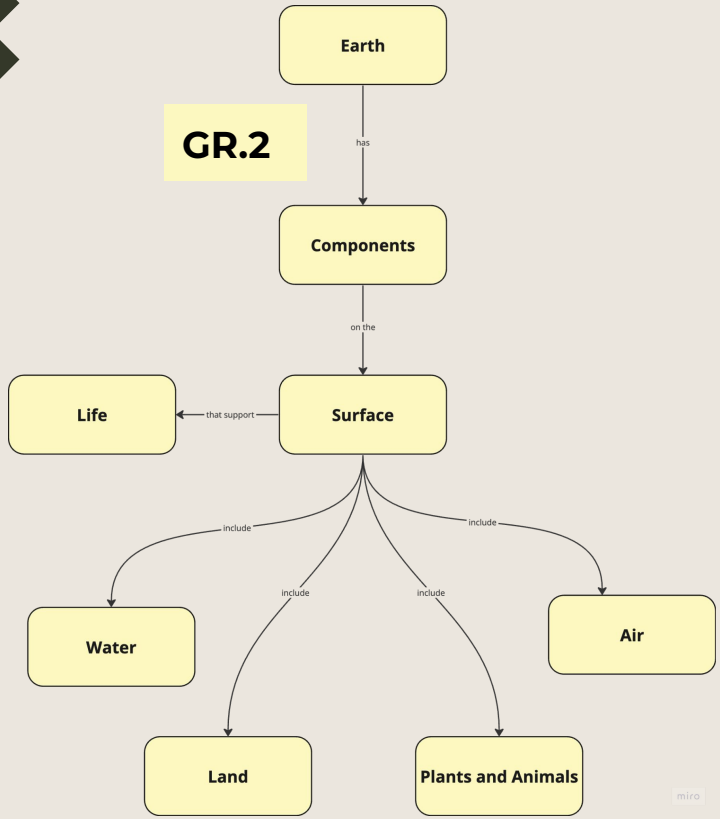
Spiraling Curriculum Concepts

Spiraling Curriculum

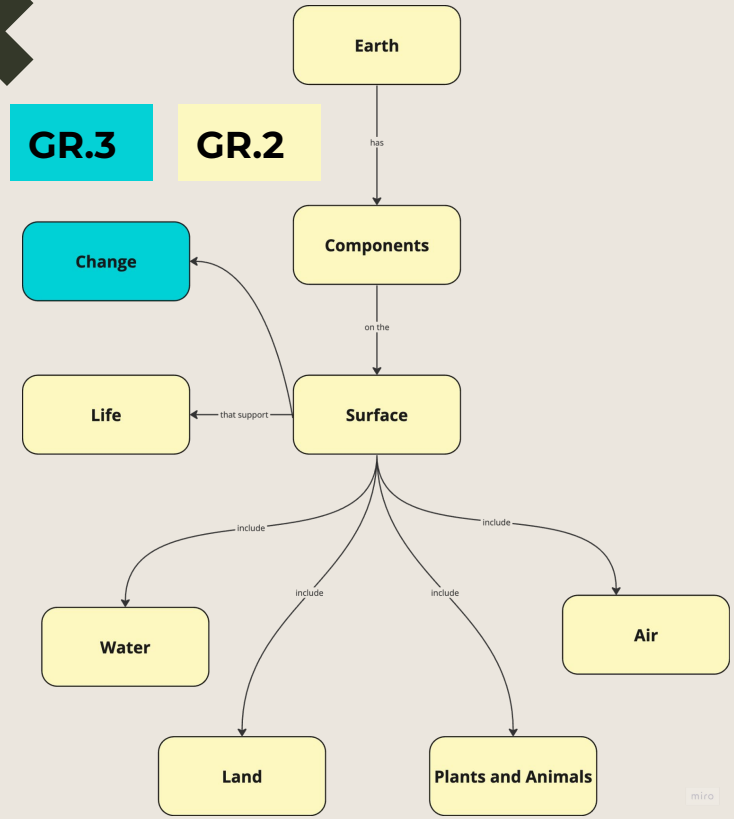
Guiding Framework Document

New LearnAlberta

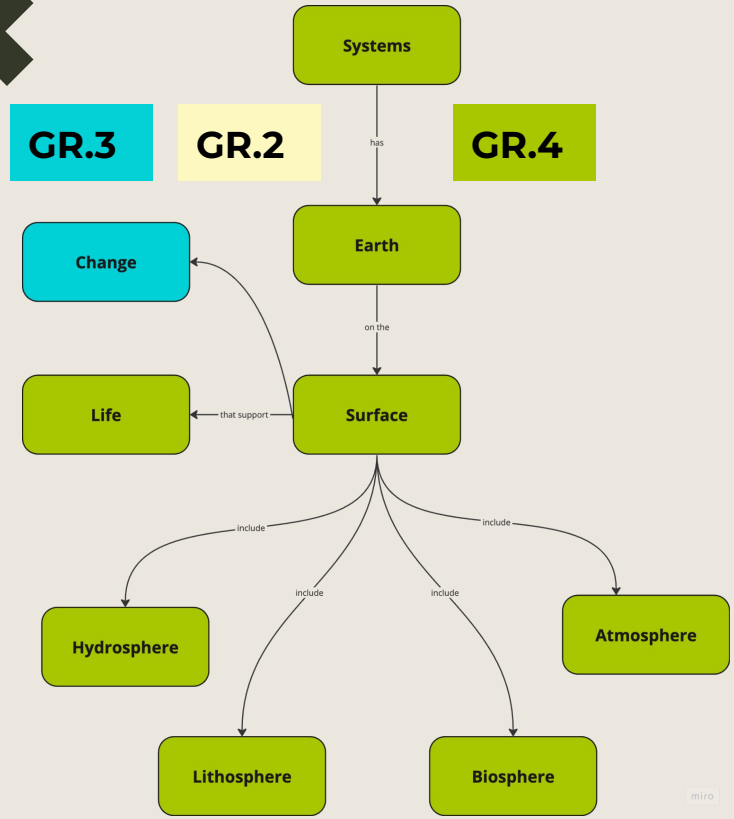




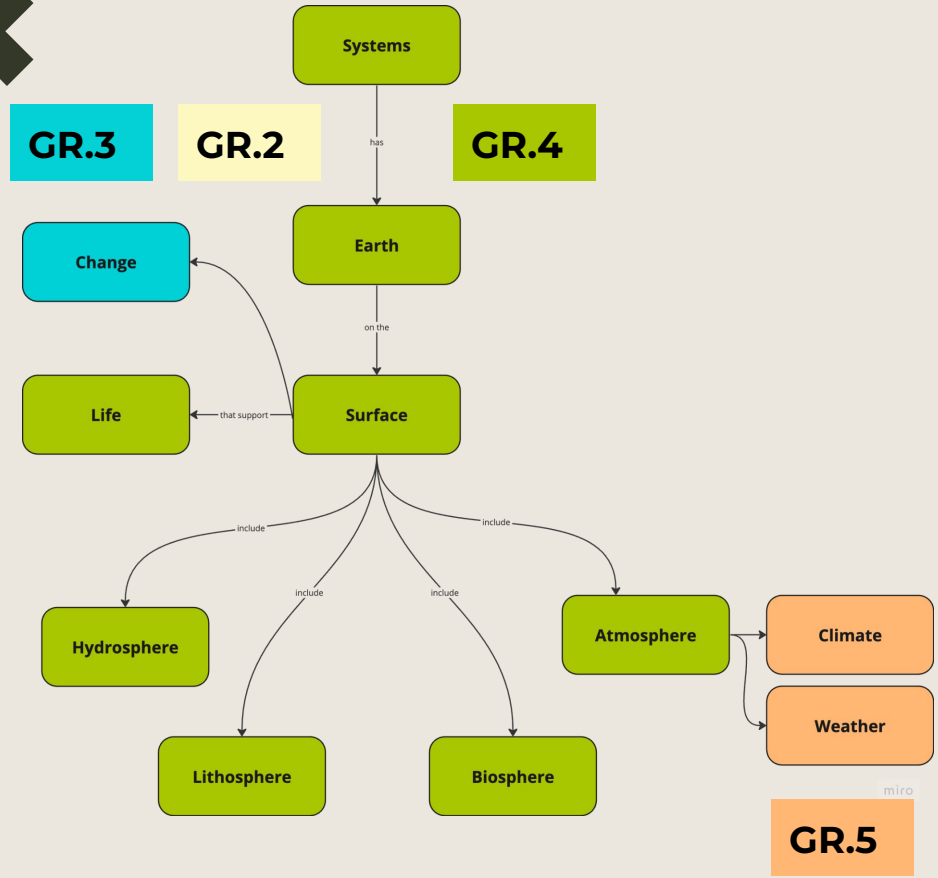
Spiraling and Growing Concepts



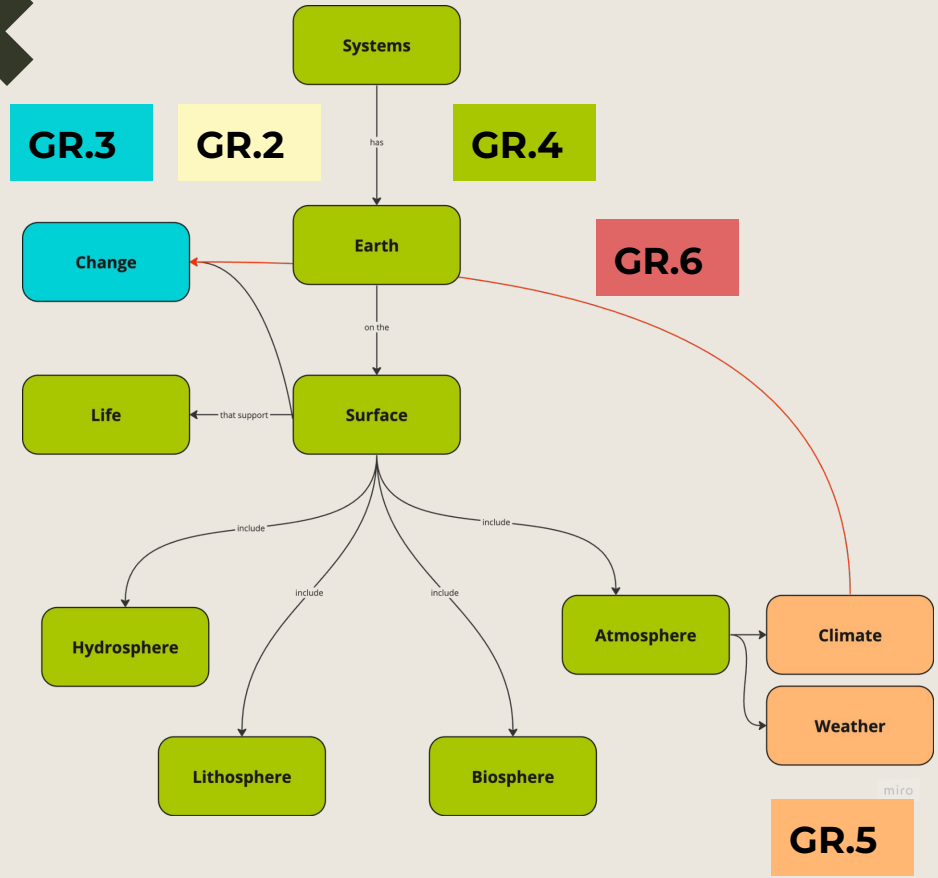
Spiraling and Growing Concepts



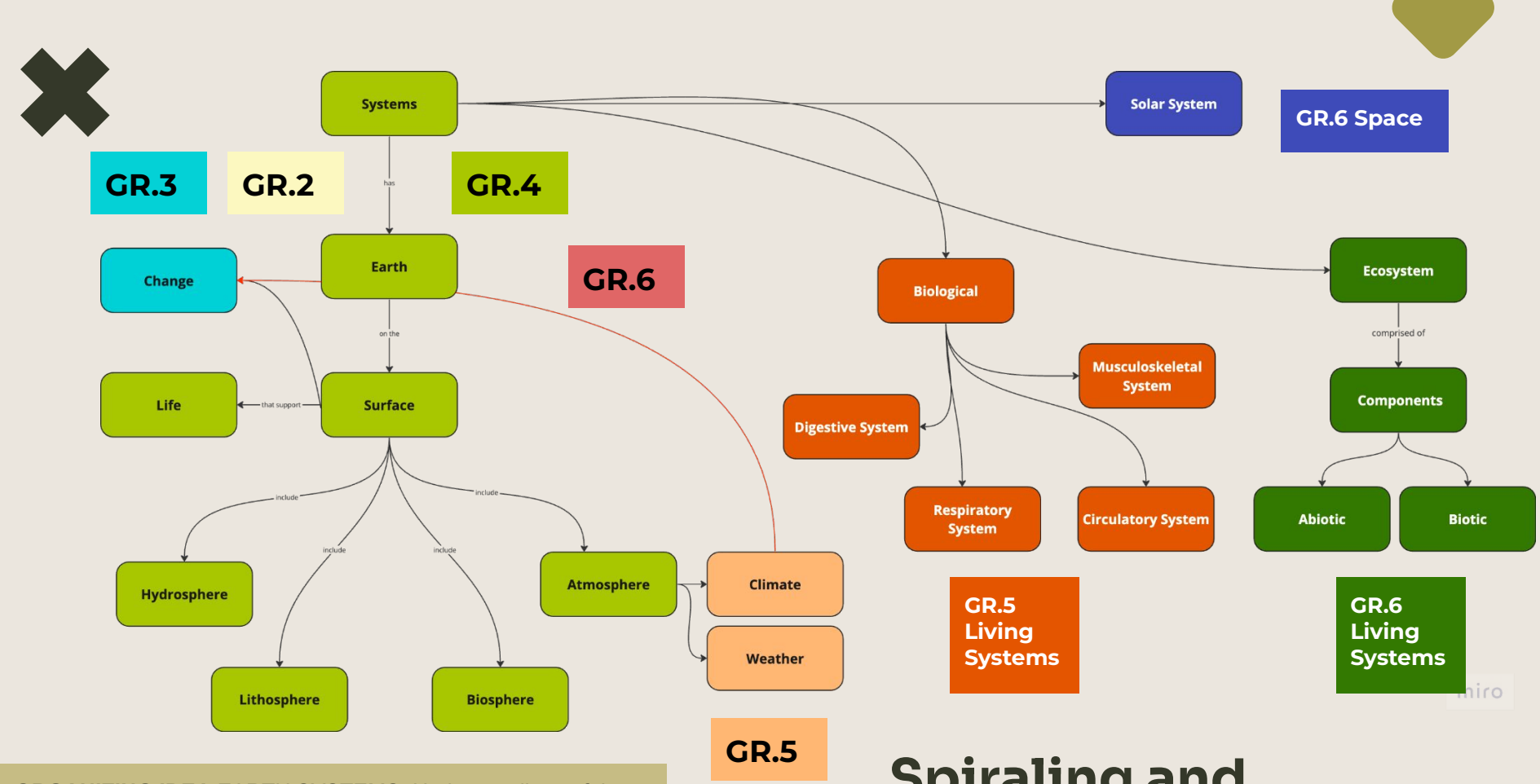
Spiraling and Growing Concepts



Spiraling and Growing Concepts

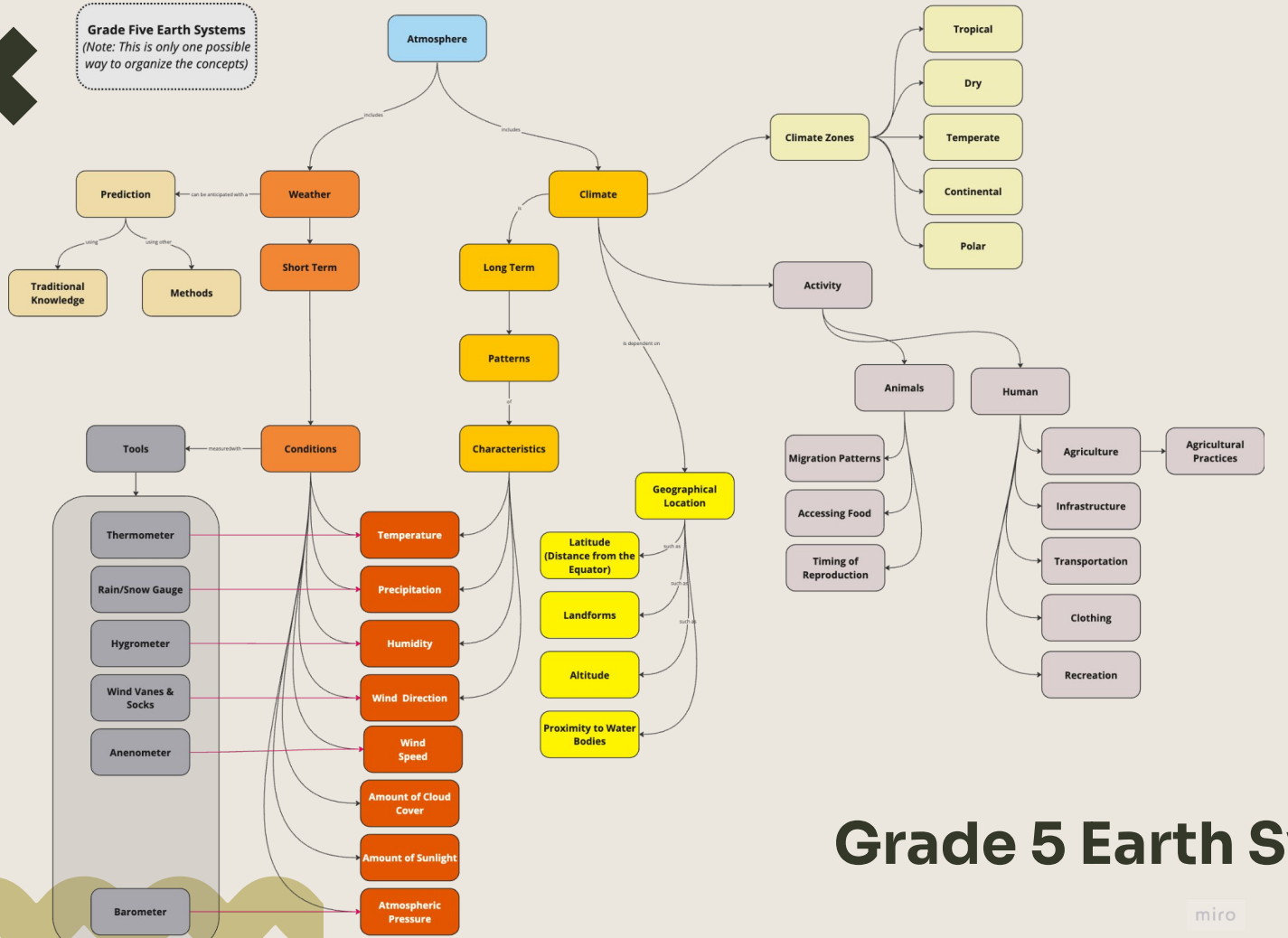


Spiraling and Growing Concepts



ORGANIZING IDEA:EARTH SYSTEMS: Understandings of the living world, Earth, and space are deepened by investigating natural systems and their interactions.

Spiraling and Growing Concepts



Grade 5 Earth Systems

EARTH SYSTEMS

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
Guiding Question: *How can environments be explored?*	**Guiding Question:** *In what ways can environments change?*	**Guiding Question:** *How can Earth's components and relationship to the Sun be understood?*	**Guiding Question:** *What visible changes can be identified through examination of Earth's surface?*	**Guiding Question:** *How does Earth sustain life?*	**Guiding Question:** *How can climate and its effects be understood?*	**Guiding Question:** *What factors affect climate?*
Learning Outcome: *Children examine and describe surrounding environments.*	**Learning Outcome:** *Students analyze environments and investigate interactions and changes..*	**Learning Outcome:** *Students investigate Earth & its landforms, & its bodies of water & and its relationship to the Sun.*	**Learning Outcome:** *Students analyze changes in Earth's surface and explain how layers of the landscape hold stories of the past.*	**Learning Outcome:** *Students investigate the systems of Earth and reflect on how interconnections sustain life.*	**Learning Outcome:** *Students analyze climate and connect it to weather conditions and agricultural practices.*	**Learning Outcome:** *Students investigate climate, changes in climate, and the impact of climate change on Earth.*
	KEY CONCEPTS				**KEY CONCEPTS**	
Animal	Change	Axis	Bodies of Water	Care	Weather	Climate Change
Environment	Change: Seasonal	Bodies of Water (wetland, river, lake, glacier, ocean)	Cause	Action	Climate	Interaction
Exploration: Senses	Change: Seasonal: Environment	Components of Earth: land,water, air, plants, human, animals.	Change	Change	Climate Zones	Climate Change Causes
Human	Change: Seasonal: Human Activities	Day	Earth's Surface	Conservation	Patterns	Climate Change: Effects
Objects Natural	Change: Sudden	Earth's Surface	History	Environment	Climate Characteristics	Climate Factors (Location)
Objects: Human-Made	Change: Seasonal: Plants and Animals	Landforms	Human Activities	Interaction	Climate Factors	Personal Actions
Plant	Environment: Responsibility: Care	Life	Intergenerational Knowledge	Interconnection	Weather: Tools: Measuring	Climate Change Observations
Shared Space	Environment	Revolution	Landscape	Life	Weather: Prediction	Extreme Weather
Wonder	Hibernation	Rotation	Landscape Layers	Lithosphere | Hydrosphere | Biosphere | Atmosphere	Climate & Human Activity	Traditional Knowledge
FNMI: Ways of Living Connected to Land	Migration	Saltwater & Freshwater Bodies	Natural Events	Natural Resources	Climate & Animal Activity	FNMI: Impact of climate change on way of living
	Observation: Senses	Water Flow	Plant & Animal Activity	Responsibility	Climate and Agriculture	
	Seasons	Year	Soil	Spheres	Agriculture: Sustainable Practices	
	FNMI: Sense of responsibility and care with nature.		Time	Sunlight	Agriculture: Conservation Practices	
	FNMI: Products made from plants and animals.		Wind | Water | Ice	Systems	Agriculture: Sustainable Harvesting	
			FNMI: Knowledge of Earth's Surface	Water Resources	Intergenerational Observation	
				FNMI: Interconnectedness of Earth Systems	FNMI: Long-term climate observations	
				FNMI: Laws of Nature and Sacredness of Water	FNMI: Observations and weather predictions	
				FNMI: Conservation		

[Link: Concept Progressions (ARPDC)]

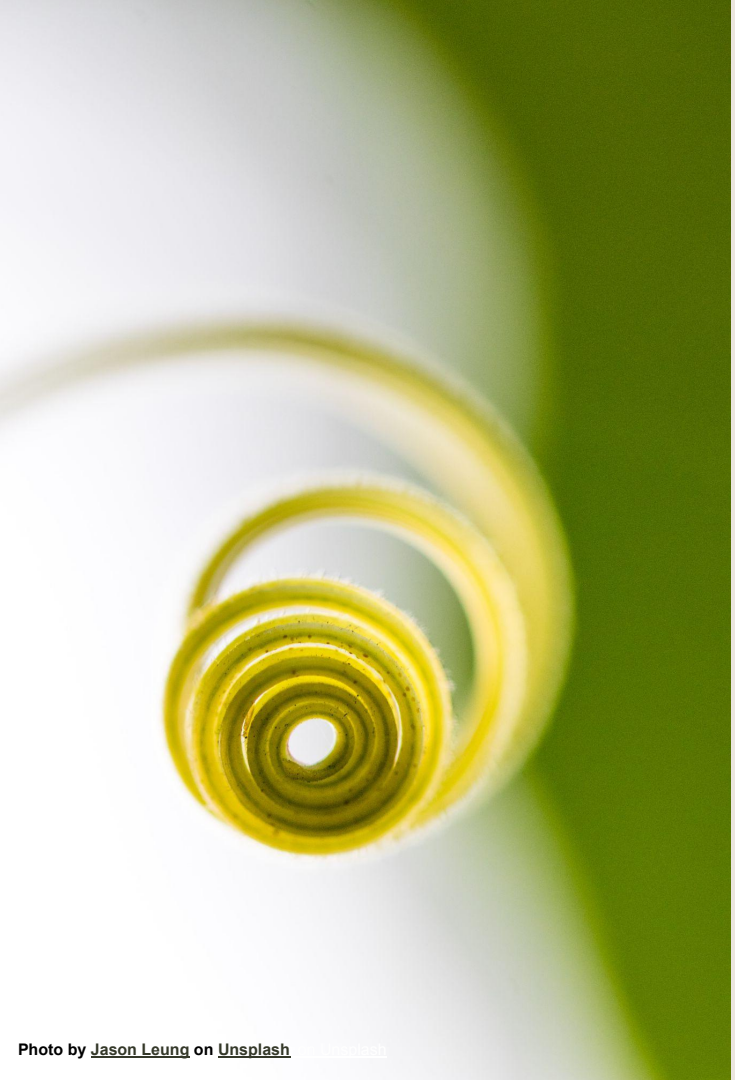


Photo by Jason Leung on Unsplash

02

Spiraling Curriculum

Skills & Procedures

“Skills and procedures **are what students do to demonstrate their knowledge and understanding.** They are specific skills, methods, tools, strategies, and processes that students will develop as they achieve the learning outcome.”

Guiding Framework

Learner Outcome Verbs				
	Grade			
	K	1	2	3
Apply Creativity				
Analyze				
Describe				
Examine				
Explain				
Explore				
Follow Instructions				
Interpret Instructions				
Investigate				
Relate				

Learner Outcome Verbs

Verbs are the skills and procedures that students do or perform to demonstrate knowledge and understanding.

Learner outcome verbs are those verbs that are identified in the learner outcome

Skills and Procedures K-3 Progressions

Grade 5 Earth Systems Learner Outcome

Students **analyze** climate and **connect it** to weather conditions and agricultural practices.

Skills & Process Verbs	Grade			
	K	1	2	3
Ask Questions				
Classify (Sort)				
Compare (find similarities and differences)				
Conclude				
Create				
Demonstrate Safety				
Describe				
Design				
Discuss				
Examine				
Explain				
Explore				
Investigate				
Observe				
Predict				
Record Data/Observations				
Relate				
Represent				

5ES1 Learning Outcome: *Students analyze climate and connect it to weather conditions and agricultural practices.*

5ES1.3 Understanding: *Climate affects human and other animal activity.*

5ES1.3 Skills and Procedures

- Explain how climate can affect human and other animal activity.
- **Discuss** how climate can affect human and other animal activity.
- **Represent** how climate can affect human and other animal activity.

Photo by zero take on Unsplash

03

Spiraling Curriculum Understanding

“Understanding is about putting pieces of knowledge into **logical and meaningful order** with other knowledge.”

Guiding Framework

Knowledge	Understanding
• **Agricultural Practices** • **Climate** • **Weather Events** How can these three concepts can be put into a **logical and meaningful order?** 	• **Climate** and **weather events** influence **agricultural practices.** **OR** • **Agricultural practices** are researched and tested to adapt to **climate** and **weather events.**

Image Credit: **Question** by Francisco Garcia Gallegos from Noun Project (CC BY 3.0)

Knowledge	Understanding 3ES1.3
Climate and **weather events** may influence agricultural practices by affecting components such as ● crop type ● crop production ● animal population ● soil quality ● water access	**Climate** and **weather events** influence **agricultural practices.**

Photo by Rohan Makhecha on Unsplash

04

Transfer

Concepts Transfer (Different Contexts)

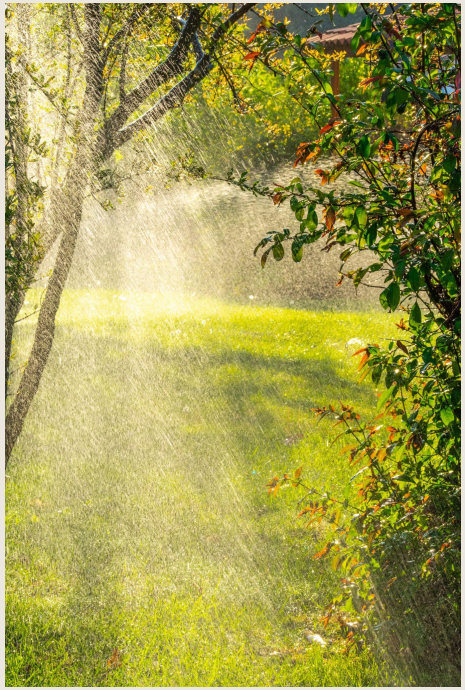


Photo by Mehmet Ali Turan on Unsplash

Photo by Mehmet Ali Turan on Unsplash

Knowledge	precipitation weather	climate

Understandings Transfer (Different Contexts)

Understanding
Grade 5: Climate and weather events influence agricultural practices.
Grade 4: Earth's systems interact with one another, resulting in environments that sustain life.

Photo by Tony Pham on Unsplash

Photo by Erik Gazi on Unsplash

05

Teaching for Transfer

Phases of Learning

Hattie, Fisher & Frey: *Visible Learning for Literacy* (2016)

Surface

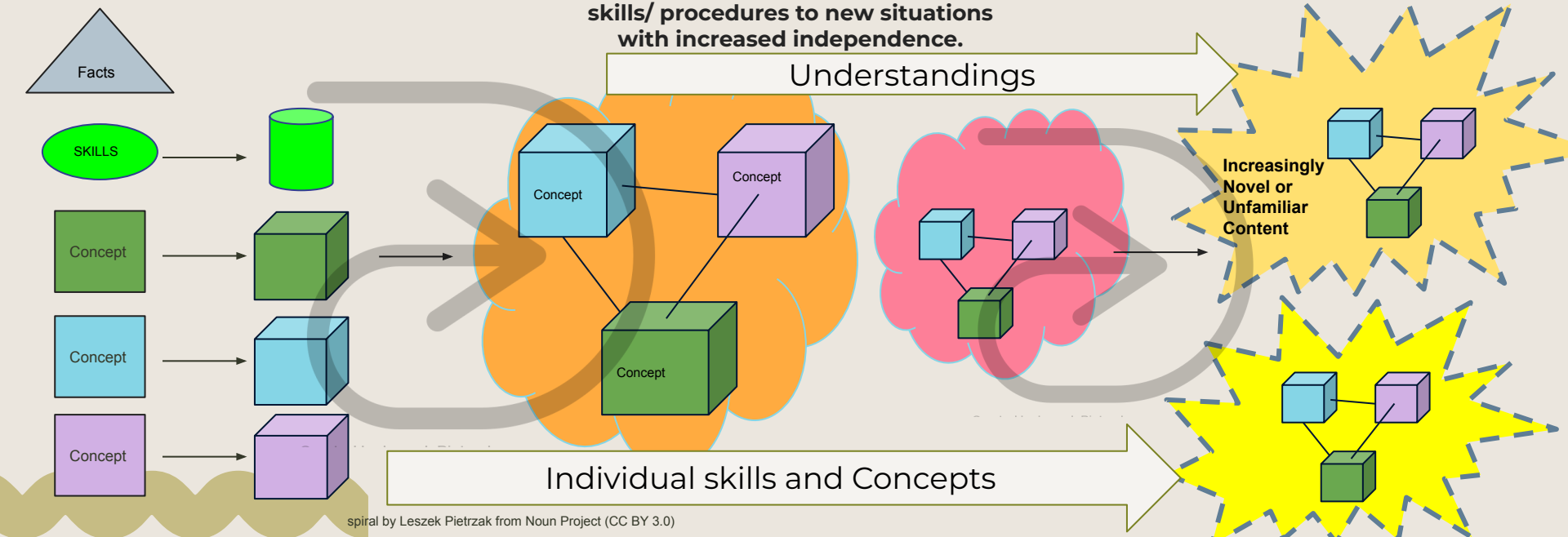
Students are first exposed to individual skills, concepts and their related knowledge.

Deep

Students make connections between concepts to create deeper understanding and appropriately skills/ procedures to new situations with increased independence.

Transfer

Students apply concepts, understandings and skills to a variety of novel and unfamiliar contexts.



spiral by Leszek Pietrzak from Noun Project (CC BY 3.0)

Planning

Begin With the End In Mind

Stephen R. Covey, 1989

Backward by Design

Grant Wiggins & Jay McTighe, 1998

Learning Outcome
Students analyze climate and connect it to weather conditions and agricultural practices.
Understandings
5ES1.1 The study of climates across regions helps identify historical patterns and make predictions.
5ES1.2 Weather conditions can be measured accurately using a variety of tools and methods.
5ES1.3 Climate affects human and other animal activity.
5ES1.4 Climate and weather events influence agricultural practices.
5ES1.5 Intergenerational observations and accounts of place enable individuals and communities to recognize patterns and cycles related to weather and seasons.

Understanding

5ES1.1 The study of climates across regions helps identify historical patterns and make predictions.

What will students do to demonstrate their learning?

Summative Assessment for Understanding 5ES1.1

Students ANALYZE climographs to predict which location on a map matches the climograph using geographical location and proximity to a water body as the factors.

What will students need to know and/or understand in order to be successful?

Climate | Factors Affecting Climate | Geographic Location| Proximity to Water Body | Climograph | Precipitation | Bar Graph | Line Graph | Axis | Prediction

What will students need to be able to do in order to be successful?

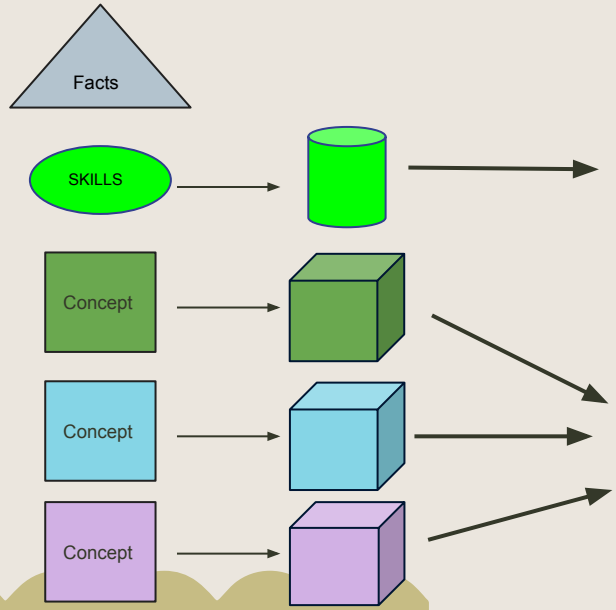
Analyze Climographs | Predict

Phases of Learning

Hattie, Fisher & Frey: *Visible Learning for Literacy* (2016)

Surface

Students are first exposed to individual skills, concepts and their related knowledge.



Analyze Climographsraphs | Predict

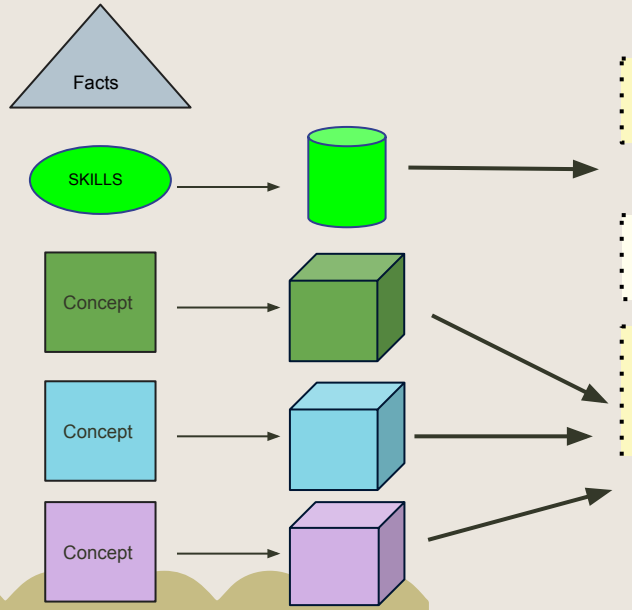
Climate | Factors Affecting Climate | Geographic Location| Proximity to Water Body | Climograph | Precipitation | Bar Graph | Line Graph | Axis | Prediction

Phases of Learning

Hattie, Fisher & Frey: *Visible Learning for Literacy* (2016)

Surface

Students are first exposed to individual skills, concepts and their related knowledge.



Skills such as Investigating; Researching; Concept Mapping

Pre Assessment for Prior Learning

Earth's Spheres | Relationship | Interconnection | Change | Conservation | Natural Resources | Human Activity

Prior Learning

What *concepts* from previous grades are important?

Environments

To the Teacher: Ask if anyone has heard the word...what do they think it means. You could start a list of words (explanations) on chart paper or the board that could be used to create a definition of what it means and what it includes.

The following 3 slides, focus on what they see and not on differentiating between natural and man-made. After discussing their notices and wonders, ask again what they think am environment is.

What is an environment?

How would you describe it in your own words?

What is an Environment?: Concept Attainment

Man-Made or **Natural**?

What do these mean?

Coman, Mirela & Cioruța, Bogdan-Vasile. (2019). 2019 (57) - From Human-Environment Interaction to Environmental Informatics (III): the Social-Ecological Systems dynamics in Knowledge-based Society.

The Earth System

https://epod.usra.edu/blog/2001/01/the-earth-system.html

Landforms of Alberta

Plateaus
Head Smashed In Buffalo Jump

UNESCO

Hills
Cypress Hills

Mountains
Mount Edith Cavell

Prairies
Drumheller Prairies

Valleys
Dinosaur Provincial Park

UNESCO

Landforms on Earth have varying characteristics.

Slopes

Zhang Yu @ Dreamtime

Size

Terrain

Peyto Lake @Pixabay20

Water, Water Everywhere!

Earth's surface is covered mostly by bodies of water.

Do you have any water near where you live or go to school? What type of water is it?

Landforms - What are they?

Write down the terms in the picture. Listen for what they are in the presentation.

Water

Water on Earth's Surface

- oceans
- glaciers
- lakes
- wetlands
- rivers

Water in Alberta

- glaciers
- lakes
- wetlands
- rivers

What are the characteristics of the different ‘waters’ in Alberta?

Glaciers

Glaciers are huge, thick masses of ice. They form when lots of snow falls in one location for many years. Over time–decades or centuries–the snow on the bottom gets squished down by the weight of falling new snow. This compressed snow becomes ice, forming a glacier.
Can a glacier move? Explain.
National Parks Service

Lakes

Source: Lily Uits Learning - How are lakes formed?

Rivers

Important characteristics of a river.
Source: Study ‘n’ Learn

Wetlands

Wetlands are areas where the land does not drain well. The ground in a wetland is saturated, or full of water. Often the ground is covered with shallow water. Wetlands are usually classified as swamps, marshes, or bogs.
Source: Britannica for Kids

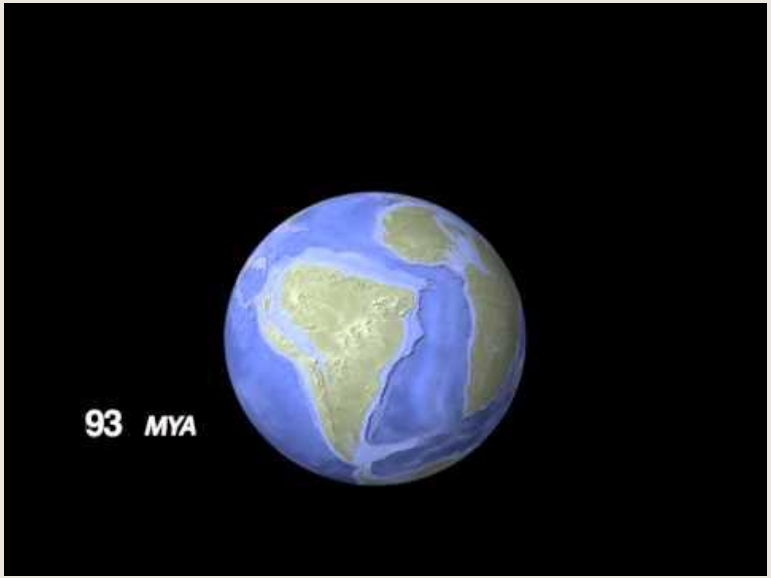
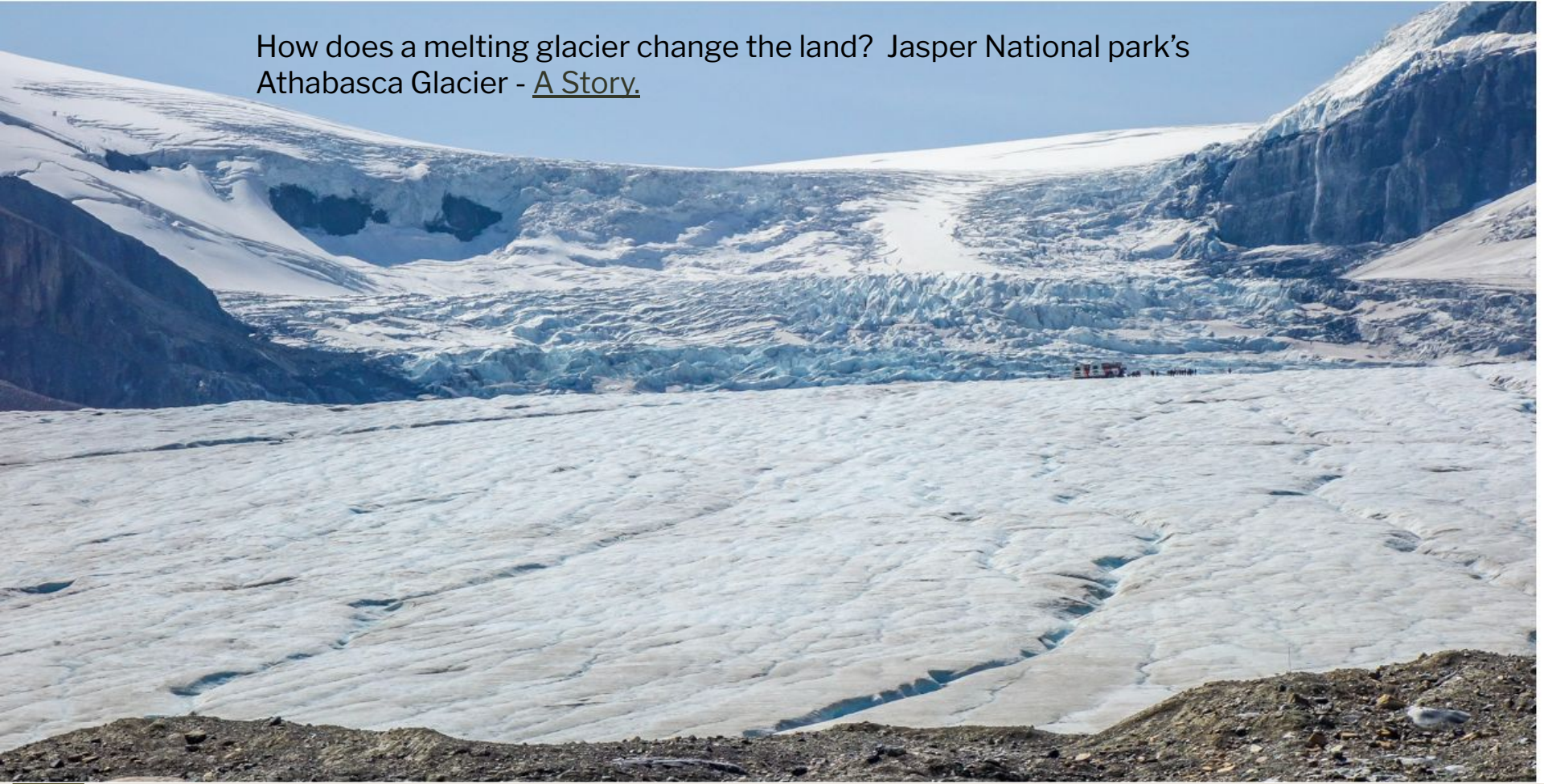


Plate Movement over the last 200 Million Years Ago to Today

How do you think it will look in the next 200 Million Years? Why can’t we feel the movement?

How does human activity change the face of the earth?

How does a melting glacier change the land? Jasper National park's Athabasca Glacier - A Story.



The Athabasca Glacier On-Top.ca
http://www.on-top.ca/Outings/2021/Toe-of-the-Athabasca-Glacier-August-2021.html

Our Friends of the Past - **Dinosaurs**

Excavating

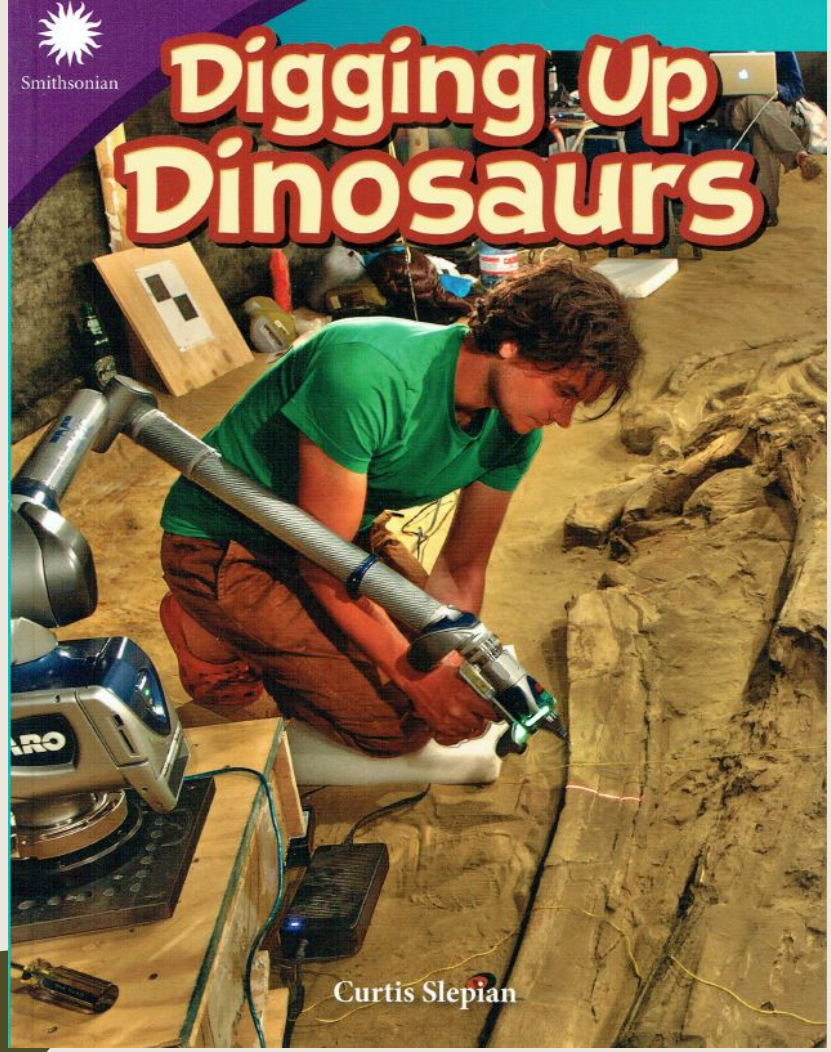
Fossils

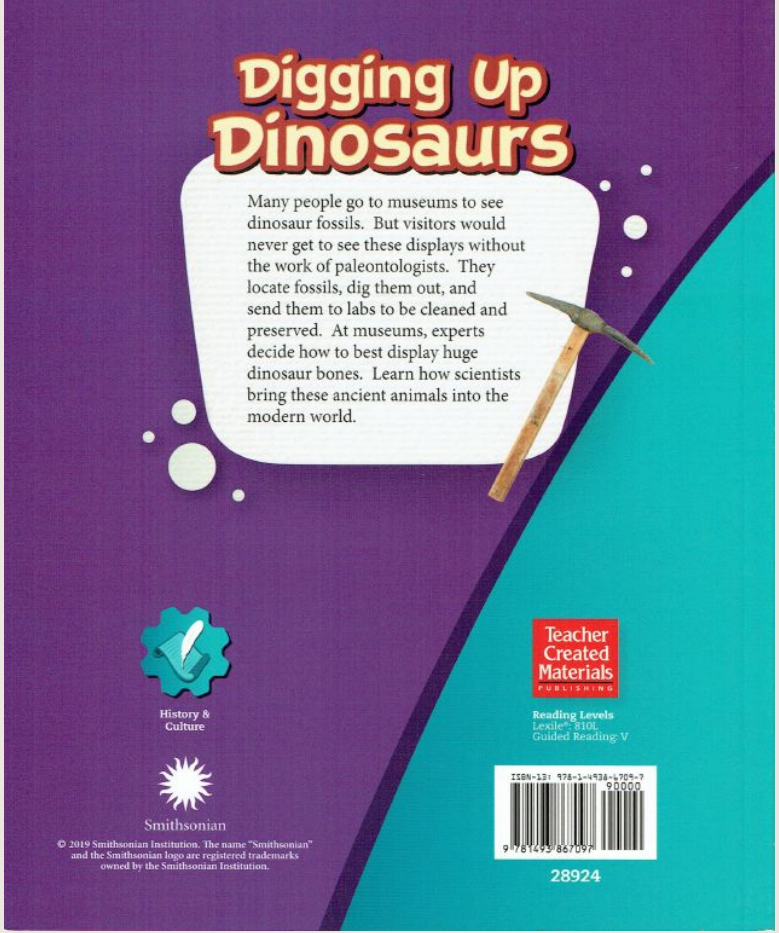
albertosaurus
edmontosaurus
nodosaur
tyrannosaur

Dino Cache: Grande Cache's World Class **Trackway**.
People and Peaks Production

Grande Prairie

Dinosaur Provincial Park





Digging Up Dinosaurs by Curtis Slepian, Teacher Created Materials - Smithsonian Institute (2019) - Available through Pearson.

Source:

Title:

Weathering and Soil

Description:

notes on different types of weathering and soil horizons – PowerPoint PPT presentation

Number of Views:

236

Slides:

36

Provided by:

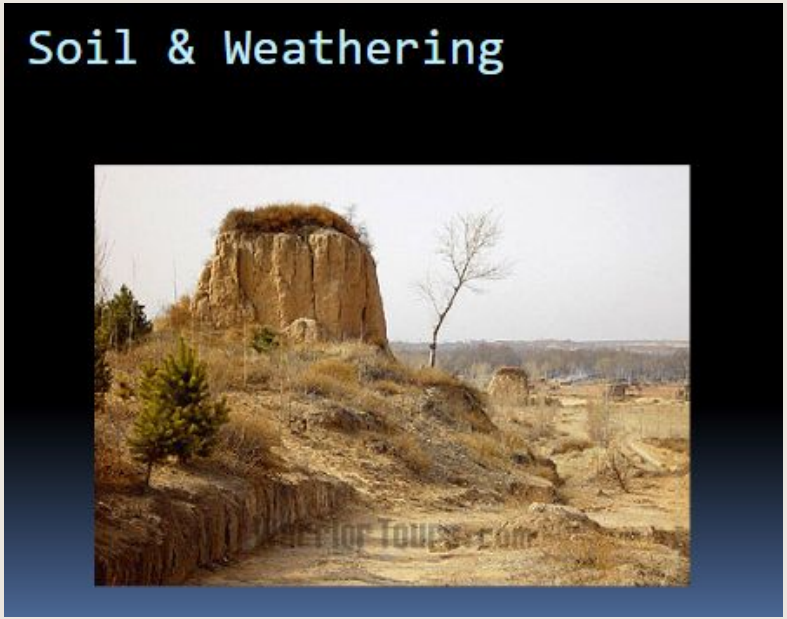
taralynn36

Category:

Medicine, Science & Technology

Tags:

erosion | soil | soil_horizon | weathering



Link

Conservation

Conservation is the preservation and protection of Earth's systems from pollution, depletion, or extinction.

- **Protection means keeping something safe and making sure it doesn't get hurt or damaged.**
- **Preservation means taking care of things and keeping them safe for the future.**

Note: Habitats are environments where plants or animals establish a home. (Gr. 3 Earth Systems)

What are examples of conservation in these videos?


Earth Systems:
Welcome to Aboard
Spaceship Earth!
Our 4 Spheres…

Grade 4

Earth's Spheres

Brainstorm with a partner. Name the four spheres.
[note to teacher: students would not be expected to explain specifics of any of the spheres after these initial introductions]

Sources to Consider

Water for Living Things

Simply Science - Water sources for animals; adaptations for plants

Science Learning Hub
Covers all Earth Systems

Earth and Life Science - contains an module and quiz (Government of the Philippines)

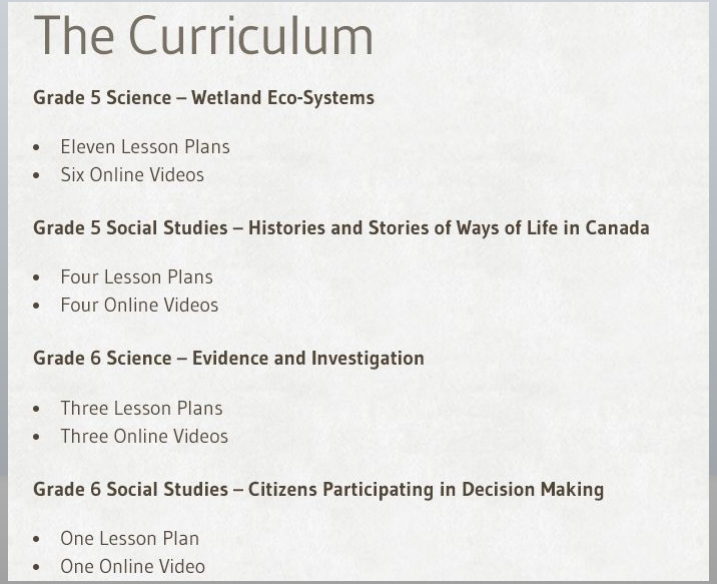
Connect the Spheres: Earth Systems Interactions. (NASA Education)

Sources to Consider

Related to Earth's Spheres

Respecting the Water

Sacred Relationships



The Curriculum

Grade 5 Science – Wetland Eco-Systems

- Eleven Lesson Plans
- Six Online Videos

Grade 5 Social Studies – Histories and Stories of Ways of Life in Canada

- Four Lesson Plans
- Four Online Videos

Grade 6 Science – Evidence and Investigation

- Three Lesson Plans
- Three Online Videos

Grade 6 Social Studies – Citizens Participating in Decision Making

- One Lesson Plan
- One Online Video

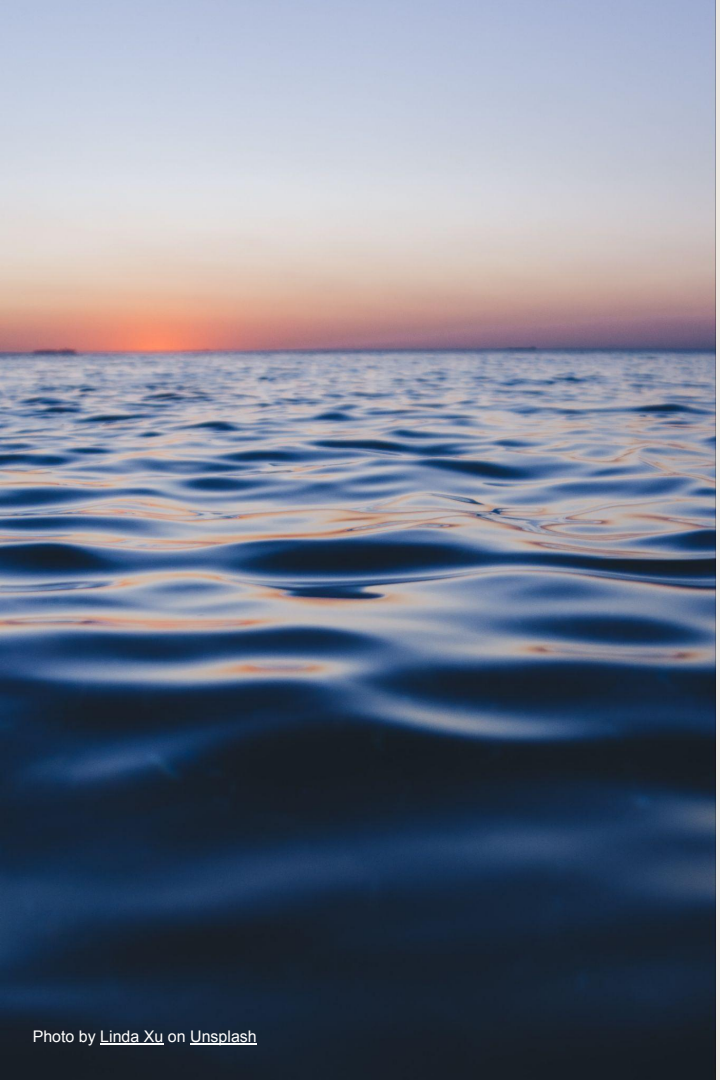


Photo by Linda Xu on Unsplash

06

Surface Level Activities – Climate and Weather

Surface Level Instructional Approaches

INTENT: Introduce and begin developing Individual Concepts (Knowledge) and Skills and Procedures

- Concept Attainment Strategy
- Frayer Model
- SEEI (State - Explain - Exemplify - Illustrate)
- Card Sorts/Classify
- Students Making/Finding examples & non-examples.
- Show a photo. Ask students how the concept you are studying is evident in the photo (eg. symmetry, empathy, authority, conflict, etc.)
- Diamond Ranking.
- Making Analogies("diversity" is like …, "motivation" is like …," our senses are like …")
- Case Studies

Sample Activities (Surface)

While planning surface activities, consider these ideas.

Broad Concepts & Skills

- System (Under Revision) (Grade 2 - Components)
- Relationship
  - Concept Map
  - Cause and Effect
  - Dependence
  - Affect/Effect
  - Interaction
  - Interconnection
- Representation
- Human Activity
- Compare and Contrast
  - Criteria
  - Similarity and Difference
- Investigation (From Grade 2 Scientific Methods)
  - Asking Questions (Notice and Wonder)
  - Observing (Using senses)
  - Analyzing
  - Prediction and Predicting
  - Conclusion
  - Sample Introduction to Research as an Investigation (Gr. 3)
  - One Point Research Rubric (Gr. 4-6)
- Evaluate

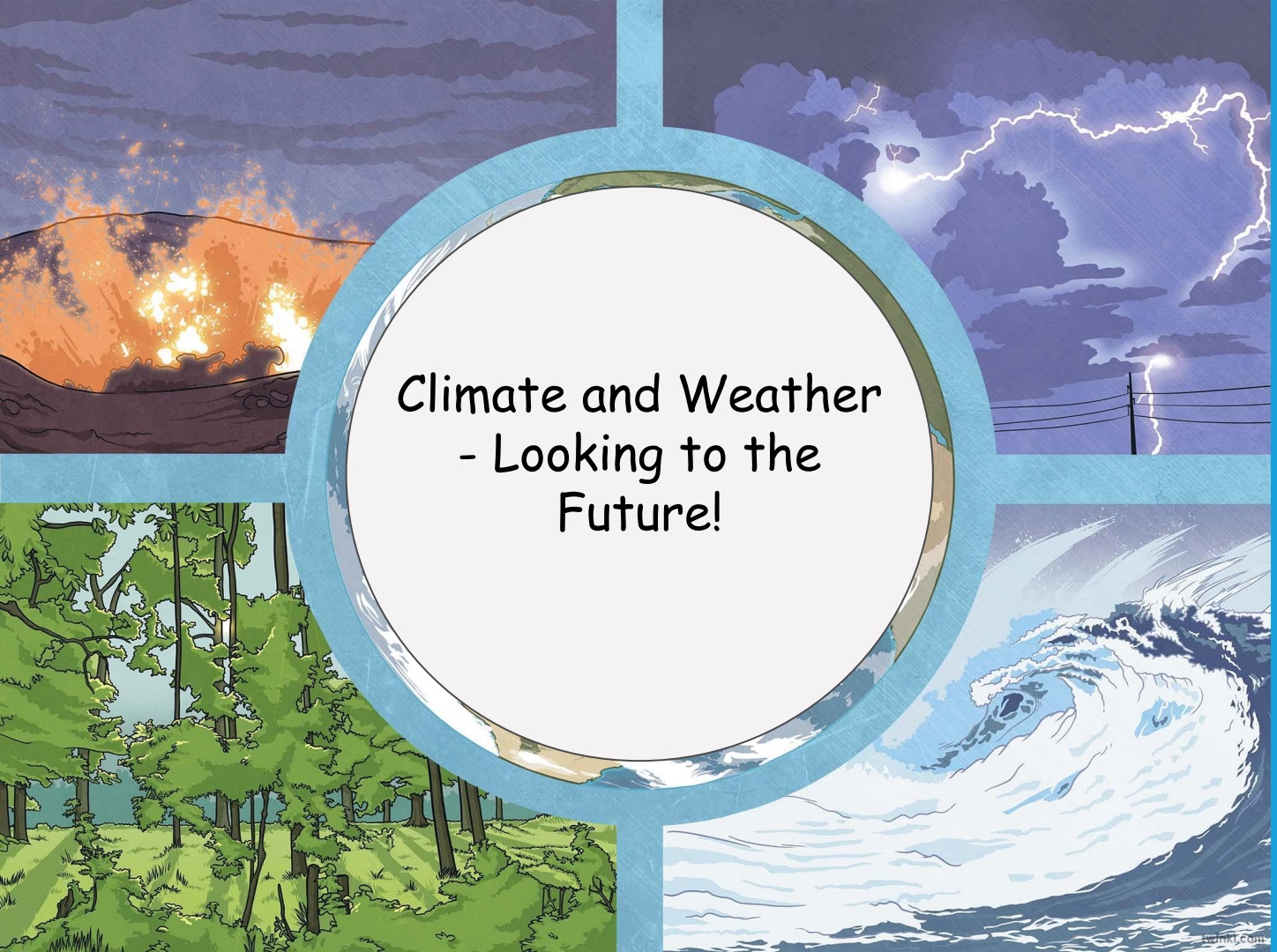
Sample Activities (Surface)

While planning surface activities, consider these ideas.

Earth Systems Specific Concepts and Skills

- **Reading Climographs**

- **Climate VS Weather (Slide 61)**
- **Tools (Slide 62)**
- **Agricultural Practices (Slide 70)**



Edmonton Regional
LEARNING CONSORTIUM

Possible Unit

- Let's Play Misconception!
- Weather vs Climate
- Making and Using Tools that Measure Weather
- Climate and Our Agricultural Practices
- First Nations, Metis and Inuit People's Resources

Let's Play *Misconception*!

There are common misconceptions about weather that adults hold. This activity could be used to start your Unit with students as well. They may not know all the terminology but allow them to explore what they know using a 1 - 2- 4 approach. There are 16 cards so you may wish to make two sets before randomly handing out one card to each student.

Weather misconceptions & introduction activity.

Weather vs Climate - aren't they the same thing? (Surface)

Weather

Weather is a short term condition experienced in a region. Weather can be experienced minute to minute, hour by hour or daily. It is our day-to-day changes.

Weather includes:

Temperature is measured with a thermometer indicating how hot or cold it is. Temperature can be measured in Celsius © or Fahrenheit (F).

Wind is how our air moves. It comes from changes in pressure between two regions that are close by each other. Wind speed and direction affect weather.

Humidity refers to how much water vapor is in the air.

Precipitation is any liquid or frozen water that forms in our atmosphere and falls back to earth.

Clouds (cloud cover) are condensed water drops or ice crystals suspended in our atmosphere. They do not always give us rain.

Amount of sunlight we receive on earth affects how much heat the earth and atmosphere experience. It is the angle the sun rays hit earth tat determine the differences in temperature.

Climate

Climate refers to the average weather pattern over a long period of time (generally 30 years).

Climate is dependent on:

Geographical location

Terrain

Altitude

Proximity to water

Based on the geographical location, the earth can be divided into three major climactic zones:

Polar - Cold Zones

Temperate - warm and cold - they have 4 seasons

Tropical - north and south of the equator - very little seasonal changes

Watch the following video and pause the recording to answer the questions at the end.

Tools

Sunlight on Earth

Classroom Demonstrations: The Seasons demo 1

Tools

Clouds

Can I make my own cloud?

Temperature

How to read a thermometer.

Make My Own!

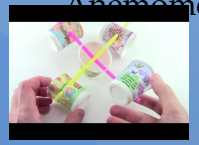
Precipitation

- Build your own rain gauge

(Government of Canada)

Wind

- Making an Anemometer



How to make an anemometer (wind speed meter)

Humidity

Making a Hygrometer

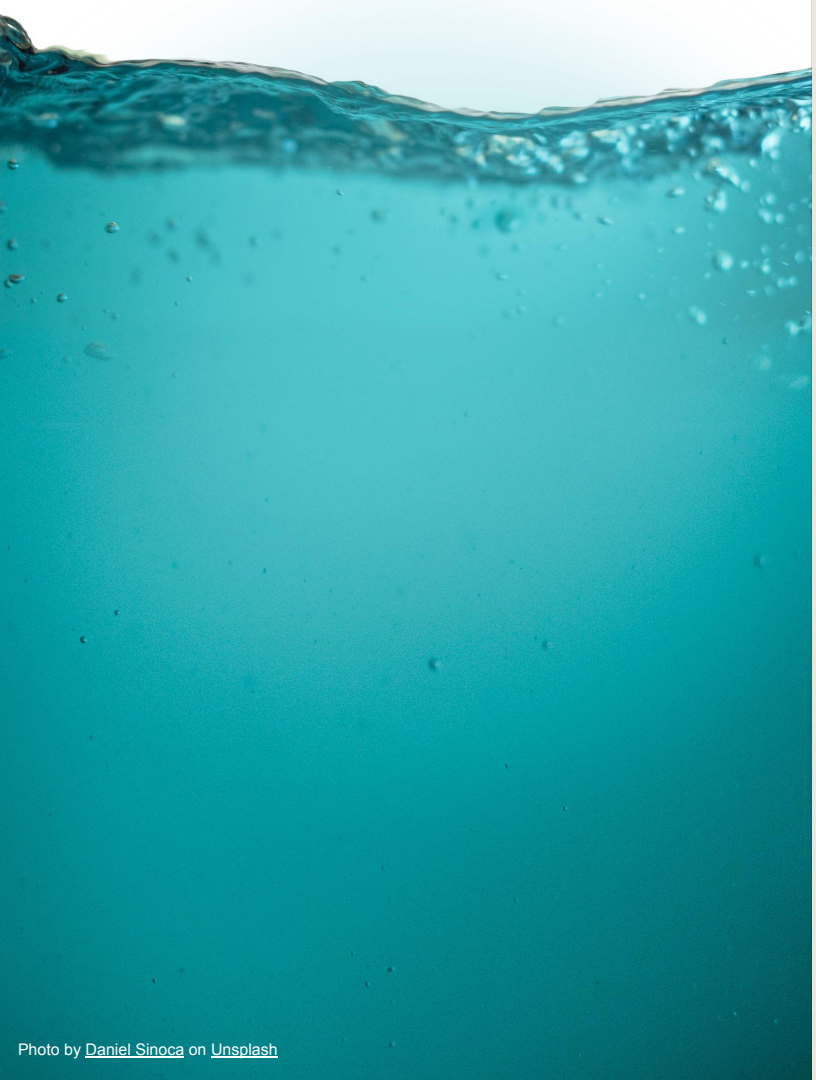


Photo by Daniel Sinoca on Unsplash

07

Deep Level Activities

Checking out Alberta

Watch the weather forecast each night for a week and draw and record the weather prediction for the following day. Use a blank map of Alberta to record your daily findings. Compare and discuss your findings with a partner.

Were there any patterns in weather over the week? Be a meteorologist, can you predict the weather for tomorrow? Is there any information that would help you to make your prediction?

Checking out your corner of Alberta

(Deep)

On a blank map of Alberta, mark where you live.

What type of terrain is around your area? What influences your weather pattern? Draw and describe any factors that affect your weather. Identify any websites or APPS you might use to assist you in getting your daily weather.

Explain how these weather factor affect your climate.

Understanding 5ES1.2: Weather conditions can be measured accurately using a variety of tools and methods.

Investigation Problem: How accurate is a homemade weather tool?

Students research how to make a the following tools

- Hygrometer
- Barometer
- Thermometer
- Rain Gauge
- Anemometer
- Weather Vane

Students design and complete the investigation with an emphasis on accurate evidence.

Understanding 5ES1.2: Weather conditions can be measured accurately using a variety of tools and methods.

Task: Students arrange the words below in a concept map and explain why they made the arrangement they did.

Hygrometer

Tools

Precipitation

Rain Gauge

Anemometer

Millimeters

Measurement

Weather Condition

Percent

Kilometers Per Hour

Wind Speed

Thermometer

˚Celcius

Understanding 5ES1.4: Climate and weather events influence agricultural practices.

Task: Students arrange the words below in a concept map and explain why they made the arrangement they did.

Planting a different crop in the same sol from one year to the next.

Crop Rotation

Keeps plant matter from previous crop near the surface.

Reduces Fertilizer Use

Organic Matter Increase

Prevents Diseases

Planting different plants close to each other.

Regenerative Agriculture

Companion Planting

Reduces Pesticide Use

Conservation Tillage

Adding plant matter waste (compost).

Conservation Agriculture

Practices

Returns Nutrients

Practices that Rebuild the Soil

Reduces Nutrient Run-Off

SURFACE

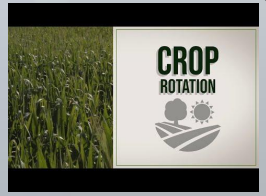
DEEP: How can Conservation Agriculture and Sustainable Harvesting practices be applied to our home garden?

Climate and Agricultural Practices

Conservation Agriculture

- Minimally disturbing the soil
  Source
- Maintaining Soil Covers

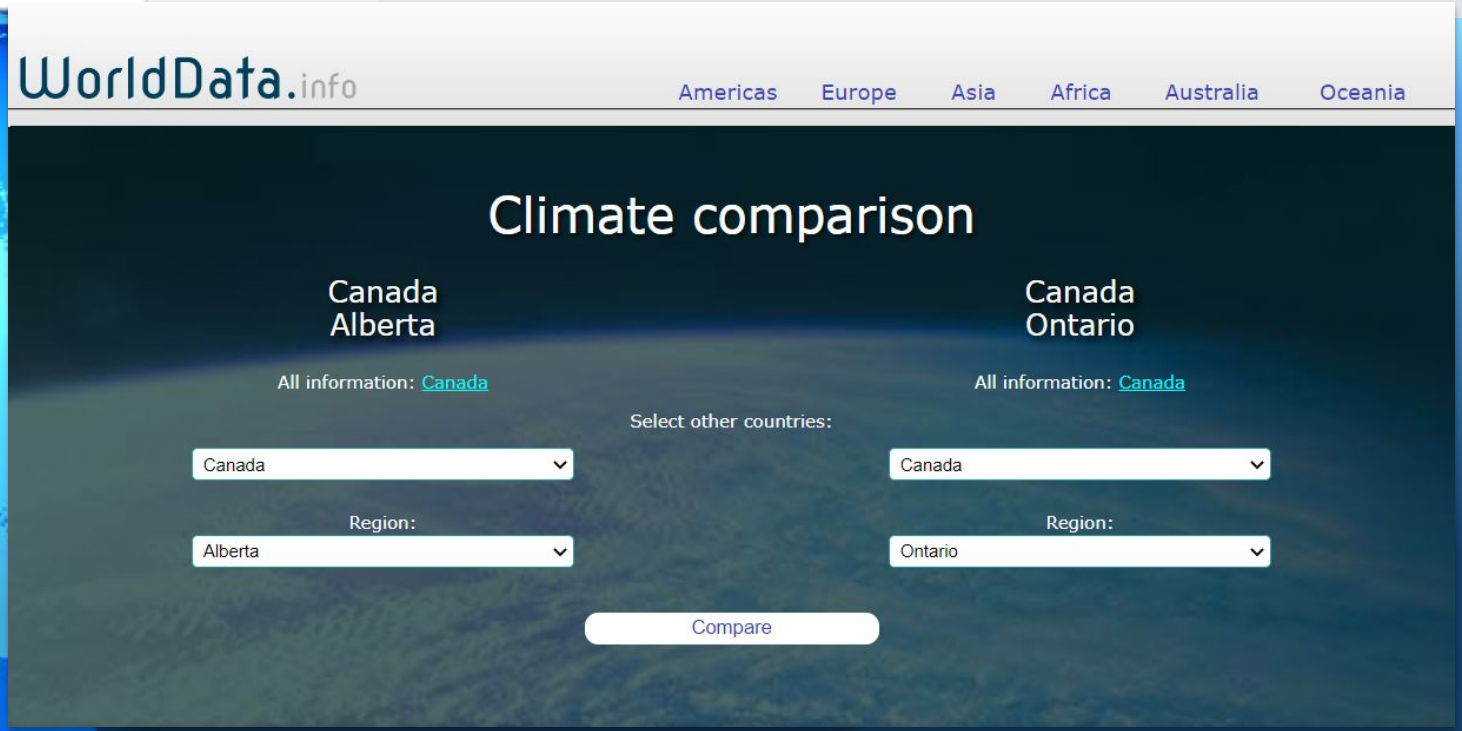
- Rotating Crops



Sustainable Harvesting

- Crop rotation
- Companion Planting
- Limiting hunting and trapping
- Considering future harvests

Where is the better place to live - Alberta or Ontario?



Link

How does analyzing long-term climate data and observations help us make decisions about relocating?

Where does this data come from: computer modelling, historical data, satellite imaging, traditional knowledge

First Nations, Metis and Inuit

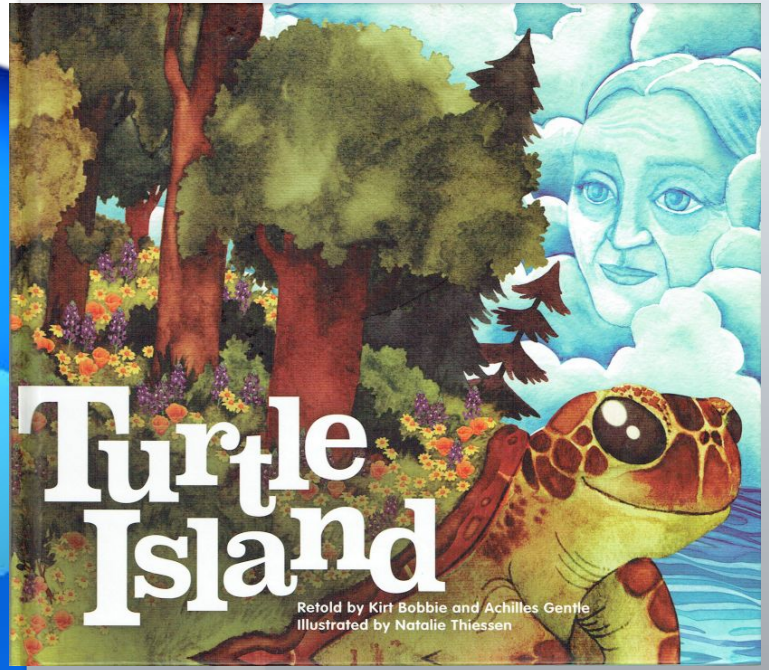
Indigenous Knowledge and Cultural Weather Perspectives:
Lessons to Support Science 10

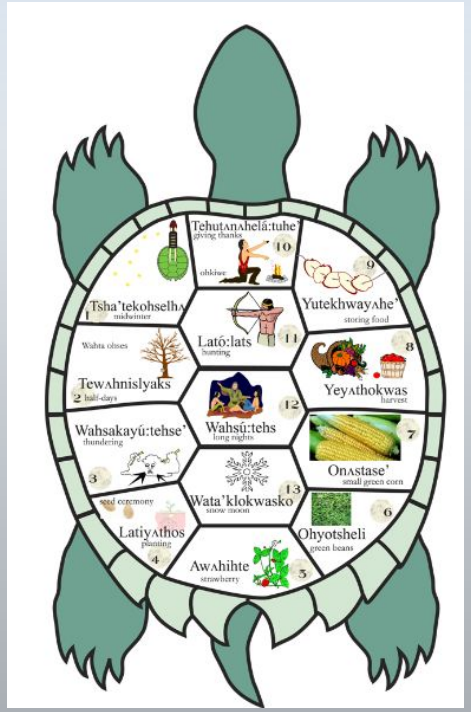
by
John Wright and Duane Johnson

2007 S106.3	Teaching Materials from the Stewart Resources Centre	SPLU	Government of Saskatchewan	

Resources for Rethinking.*Learning for a Sustainable Future.*

13 moons on Turtle's Back





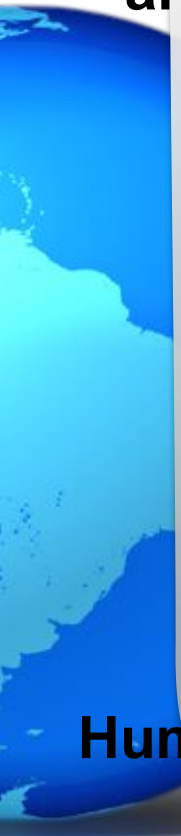
Posted by Kathryn Aunger @
Earth Haven Farm 13 Moons on Turtle's Back

Migration & Hibernation and Seasons

Animal senses to weather changes - severe weather

Weather patterns and cycles can be used to predict weather conditions and animal behaviour.

(some link to grade 3 & 4 ES)



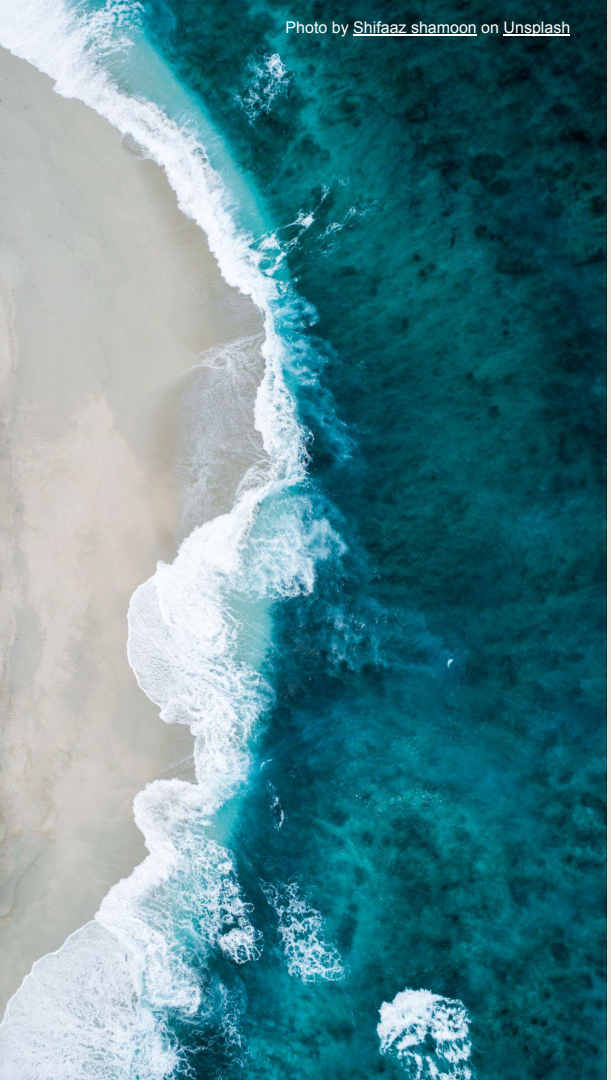
Human Activity

Plant Life Cycles

Understanding 5ES1.3: **Climate** affects **human** and other **animal activity**.

Task:

1) ***Research*** *how climate affects human activity and other animal activity (choose on mammal, bird, insect, reptile, and amphibian).*
2) ***Represent*** *your findings.*



08

Transfer & Assessment

Transfer

Assessment of Learner Outcome 5ES1: ***Students analyze climate*** *and* ***connect it to weather conditions*** *and agricultural practices.*

Task

Provide students with copies of the various climate zones and their descriptors:

- *tropical*
- *dry*
- *temperate*
- *polar*
- *continental*

Next, provide students with forecasts of a locations that typify each climate zone.

Students relate (connect) the forecast to the climate zone and justify their choice.

Resources

Sources to Consider

Climate and Weather

Centre for Science Education - UCAR-
Weather Trail - Take a Virtual Field Trip
Classroom Activities
Culminating Task (Transfer)

Muskrat Magazine
Covers all Earth Systems

Wright, J. and Johnson, D. Indigenous Knowledge and Cultural Weather Perspectives. Government of Saskatchewan. 2007.

Sources to Consider

Related to Earth's Spheres

NATIONAL GEOGRAPHIC | Learn with us

Consider searching for Atmosphere, Lithosphere, Biosphere, and Hydrosphere and using materials provided for individual classroom use only.

Earth's Spheres Part 1

Earth's Spheres Part 2

Earth's Spheres Gree Games and Activities

Earth's Spheres Jeopardy - up to 10 teams

Link

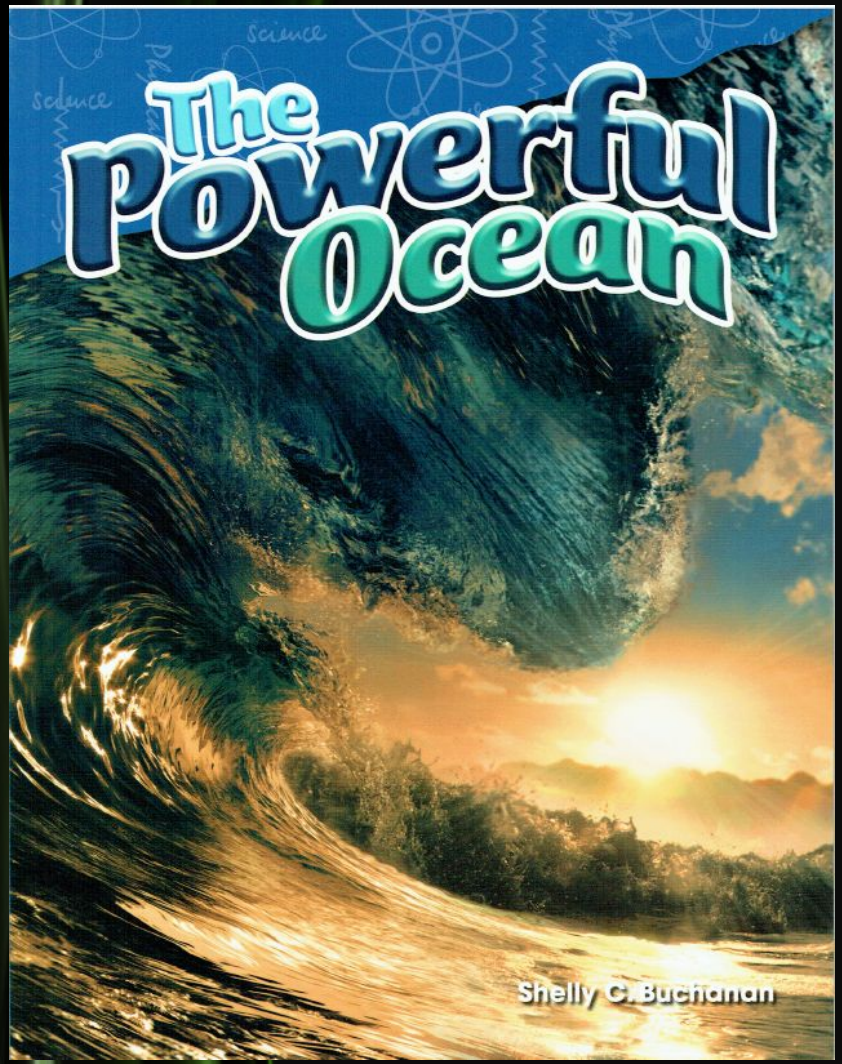
Water

Link

OLogy: American Museum of Natural History

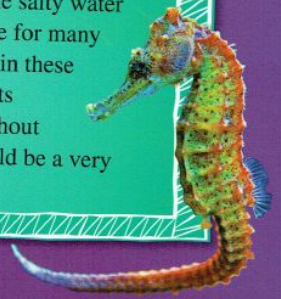
STEM Engagement

Sacred Relationships - Importance of Water and Wetlands



The Powerful Ocean

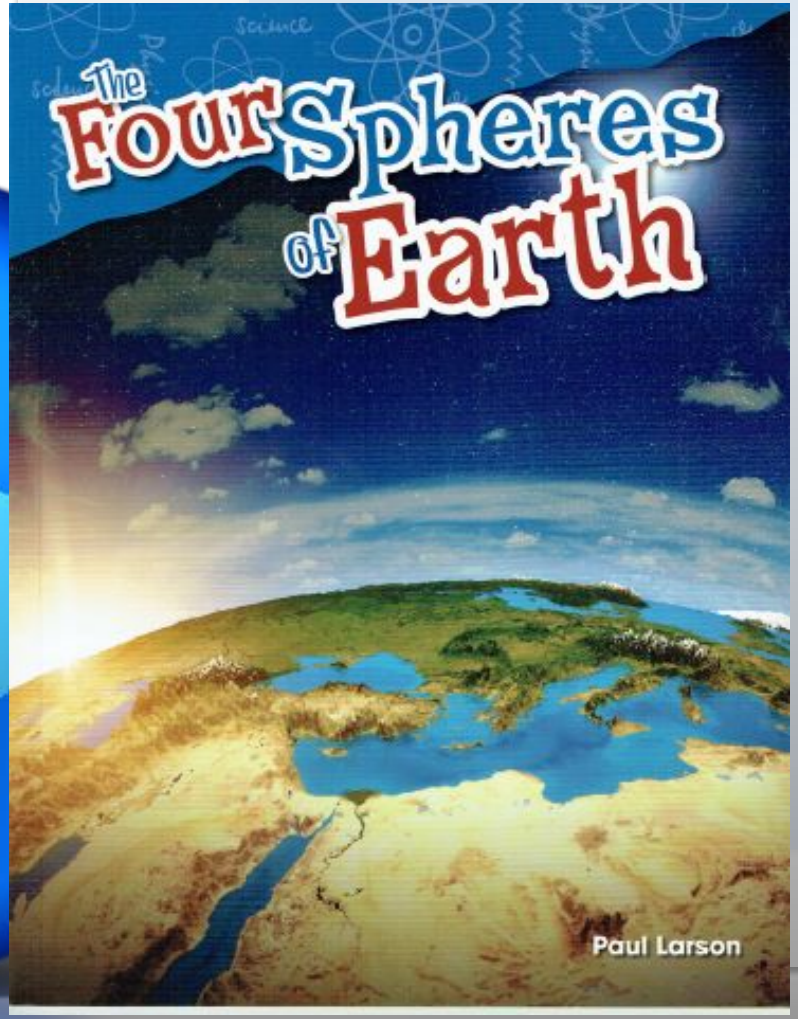
The ocean is beautiful, powerful, and refreshing. It's home to many amazing and unique creatures. The salty water provides the perfect home for many plants and animals. Within these waters are choppy currents and strong tides. But without the ocean, our world would be a very different place.

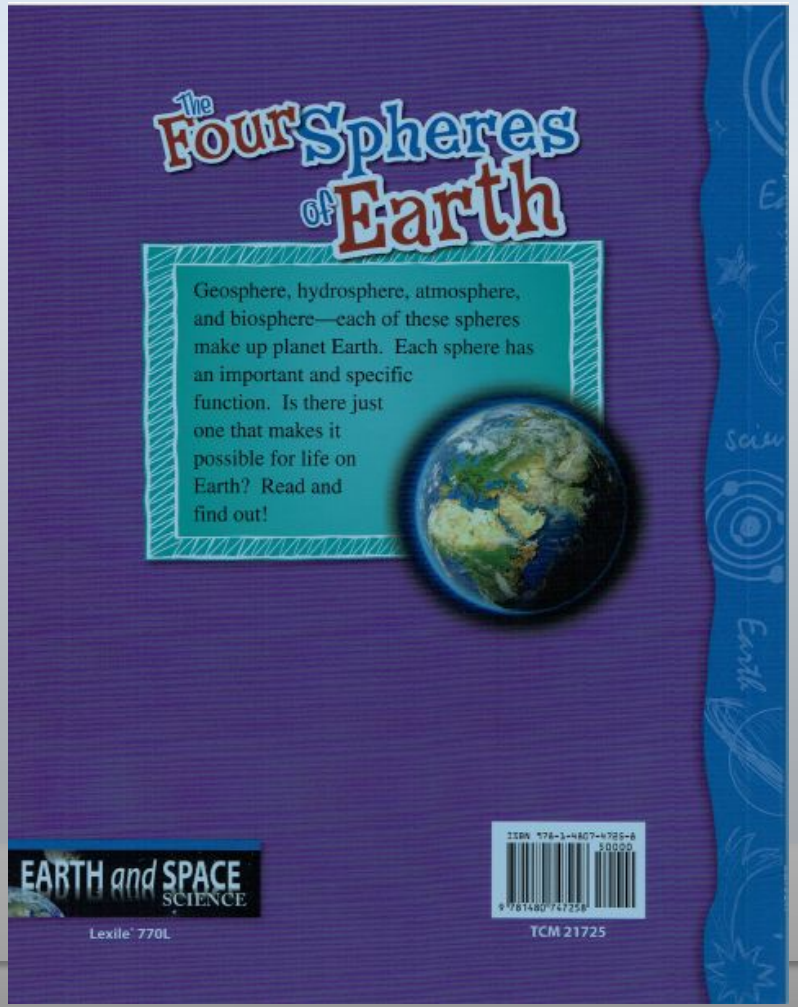


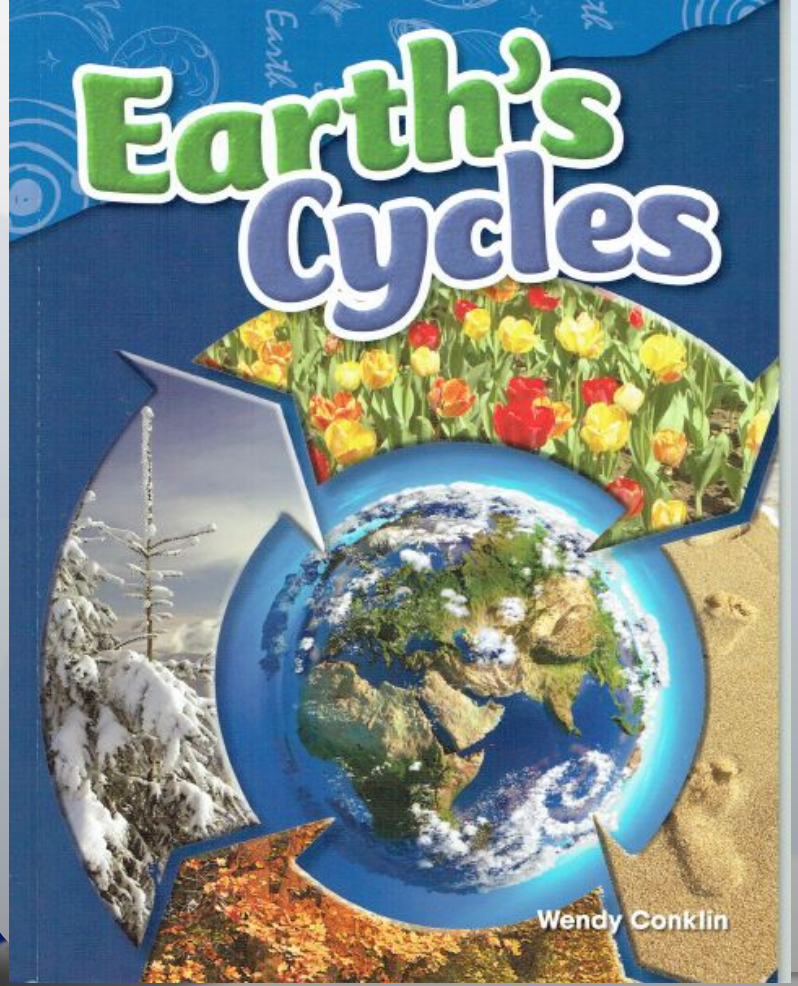
EARTH and SPACE SCIENCE

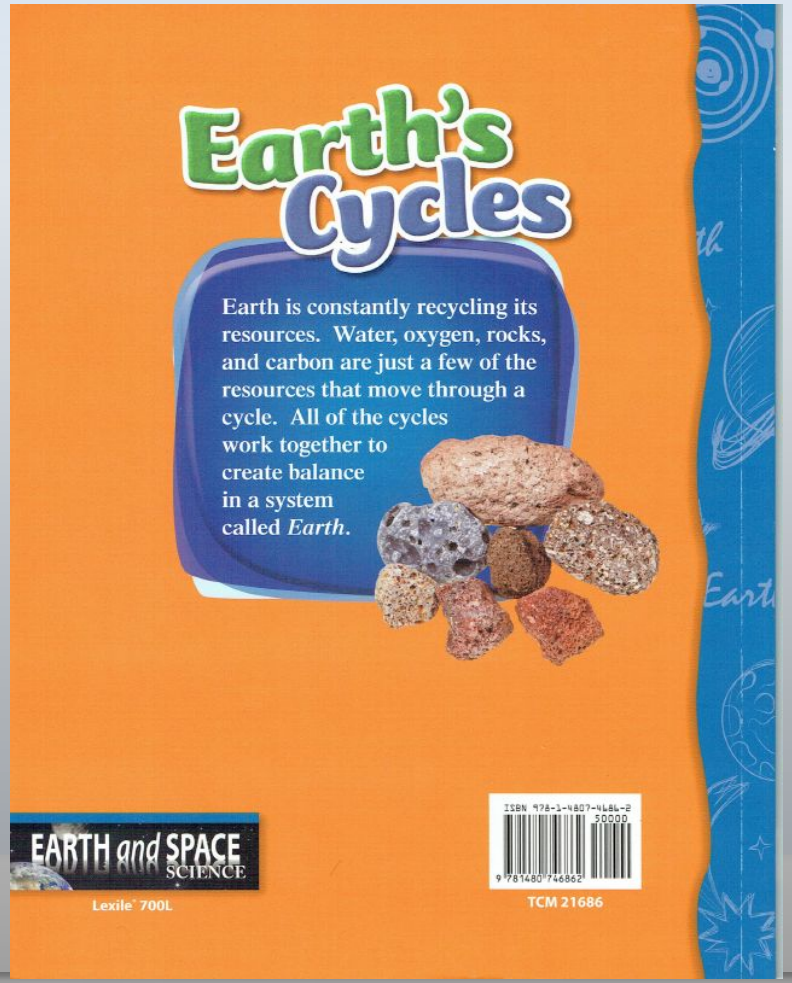
Lexile® 780L

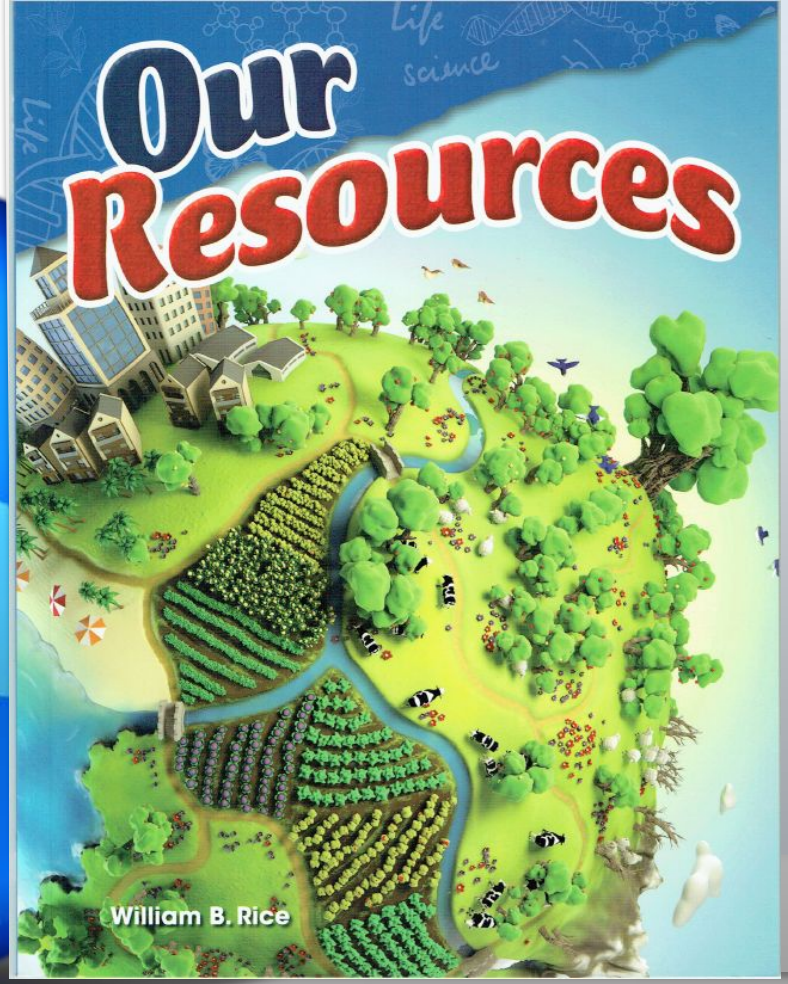
ISBN 978-1-4807-4726-5
TCM 21726


The Four Spheres of Earth
Paul Larson


The Four Spheres of Earth
Geosphere, hydrosphere, atmosphere, and biosphere—each of these spheres make up planet Earth. Each sphere has an important and specific function. Is there just one that makes it possible for life on Earth? Read and find out!
EARTH and SPACE SCIENCE
Lexile® 770L
TCM 21725


Earth's Cycles
Wendy Conklin


Earth's Cycles
Earth is constantly recycling its resources. Water, oxygen, rocks, and carbon are just a few of the resources that move through a cycle. All of the cycles work together to create balance in a system called *Earth*.
EARTH and SPACE SCIENCE
Lexile® 700L
TCM 21686



Our Resources

Almost everything you do requires resources. You use them throughout your day. Our planet provides us with natural resources, such as water, wood, oil, and metal. Whether resources are renewable or nonrenewable, they provide us with important materials we need.

EARTH and SPACE SCIENCE

Lexile® 730L

ISBN 978-1-4807-4689-3
50000
9 781480 746893
TCM 21689

KEEPERS OF THE EARTH

Native American Stories and Environmental Activities for Children

Michael J. Caduto and Joseph Bruchac

Foreword by N. Scott Momaday
Illustrations by John Kahionhes Fadden and Carol Wood

Native American/Education

"*Keepers of the Earth* is a sensitive and well thought-out guide for helping children love and care for the Earth. I heartily recommend it as a resource for parents and teachers."

—Joseph Cornell,
author of *Sharing Nature with Children* and *Listening to Nature*

This environmental classic teaches children respect and stewardship for the Earth and all living things. Joseph Bruchac's lyrical retellings set the stage for Michael Caduto's abundance of related activities.

- Connects to social studies, science, environmental studies, and other content areas.
- Uses a holistic approach suitable for all ages.
- Provides field-tested activities.
- Includes charts, illustrations, and graphs to enhance the projects and concepts.

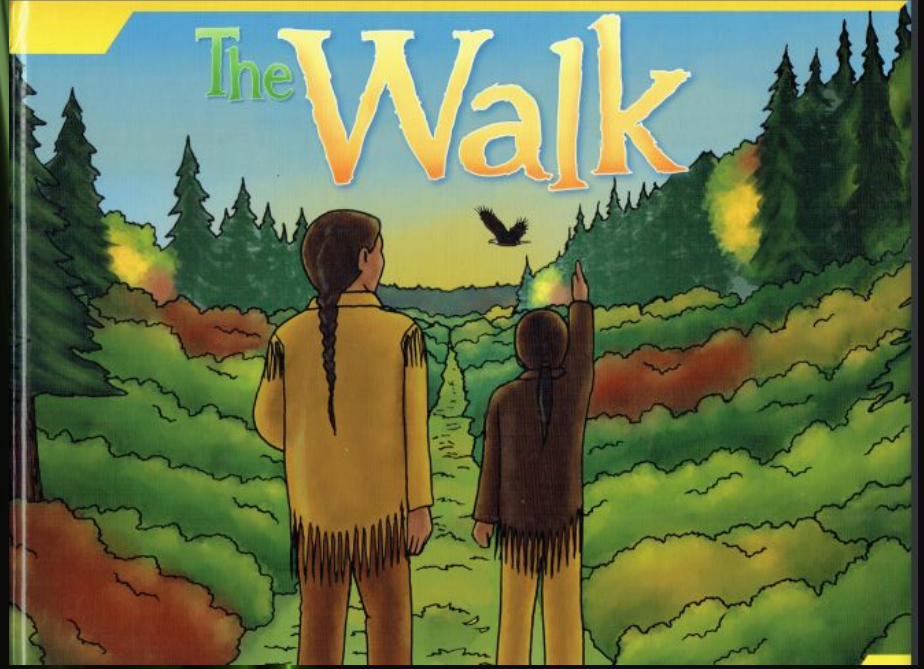
Michael J. Caduto is an internationally known, award-winning author, storyteller, ecologist, educator, and musician. He travels widely presenting environmental and cultural performances, speeches and workshops for children and adults. His recent books include *Earth Tales from Around the World* and *The Crimson Elf: Italian Tales of Wisdom*. He lives in Vermont.

Joseph Bruchac, a scholar of Native American culture, is an internationally known and award-winning Abenaki author, poet, and storyteller. His writings have appeared in more than five hundred publications, from *Parabola* to *National Geographic* and *Smithsonian* magazines. He is author of the novels *Dawn Land* and *Long River* and other books for children. He lives with his wife in upstate New York.

Look for other Fulcrum books in this series: *Keepers of the Animals*, *Keepers of Life*, and *Keepers of the Night*.

FULCRUM PUBLISHING
www.fulcrumbooks.com

$23.95 US | Native American | Education
ISBN 9781555913854
52395
FULCRUM PUBLISHING



The Walk is a wonderfully drawn story about the Seven Teachings. Join Johnny and an Elder from his community as they go for a walk on a beautiful sunny day. They observe the animals of the Seven Teachings and Johnny is taught by the Elder how important the Seven Teachings are for all of us including himself.

Native Reflections
1-866-932-9322
www.nativereflections.com • copyright 2017
ISBN-13: 9781772090253
9 781772 090253

www.nativereflections.com

Computer Science
Angela Dearing

- What exactly IS Computer Science?
- What does successful integration of Computational Thinking across the grades look like?
- How can we teach it and support each other integrating computational thinking into instructional practices effectively when we've never taken a computer science course ourselves?

Posted and Upcoming Sessions (ARPDC)

Have been Completed Before the End of June

- Introductory Videos
- Living Systems - May 1 (Grade 1) +
- Matter - June 8 (Kindergarten) +

Coming in the Next School Year
Fall (6-8 weeks apart)

- Earth Systems (Oct 10 - 19)
- Energy (November 20 - 29)
- Space (Feb 5, 6, 12)

Check the CARC or ERLC website for registrations

Thanks!

Do you have any questions?

chris.zarski@arpdc.ab.ca

ted.zarowny@erlc.ca

Photo by Gaelle Marcel on Unsplash