Photo by Aaron Burden on Unsplash

New SCIENCE Curriculum

Earth Systems Grade 4

October 17, 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

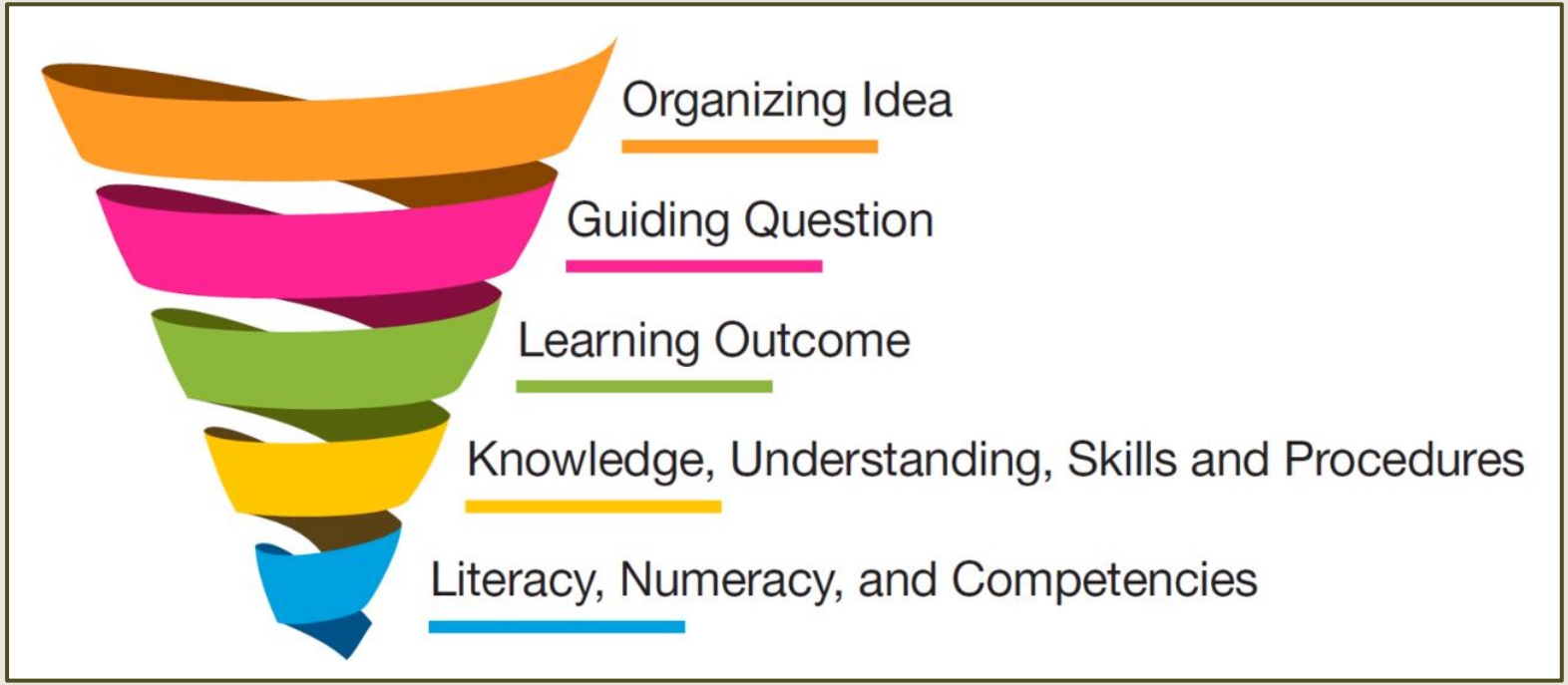
01

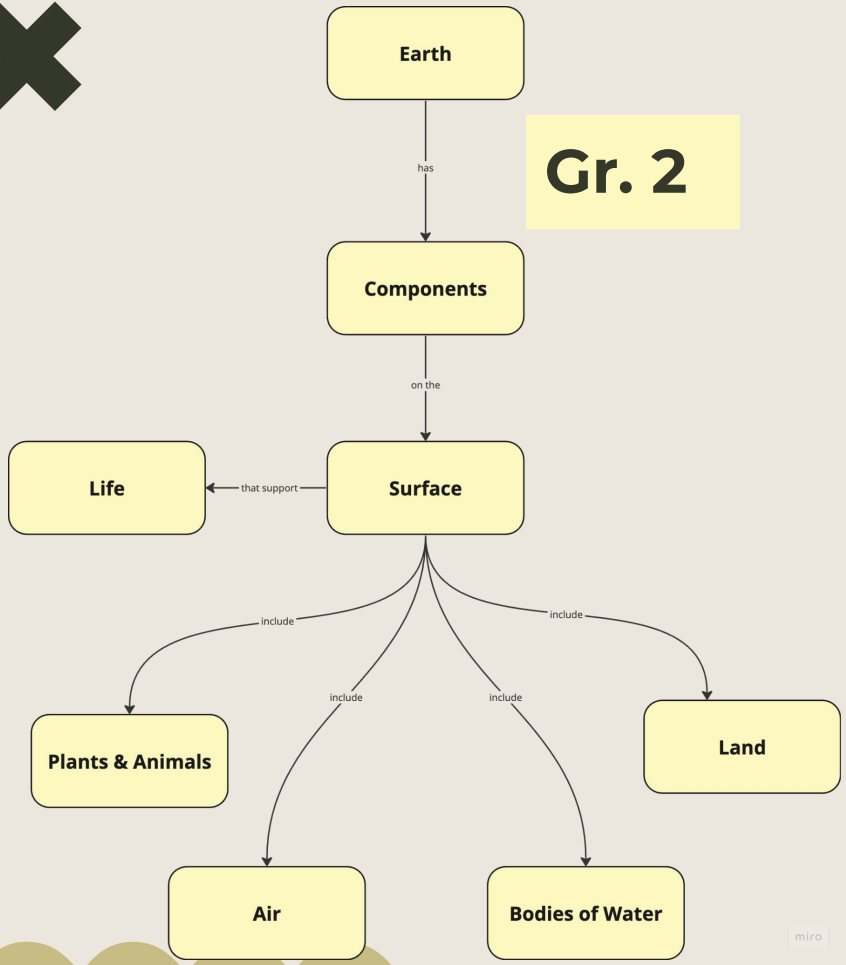
Spiraling Curriculum Concepts

Spiraling Curriculum

Guiding Framework Document

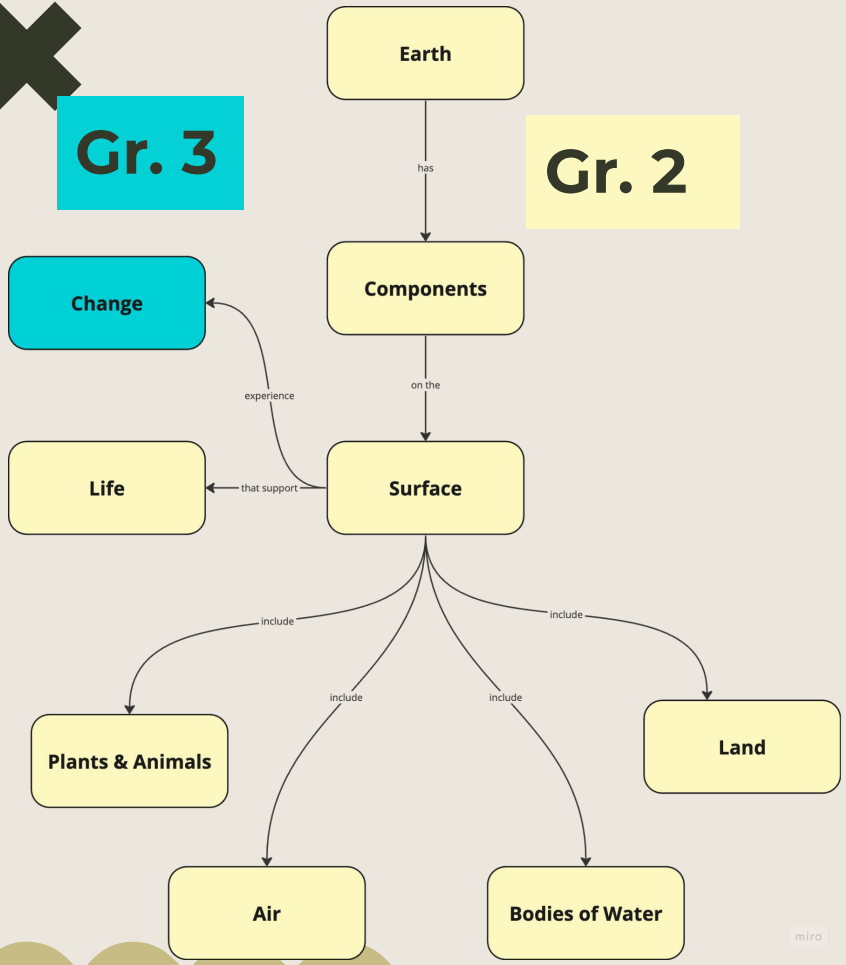
New LearnAlberta



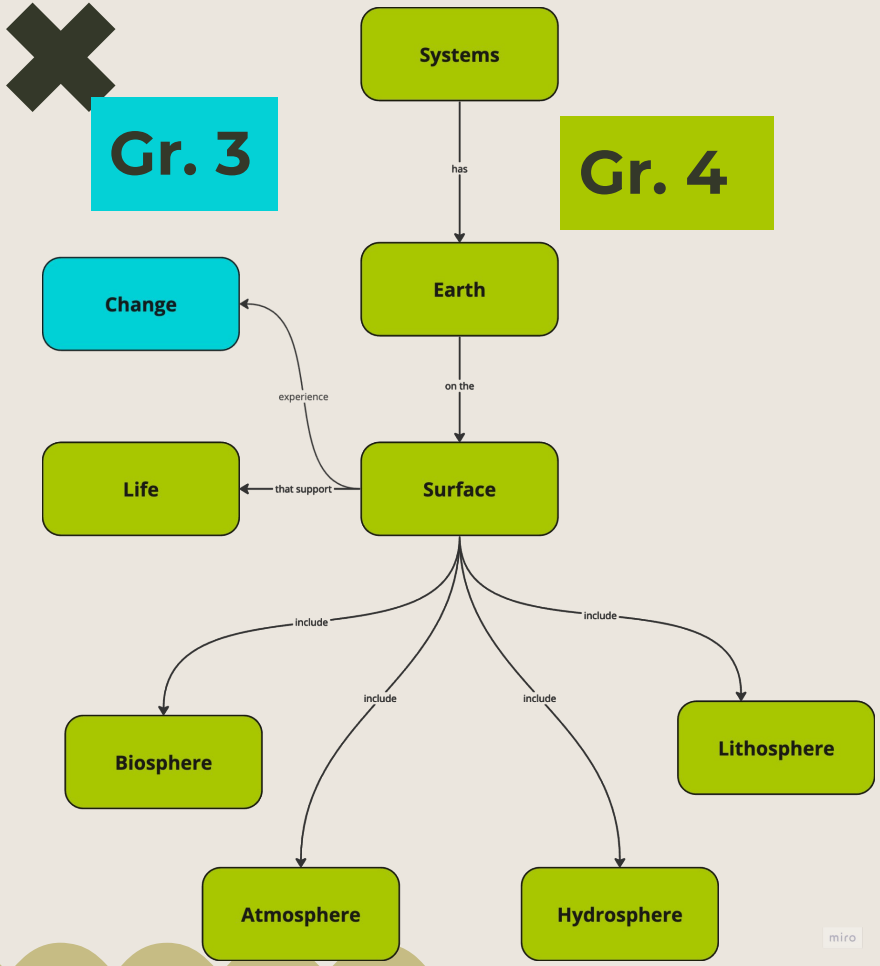


Gr. 2

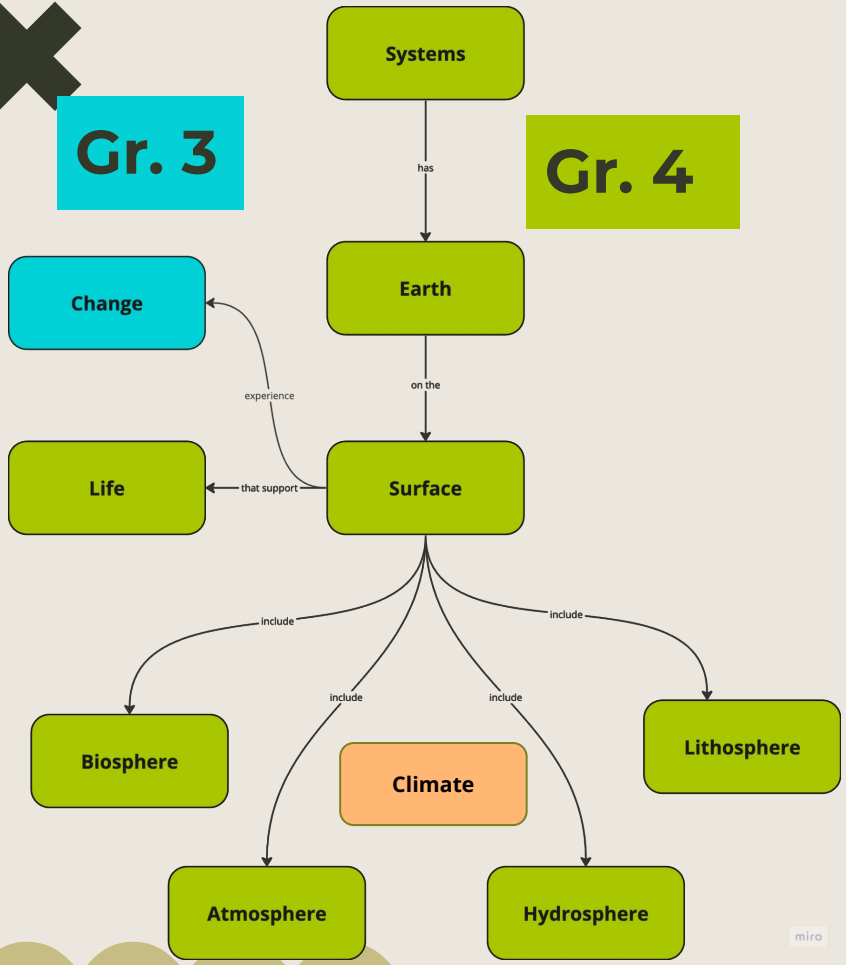
Spiraling and Growing Concepts



Spiraling and Growing Concepts

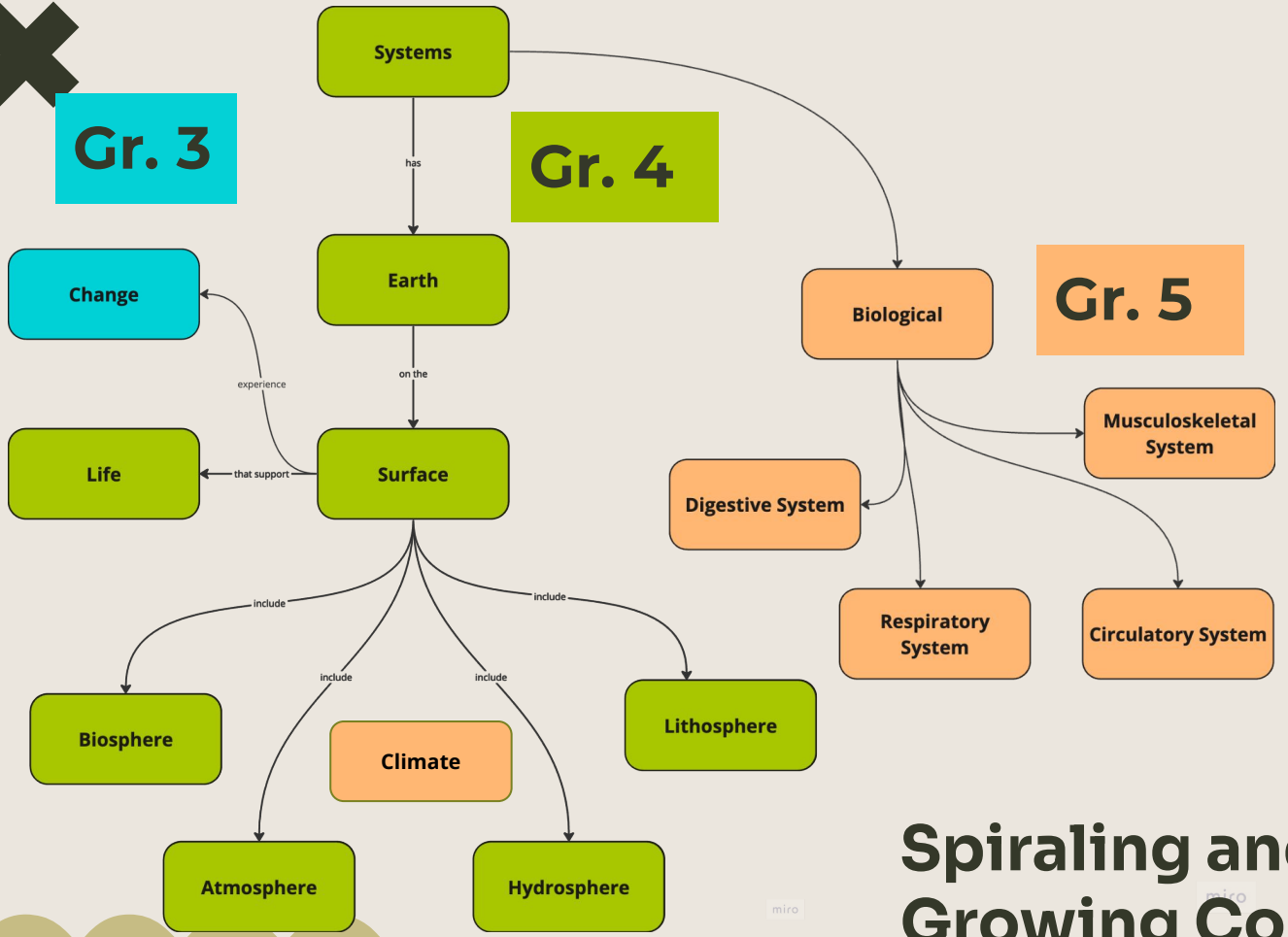


Spiraling and Growing Concepts

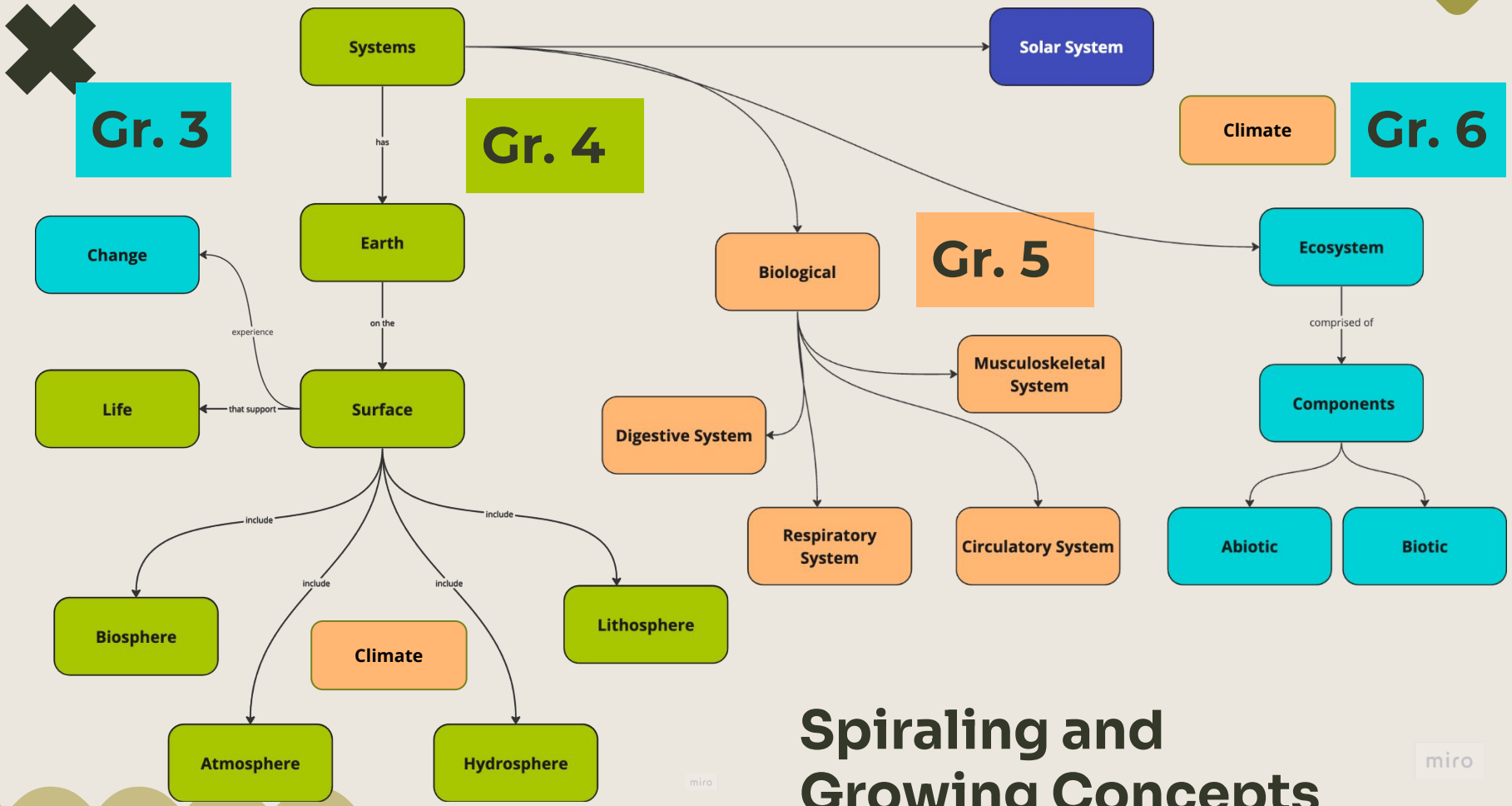


Gr. 5

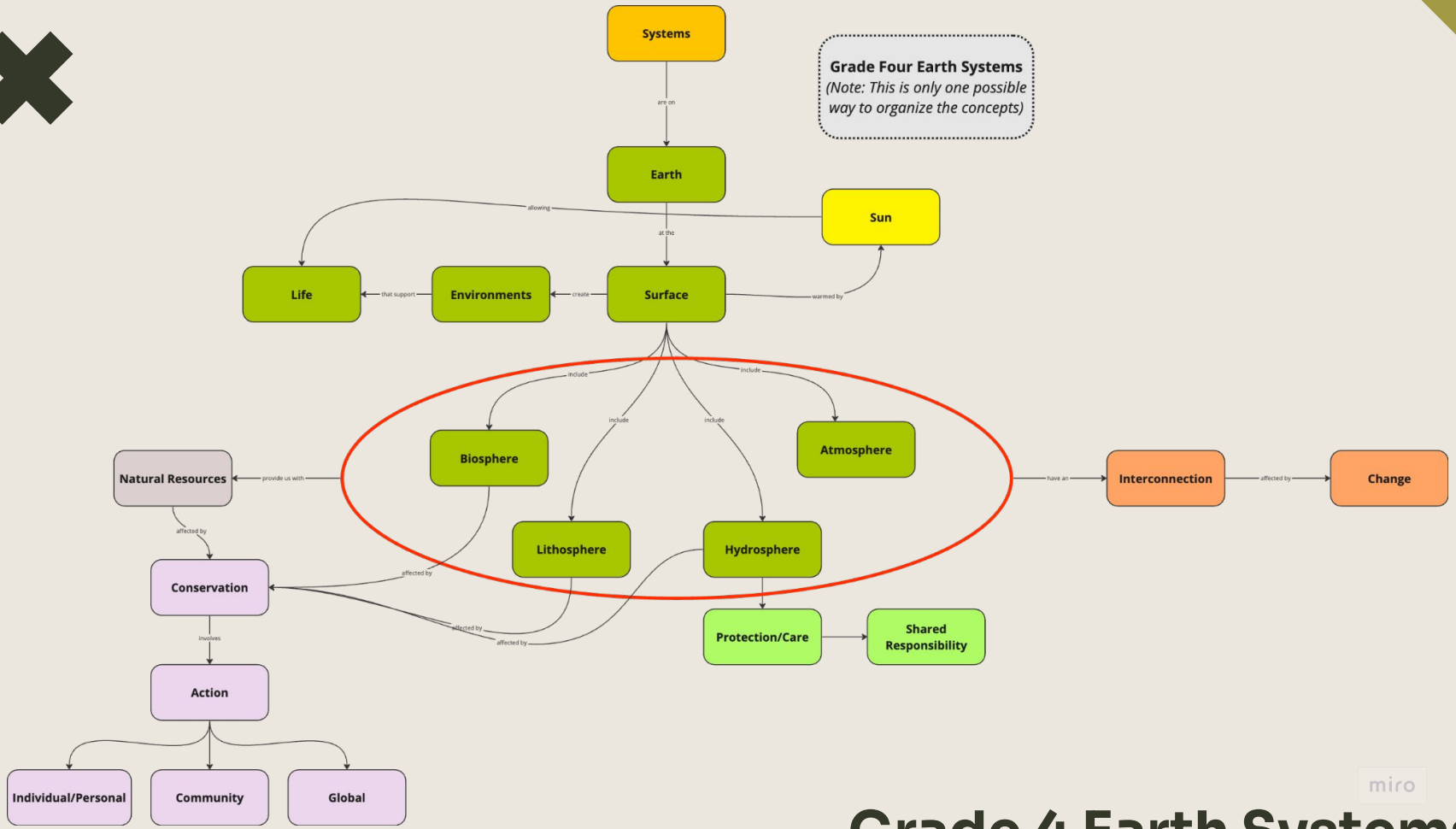
Spiraling and Growing Concepts



Spiraling and Growing Concepts



Spiraling and Growing Concepts



Grade 4 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)]

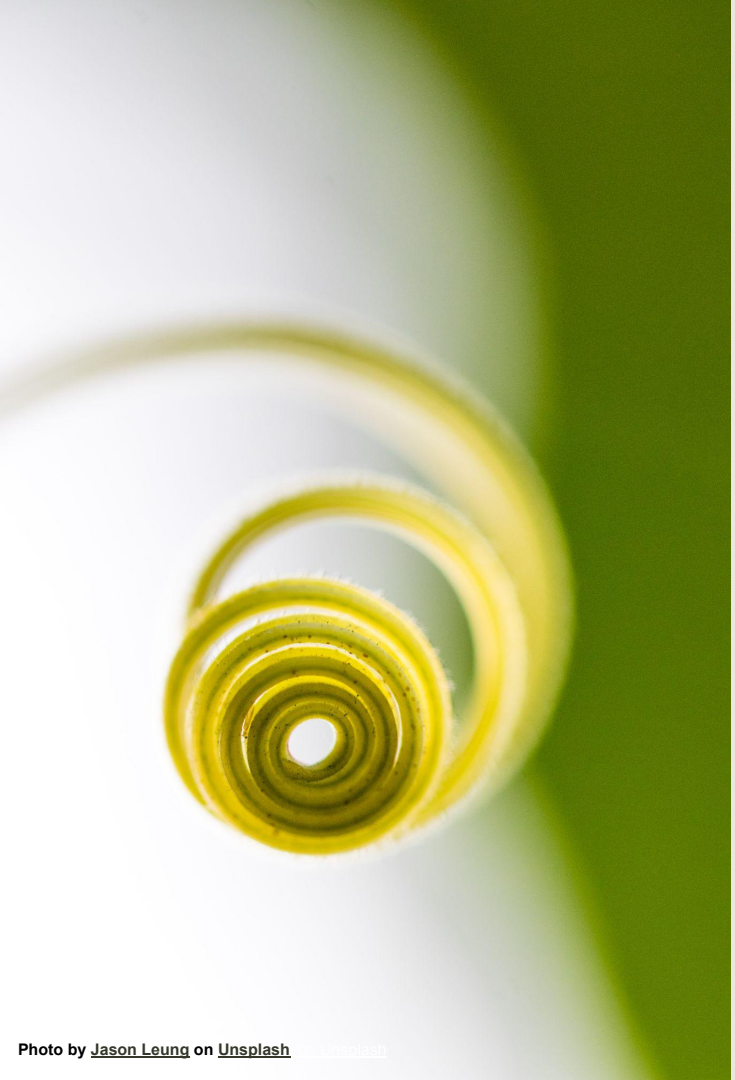


Photo by Jason Leung on Unsplash

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.

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

Skills and Procedures K-3 Progressions

Students **analyze** changes in Earth's surface and **explain** how its layers hold stories of the past.

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				

4ES1 Learning Outcome: *Students **investigate** the systems of Earth and r**eflect** on how their interconnections sustain life.*

E4S1 Understanding: *Earth's systems include natural resources that are central to human well-being.*

4ES1.3 Skills and Procedures

- Relate human activities to changes in Earth's surface.
- Relate activities of plants and animals to changes in Earth's surface.

- **Compare** activities of plants and animals to changes in Earth's surface to activities of humans.

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
• **Human Well-Being** • **Natural Resources** • **Earth's Systems** How can these three concepts can be put into a **logical and meaningful order?** 	• **Earth's systems** include **natural resources** that are central to **human well-being.** **OR** • **Earth systems** must be protected to ensure **natural resources** are available **for human well-being.**

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

Knowledge	Understanding 3ES1.3
Natural resources are materials from nature that are used to meet human needs, and include ● air ● water ● soil minerals metals forests organisms	**Earth's systems** include **natural resources** that are central to **human well-being.**

Photo by Rohan Makhecha on Unsplash

04

Transfer

Concepts Transfer (Different Contexts)

Photo by Bogomil Shopov - Боро on Unsplash

Photo by André Mašek on Unsplash

Knowledge	Atmosphere Biosphere	Hydrosphere Lithosphere

Understandings Transfer (Different Contexts)

Understanding
Earth’s systems interact with one another, resulting in environments that sustain life.

Photo by Tony Pham on Unsplash

Understandings Transfer (Different Contexts)

Understanding
Earth’s systems interact with one another, resulting in environments that sustain life.

Photo by Alejandro Luengo on Unsplash

Photo by NOAA on Unsplash

Understandings Transfer (Different Contexts)

Understanding
Earth’s systems interact with one another, resulting in environments that sustain life.

Photo by NOAA on Unsplash

Photo by Erik Gazi on Unsplash

05

Teaching for Transfer

Phases of Learning

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

Surface

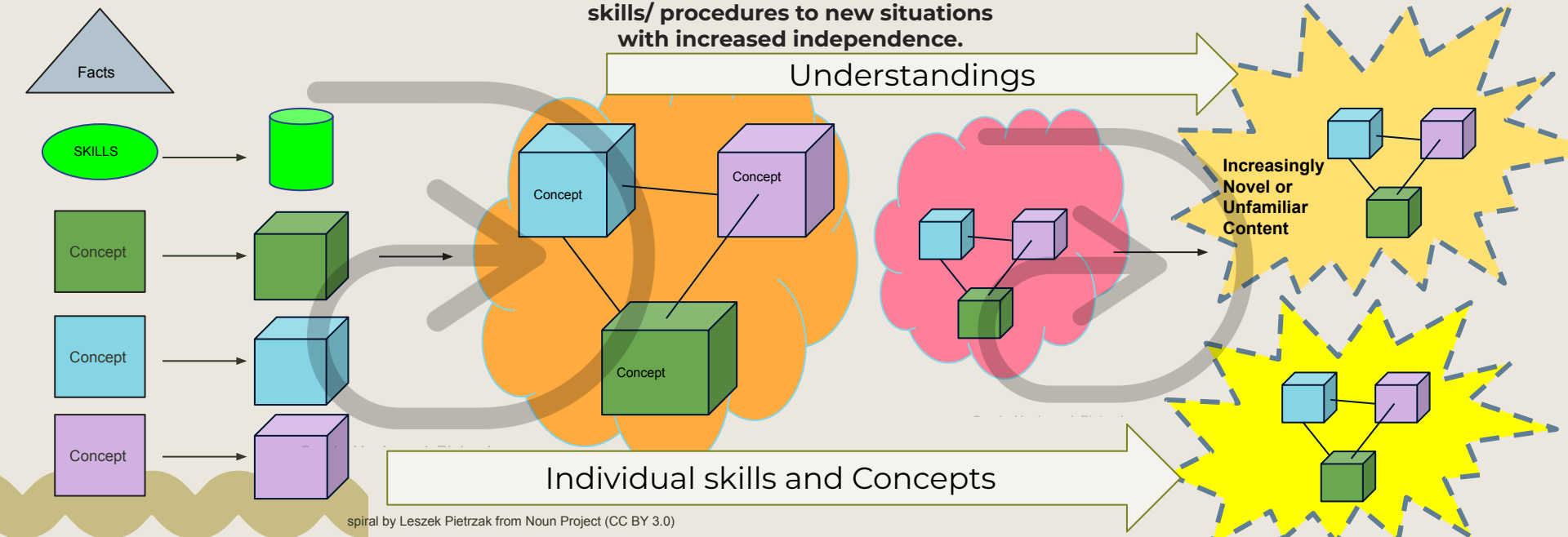
Students are first exposed to individual skills, concepts and their related knowledge.

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

4ES1: Students investigate the systems of Earth and reflect on how their interconnections sustain life.

What will students do to demonstrate their learning?

Investigate this Problem: What interconnection exists between Earth's spheres (including human activity) in the boreal forest (also called taiga)

Include natural resources, change, and conservation in your conclusion.

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

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

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

Investigate | Research Skills

Learning Outcome

Students investigate the systems of Earth and reflect on how their interconnections sustain life.

Understandings

4ES1.1 Earth's systems interact with one another, resulting in environments that sustain life.

4ES1.2 Earth's surface is warmed by the Sun, allowing for life.

3ES1.3 Caring for water and water sources is a shared responsibility.

4ES1.4 Earth's systems are interconnected and can be impacted by small changes.

4ES1.5 Earth's systems include natural resources that are central to human well-being.

4ES1.6 Conservation can impact land, natural resources, and organisms.
Many First Nations, Métis, and Inuit practise traditional methods of conservation, including taking only what is needed.

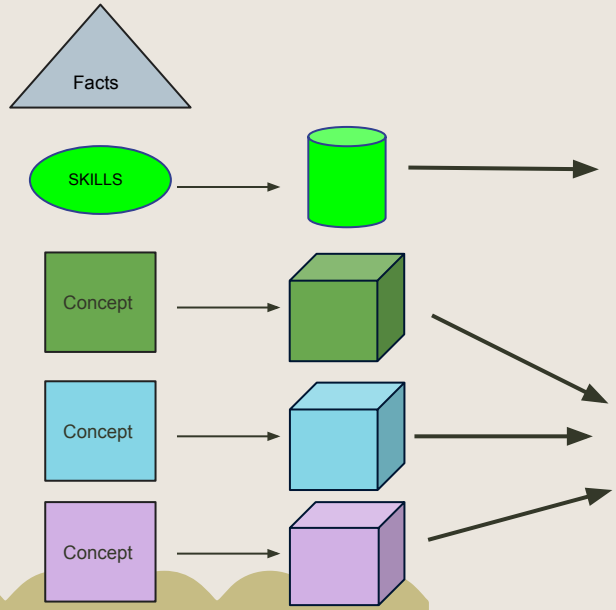
4ES1.7 Conservation of Earth's systems involves personal, community, and global action.

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

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

Phases of Learning

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

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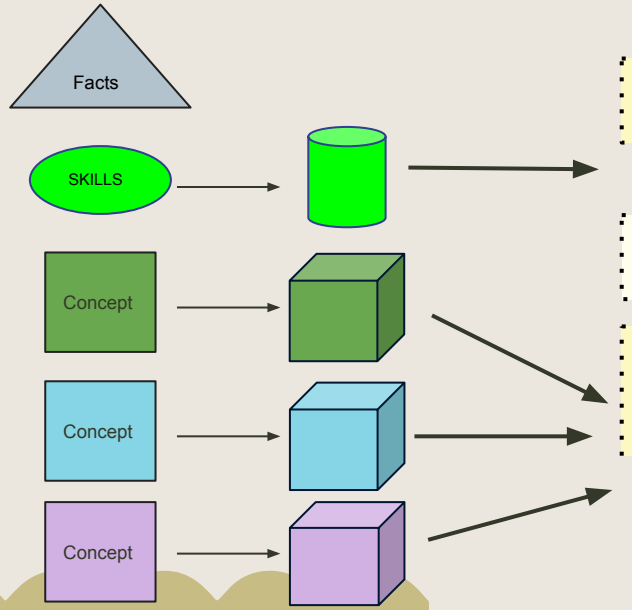


Skills such as Investigating; Researching; Concept Mapping

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

Landforms - What are they?

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

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?

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

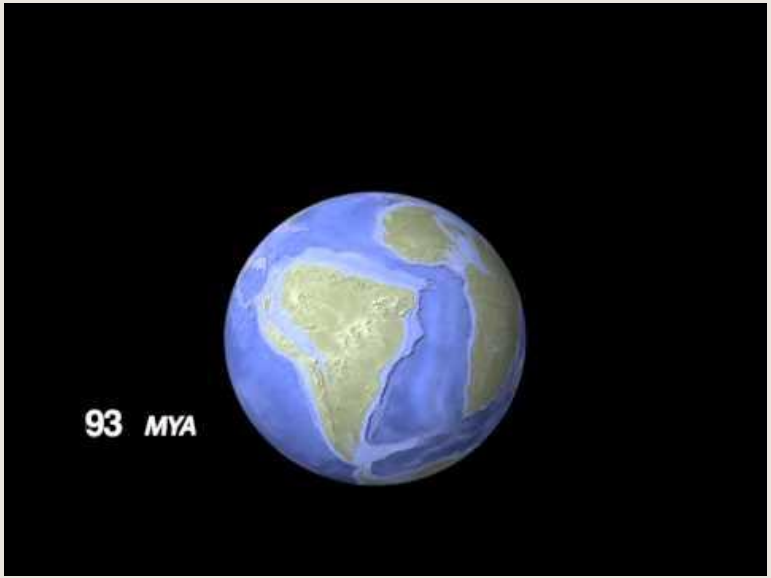
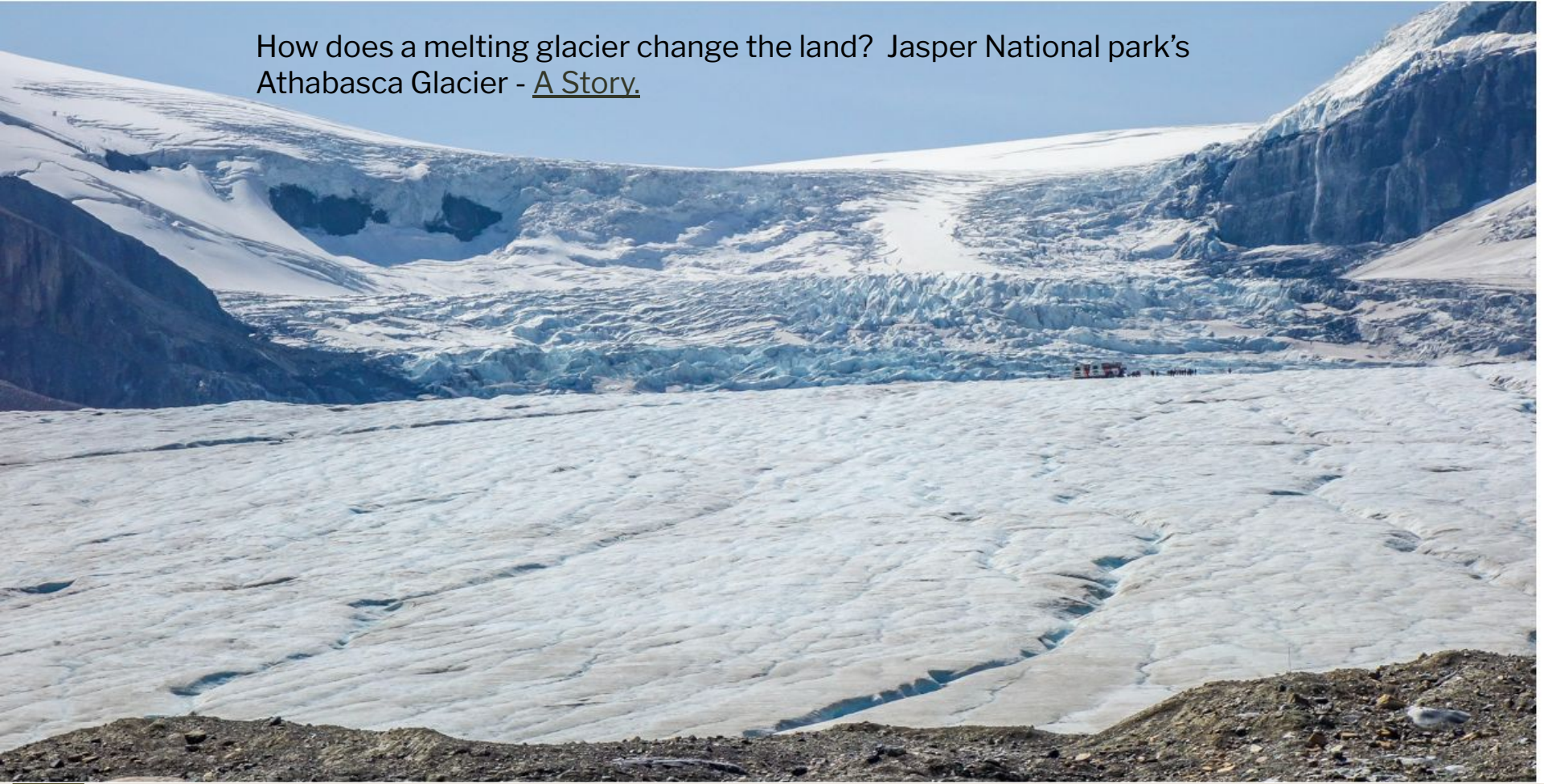


Plate Movement over the last 200 Million Years Ago to Today

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

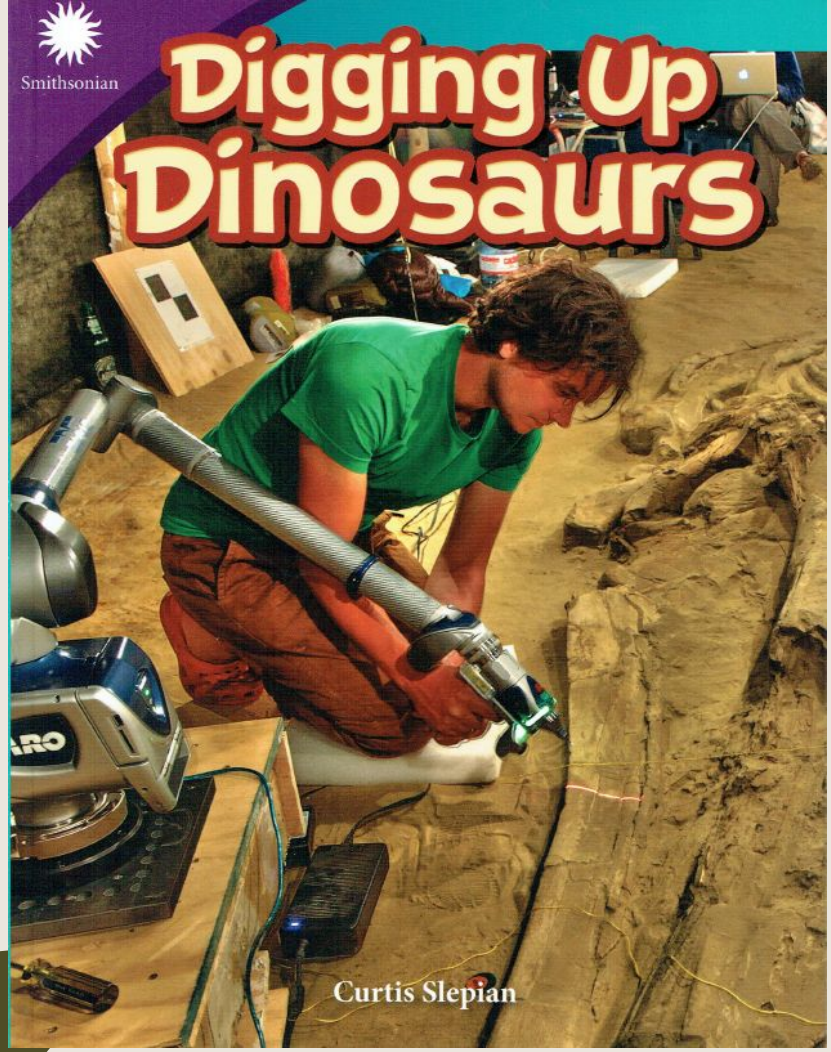
Fossils

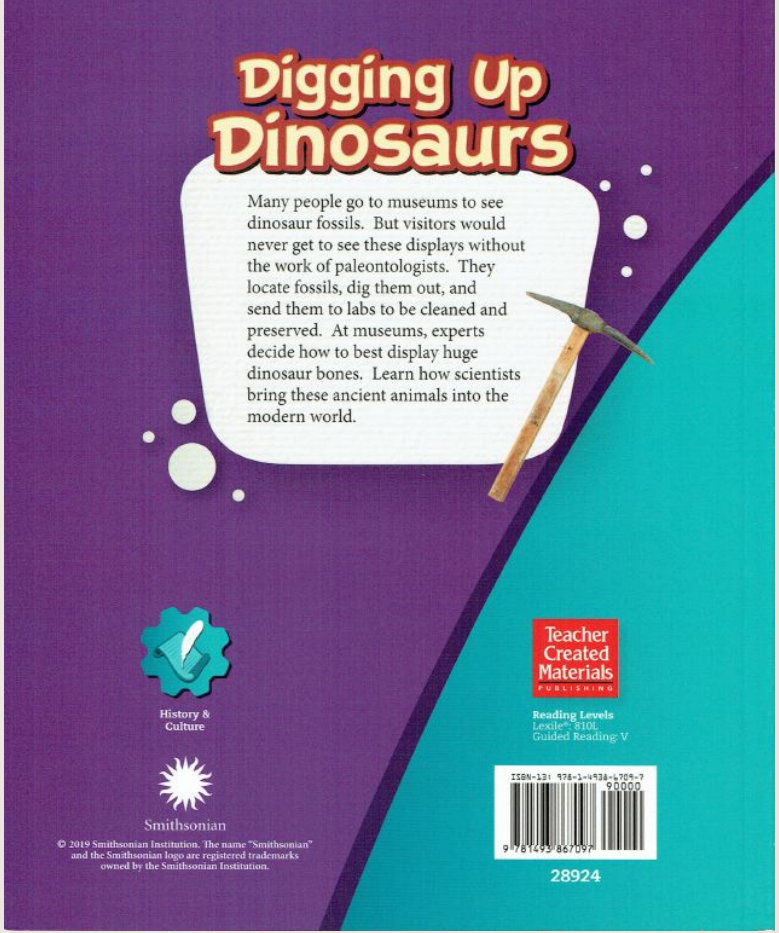
albertosaurus
edmontosaurus
nodosaur
tyrannosaur

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:

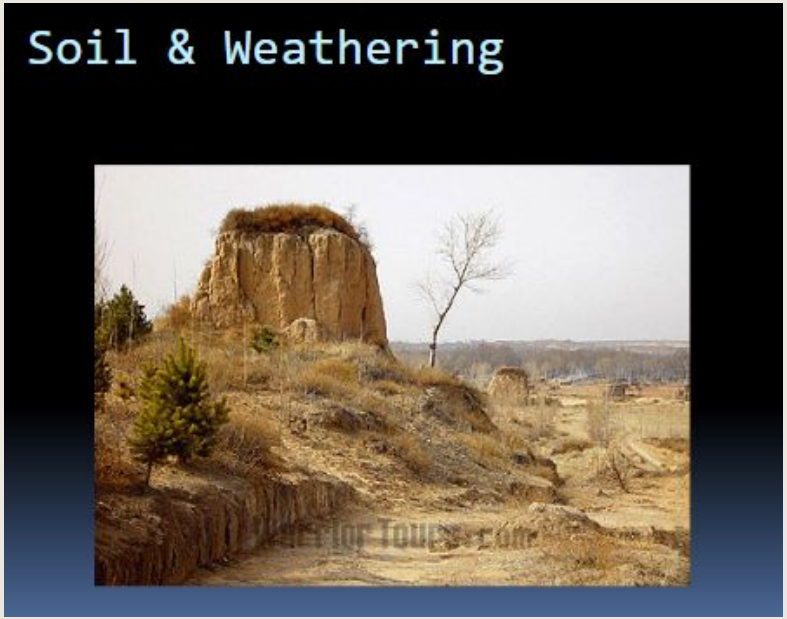
taralynn36

Category:

Medicine, Science & Technology

Tags:

erosion | soil | soil_horizon | weathering



Link

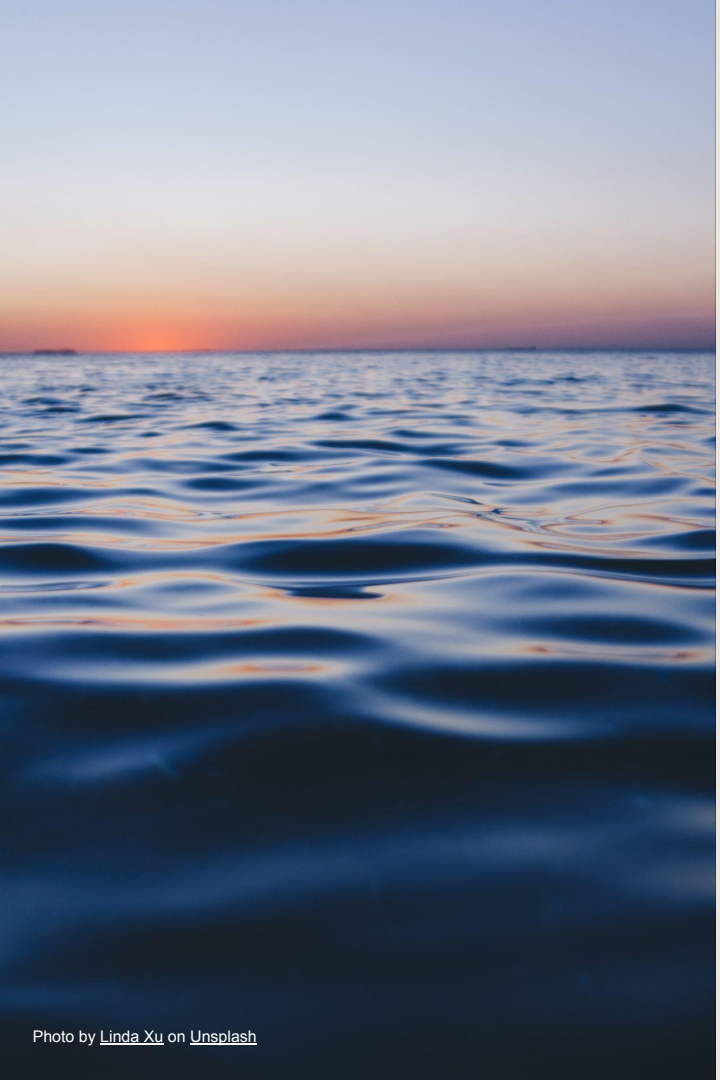


Photo by Linda Xu on Unsplash

06

Surface Level Activities – All Aboard Spaceship Earth!

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

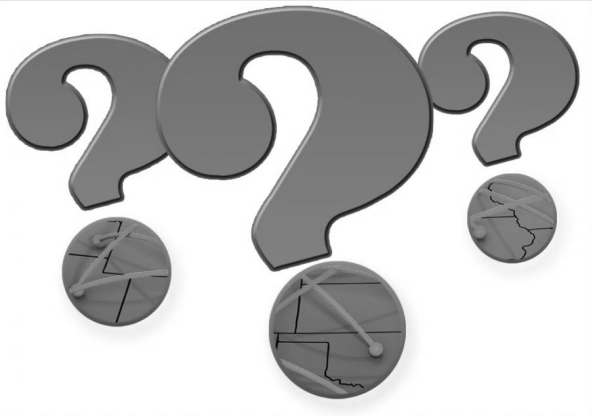
Sample Activities (Surface)

While planning surface activities, consider these ideas.

- System (Under Revision) (Grade 2 - Components)
- Relationship
  - Concept Map
  - Cause and Effect
  - Dependence
  - Affect/Effect
  - Interaction
  - Interconnection
- Human Activity
- Change (Introduction)
  - Change and Time
  - Criteria
  - Significant Change
  - Positive/Negative Statements
- 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)
- Representation
- Earth's Spheres (Slides 56-75)
- Resources and Natural Resources
- Conservation (Slide 77)

Earth Systems: Welcome to Aboard Spaceship Earth!

If YOU went on a Spaceship, what would you need to take with you?



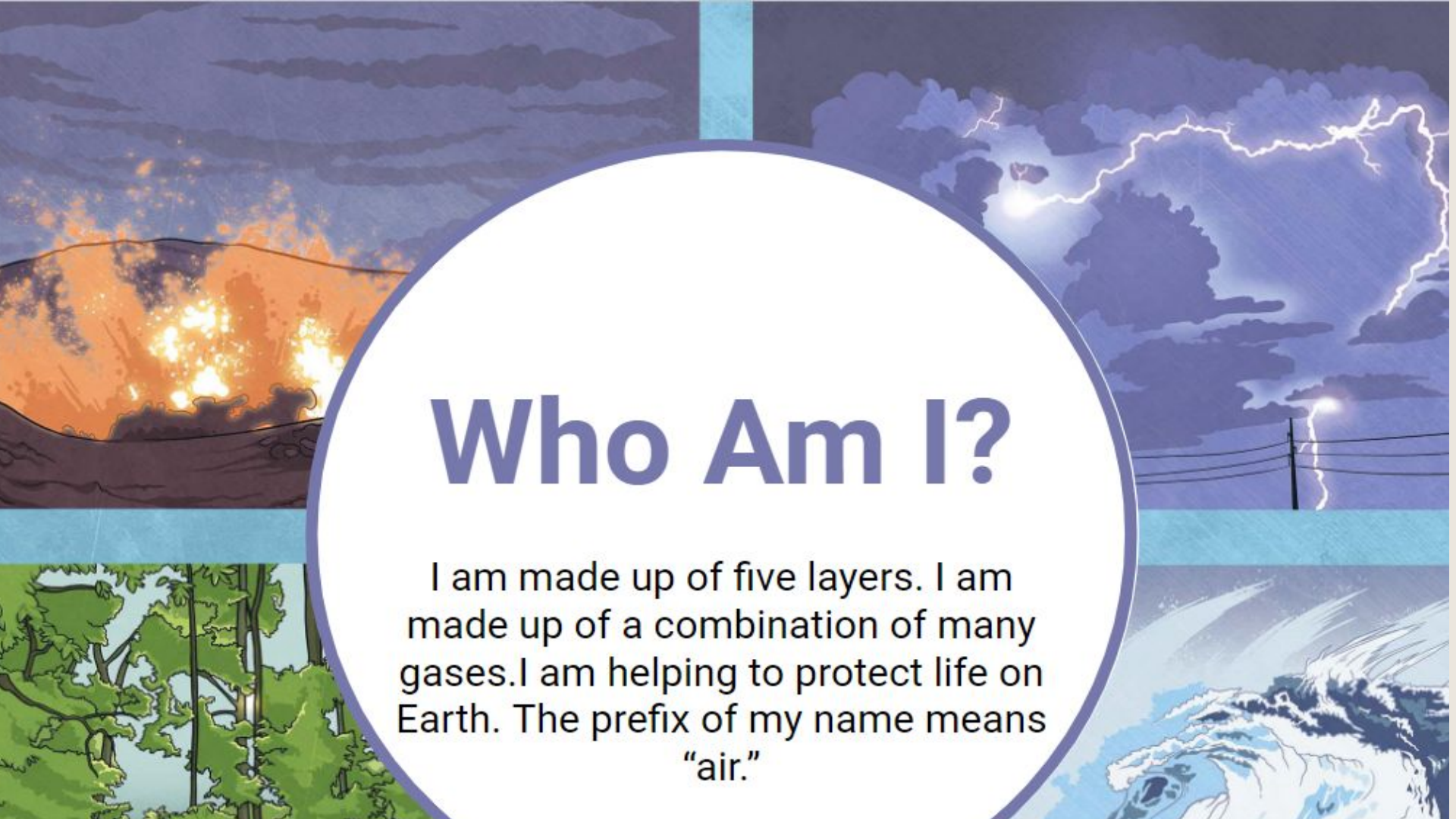
Possible Unit

Earth's Systems	Earth as a Spaceship - a Closed System
Item 2	Understanding Earth's Spheres
Item 3	Human Earth Relationship
Item 4	Case Studies and Transfer
Item 5	Resources

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]

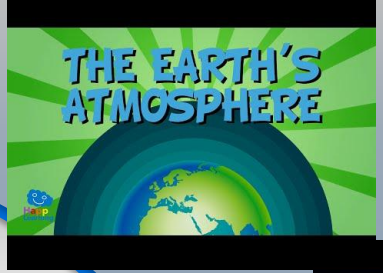

Earth's Four Spheres:
Who Am I?

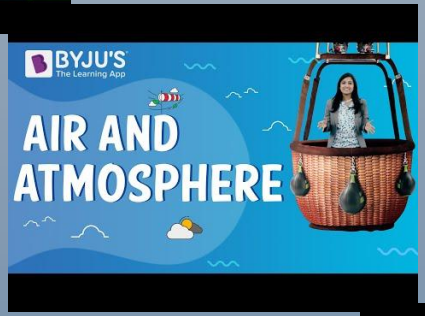


Who Am I?

I am made up of five layers. I am made up of a combination of many gases.I am helping to protect life on Earth. The prefix of my name means “air.”


atmosphere





Atmosphere

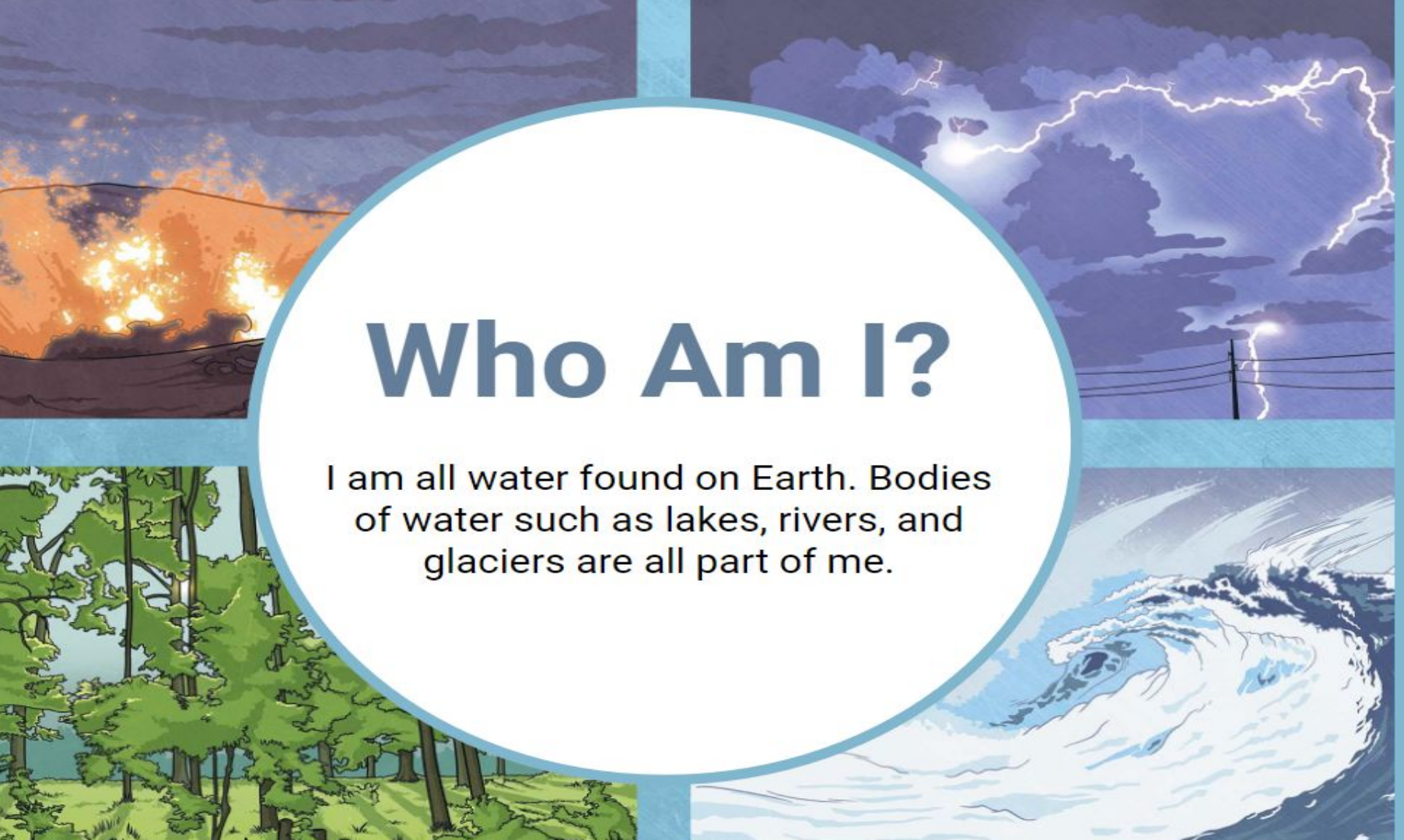
What is the atmosphere? What impact would it have on life without it?

Our Atmosphere

- A gaseous shell that surrounds our earth.
- Made up of Oxygen (21%), Nitrogen (78%) Carbon Dioxide (0.04%), Argon (0.9%) and Water Vapour.
- Air is important for life. During respiration living things take in oxygen and give off carbon dioxide. Plants take in carbon dioxide, combined with sunlight to make and give off oxygen so they are our best friends!
- Air can hold water (humidity) and when humidity is high, it forms rain.
- Our atmosphere is a protective cushion for our earth. It keeps us from getting too hot or too cold by protecting us from the sun infrared rays.
- Air can move in the form of wind.

National Geographic Resource Library
Atmosphere (for individual classroom use only)

NATIONAL GEOGRAPHIC | Learn with us



Who Am I?

I am all water found on Earth. Bodies of water such as lakes, rivers, and glaciers are all part of me.


hydrosphere

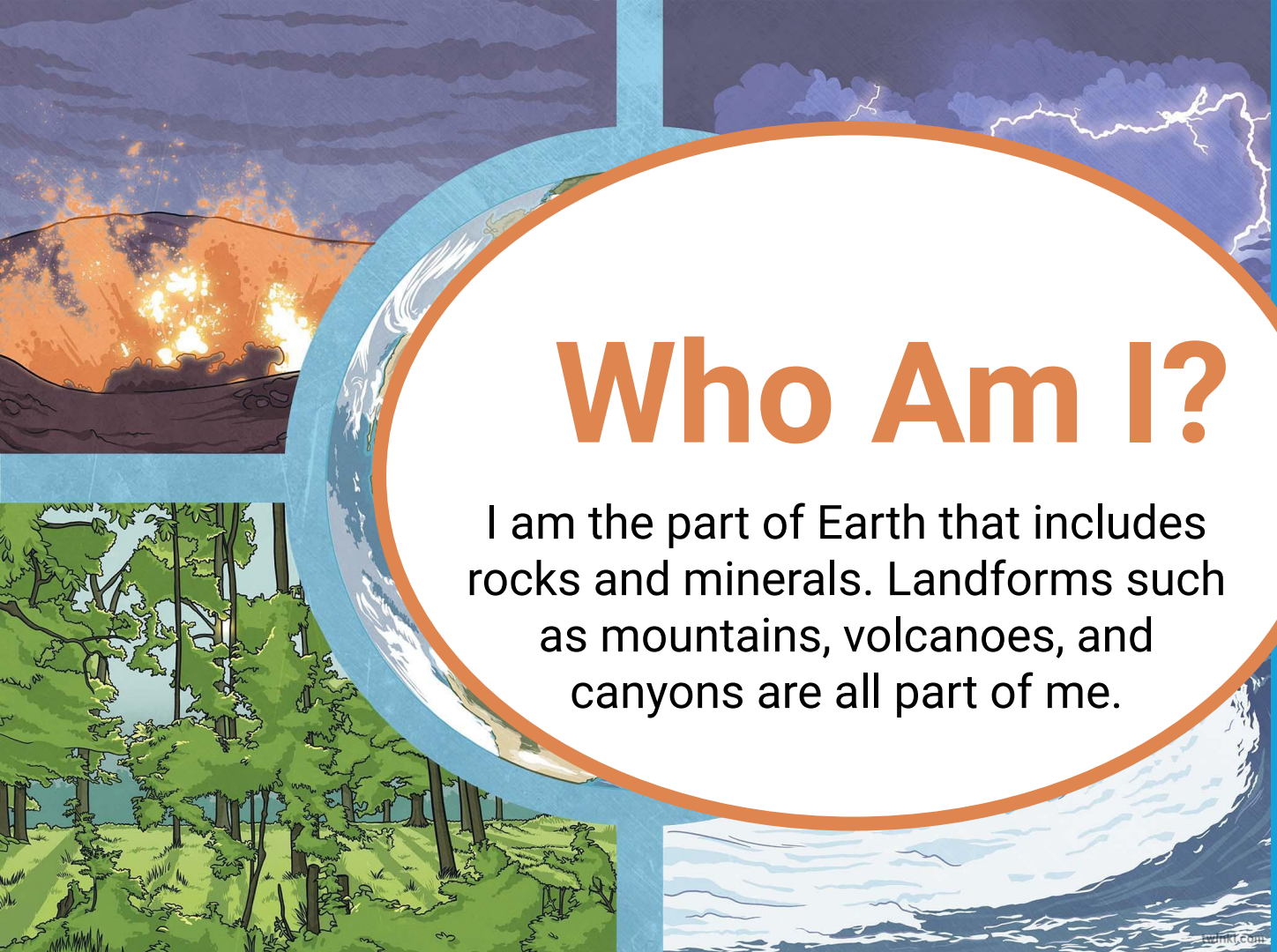
Our Hydrosphere

- Includes all water on earth
- Interacts with all other spheres (it sometimes called the water sphere) - remember the water cycle - how do you think these are related?
- 70% of earth is covered by water - most of it salt water
- The rest is freshwater - what we need to live and survive.

National Geographic Resource Library
Hydrosphere (for individual classroom use only)

Why does the earth look so blue from outer space?

[This video shows not only the components of the hydrosphere but also reviews the water cycle]



Who Am I?

I am the part of Earth that includes rocks and minerals. Landforms such as mountains, volcanoes, and canyons are all part of me.


lithosphere

What is the Lithosphere?

- The lithosphere is the solid rock that covers the planet. This includes the crust, as well as the very uppermost part of the mantle, which is solid rock.
- All of the rock on Earth, from the mountains to the sea floor, is included in the lithosphere.

Lithosphere

- Outermost part of layer of the earth - crust.
- It is where plants, trees, land for agriculture and human homes and life exists.
- It is where we would find the tectonic plates which provide earth with change.

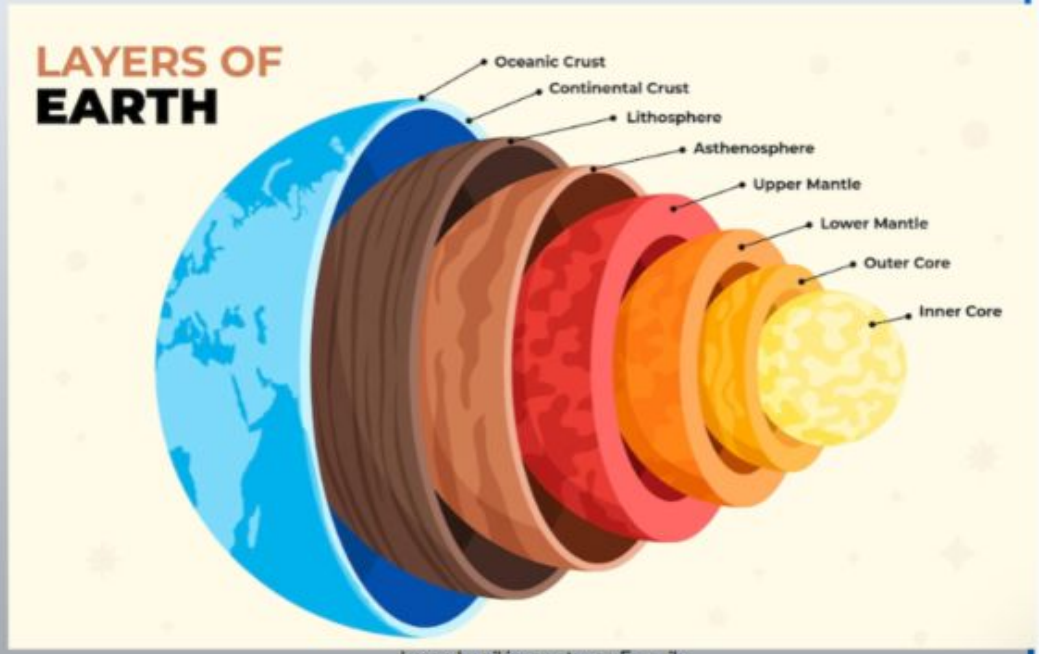
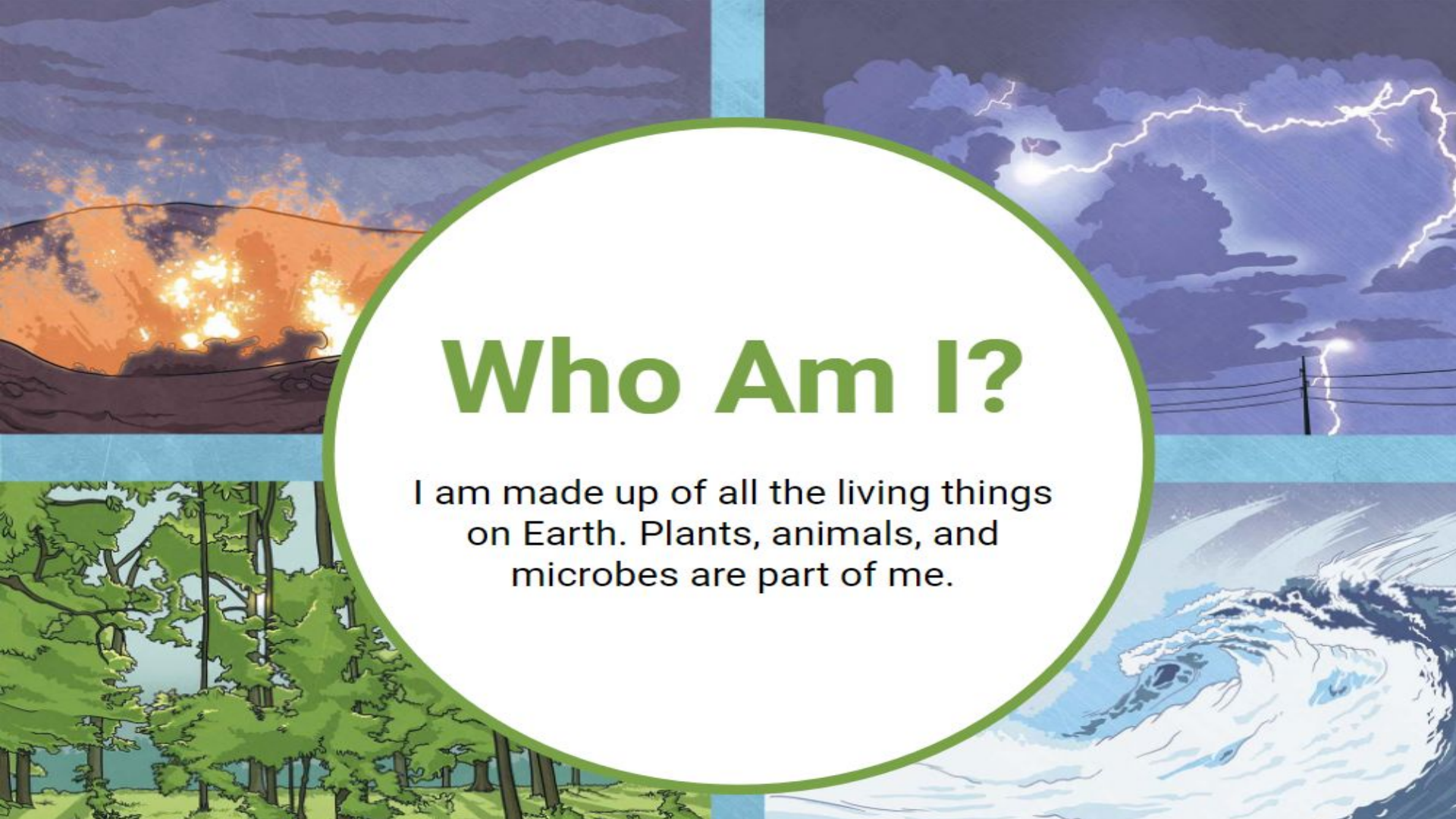
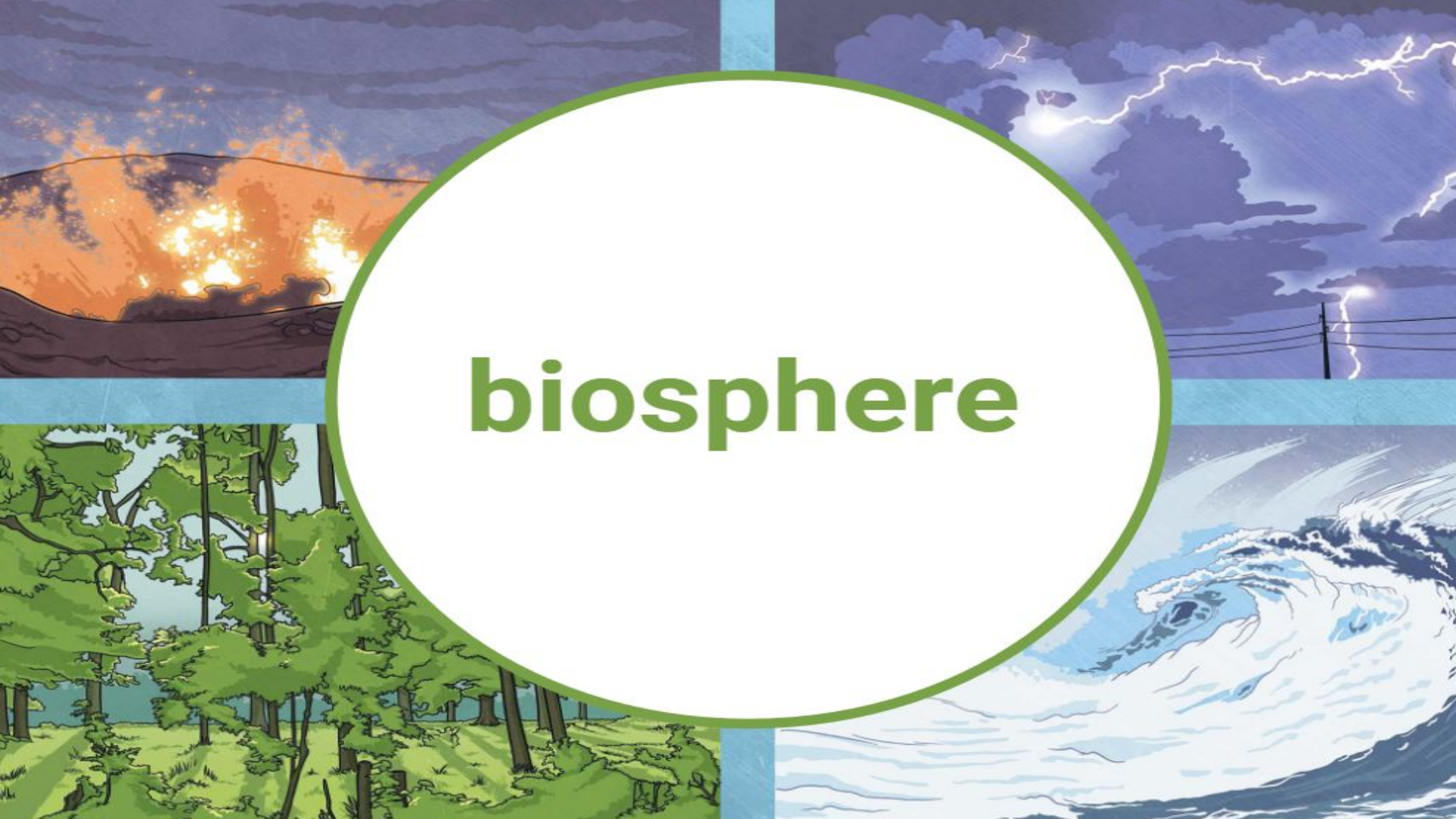
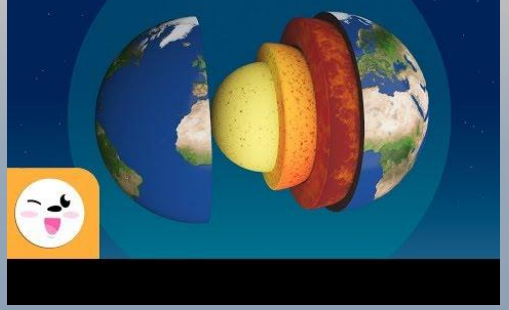


Image by pikisuperstar on Freepik


Who Am I?
I am made up of all the living things on Earth. Plants, animals, and microbes are part of me.


biosphere



Stop at 1:46

The Biosphere
Start at 1:13 - 1:33 -

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?

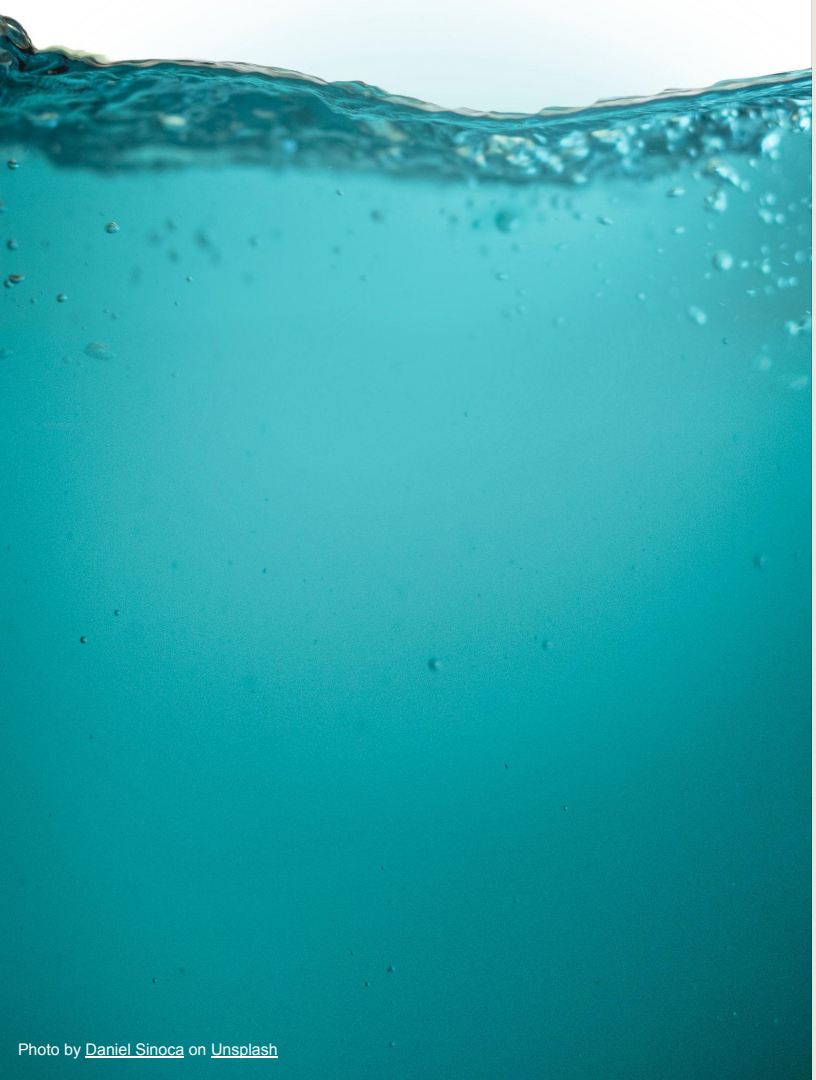


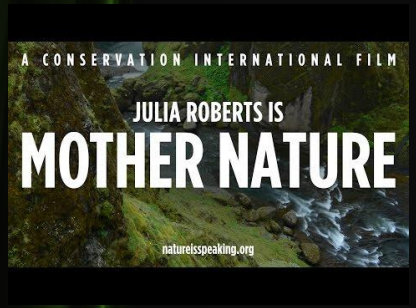
Photo by Daniel Sinoca on Unsplash

07

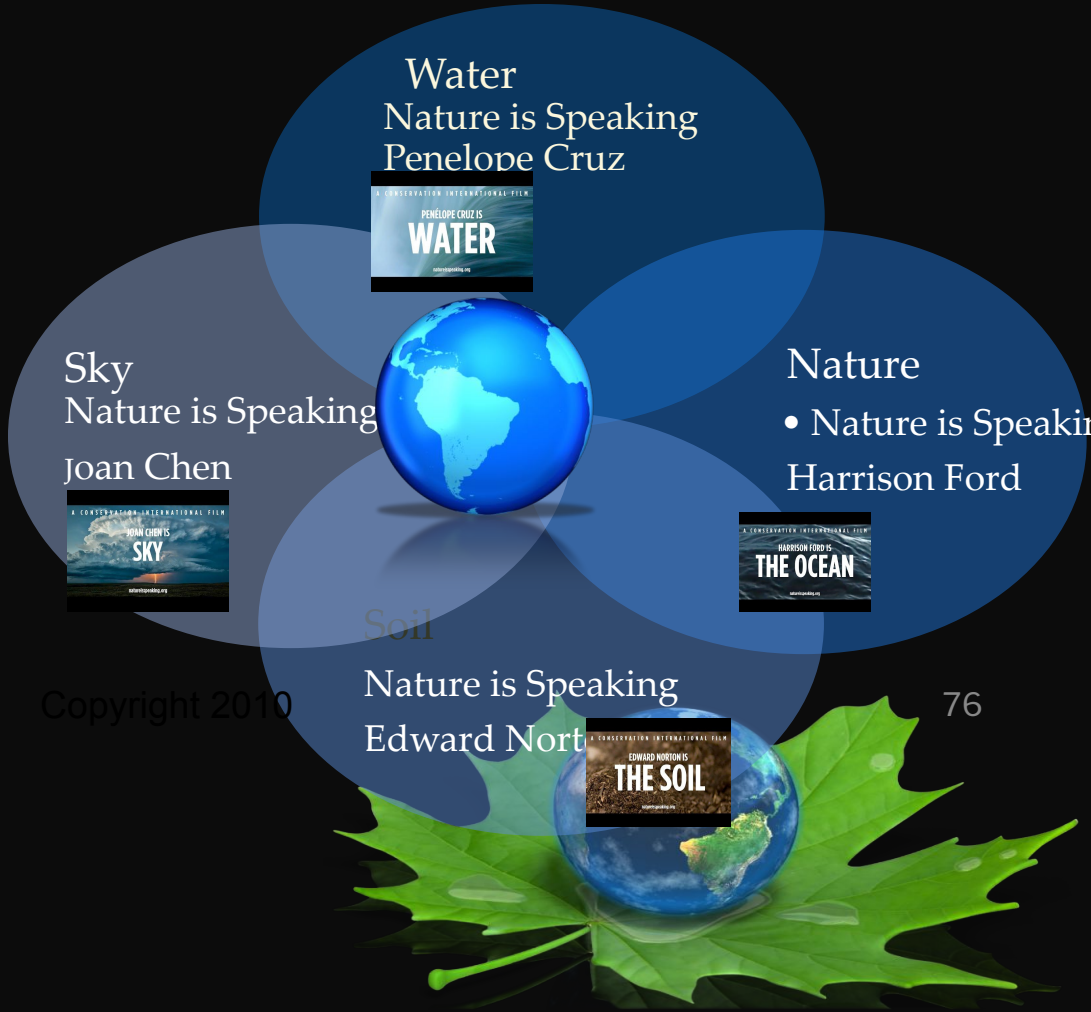
Deep Level Activities

Conservation

This chart utilizes Smart Art which is feature in PowerPoint 2007 or higher. If you wish to make charts like this and don't have PPT 2007, we have provided the graphical elements to help you build this yourself.



Nature is Speaking Series



Human-Earth Relationship Deep/Transfer

Conservation: group efforts to restore, and protect Canada's Natural and cultural heritages.

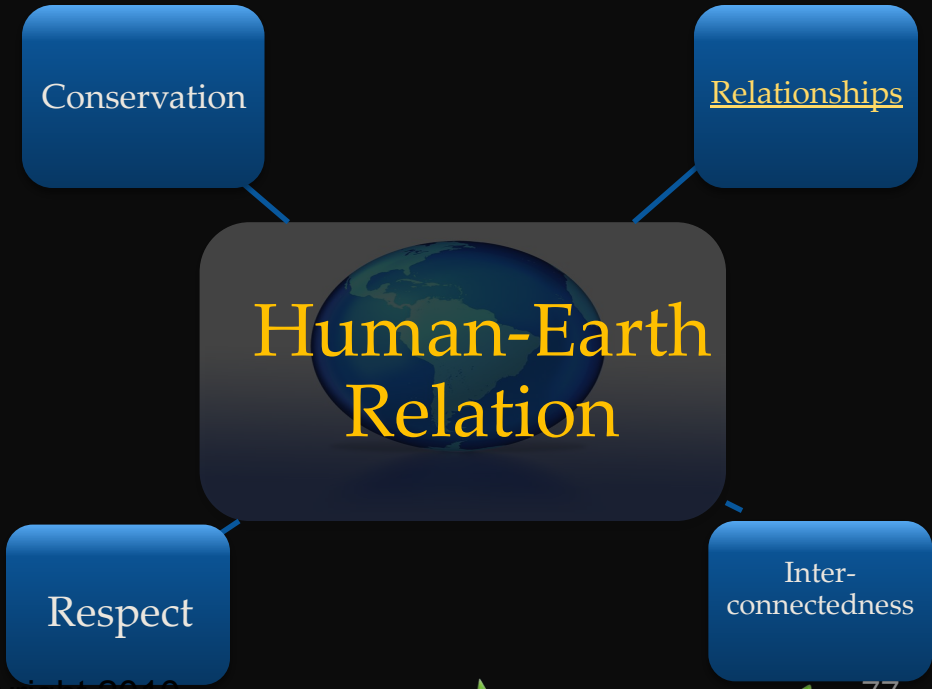
- Impact land, natural resources, organisms
- Maintain water for living things - how plants and animals use water
- Minimize disturbance and impact on plants, animals and land

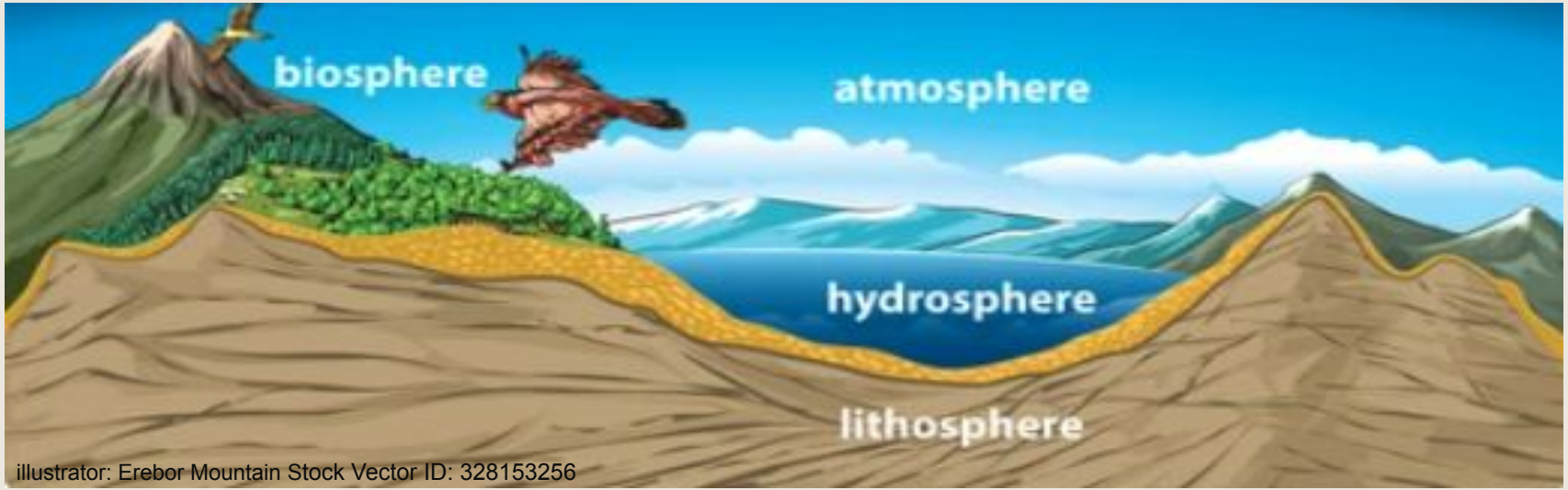
How do we balance the human use with conservation of land, plants, animals and resources?

Relationships
How does human activity impact the relationship between land, air, water and organisms?

Interconnectedness
How are land, air, water and organisms interconnected?

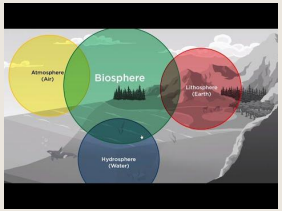
Respect
"Water is the blood of Mother Earth and, as such, cleanses not only herself, but all living things" (Honouring Water, Assembly of First Nations, 2012)
How are all people responsible for the care of water and water sources?



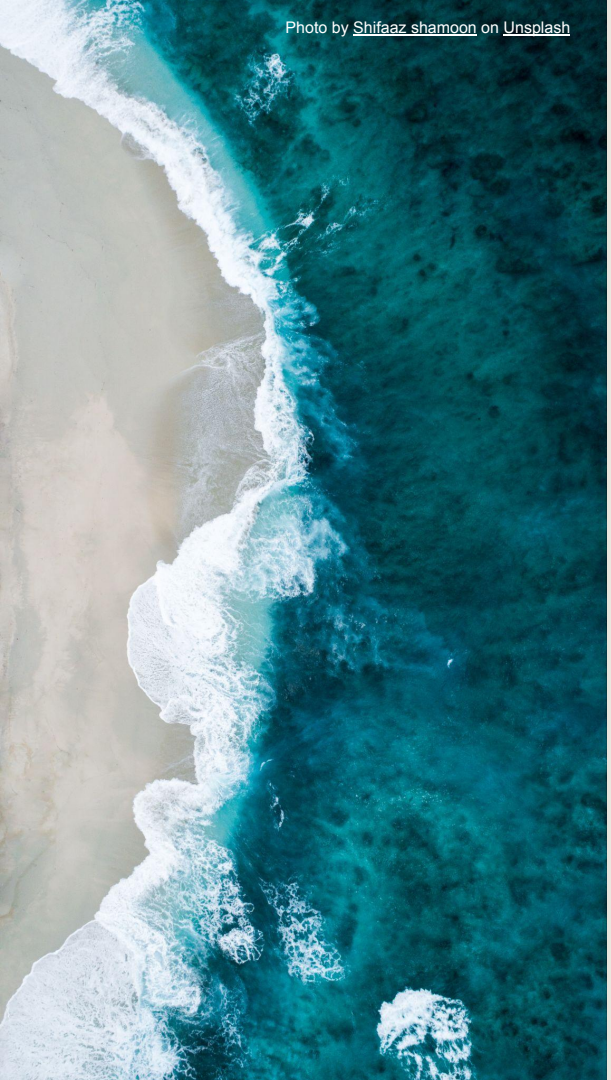


illustrator: Erebor Mountain Stock Vector ID: 328153256

How are these spheres interrelated?



Earth's Interconnected Cycles



08

Transfer & Assessment

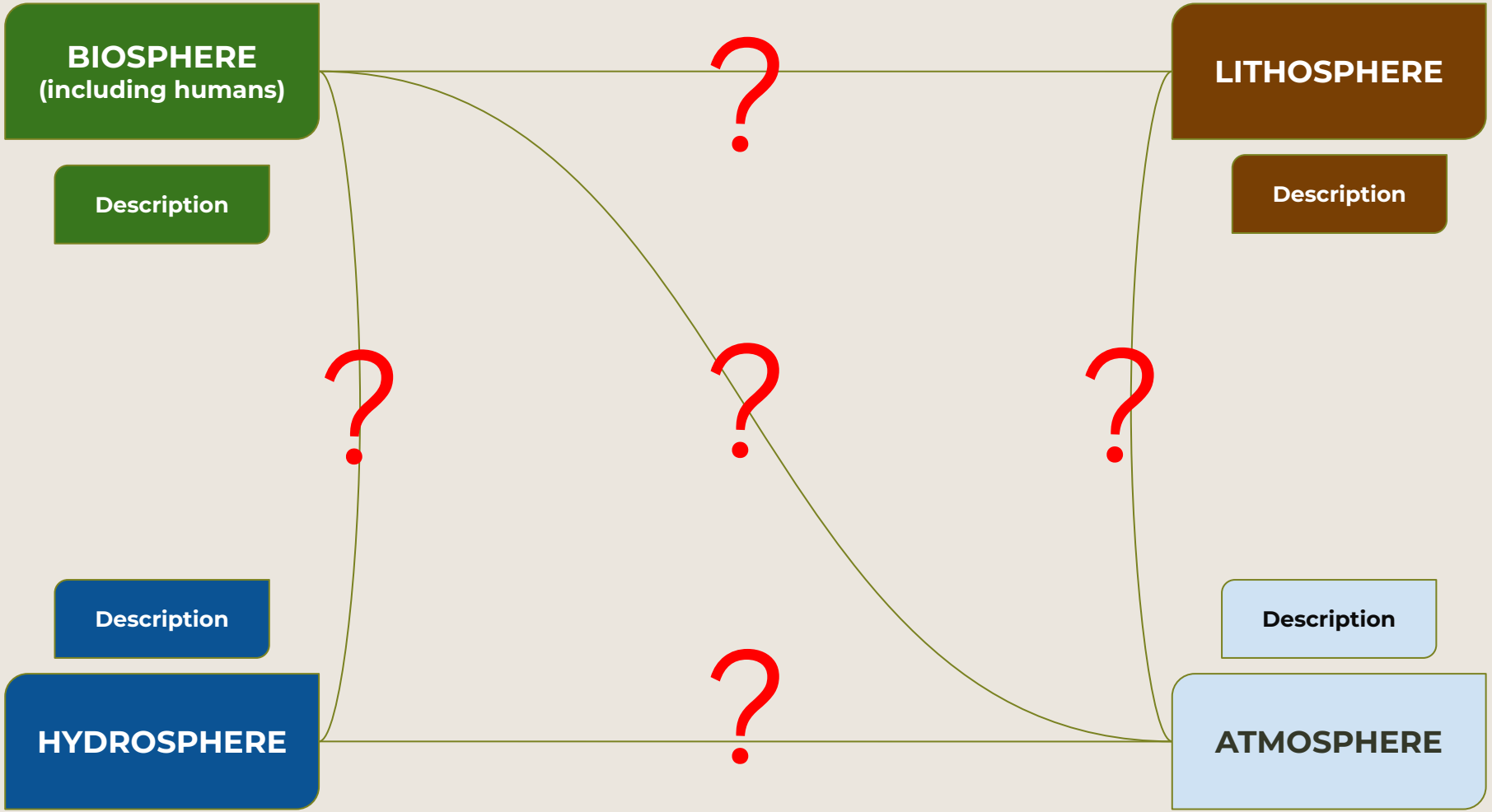
Sample Summative Assessment

Investigate this Problem: What is the interconnectedness between Earth's spheres including human activity (biosphere) in the boreal forest (also called taiga).

Include natural resources and conservation in your conclusion.

Sample Video Resources

- 5 Big Reasons to Conserve Canada's Boreal Forest (1:20_
- Take a journey through the Boreal Forest in Fort McMurray (2:23)
- In Boreal Forest, Indigenous Leader Bridges Environmental Divides (6:45)
- Indigenous Hunter Keeps Traditions Alive in Boreal Forest (6:17)
- The Boreal Forest: A Bird Haven (2:36)
- How BIG is Canada's Boreal Forest? (0:46)
- Taiga Animals and Plants
- Biomes and Climate Change: The Boreal Forest


BIOSPHERE
(including humans)
Description
LITHOSPHERE
Description
?
?
?
?
Description
HYDROSPHERE
Description
ATMOSPHERE

Resources

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

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)

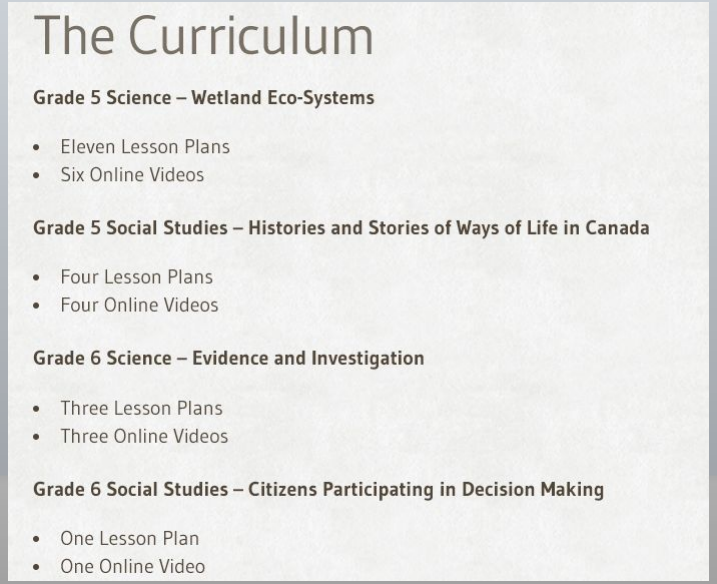
Connect the Spheres: Earth Systems Interactions. (NASA Education)

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

Link

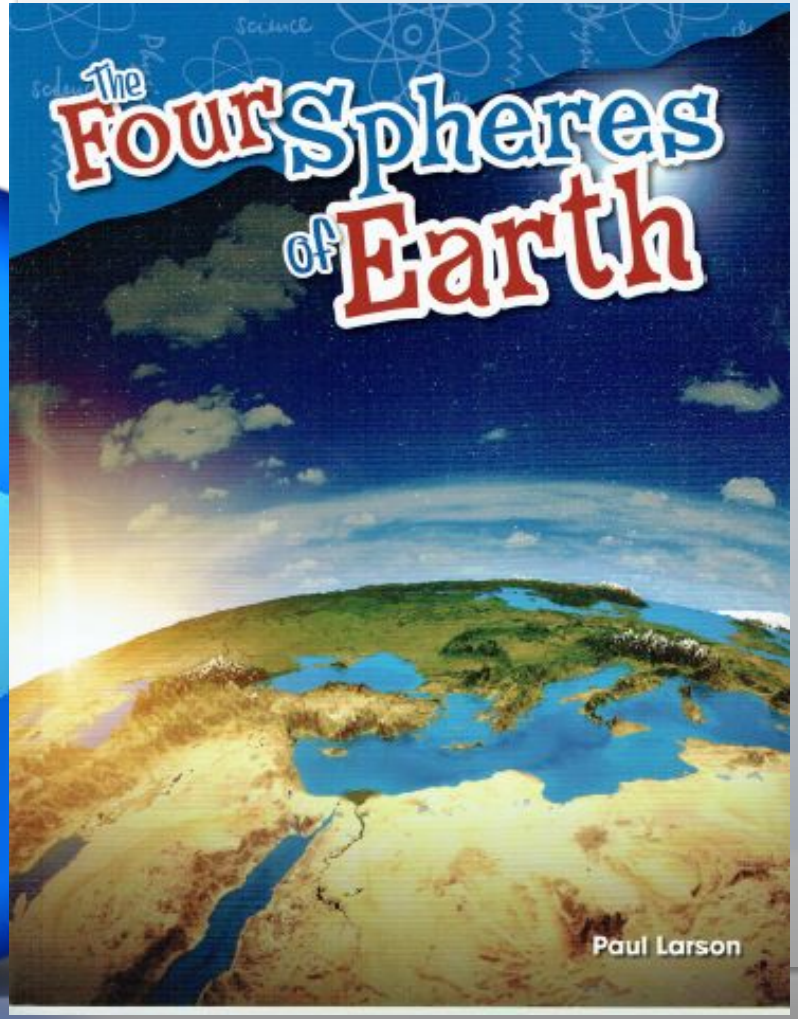
Water

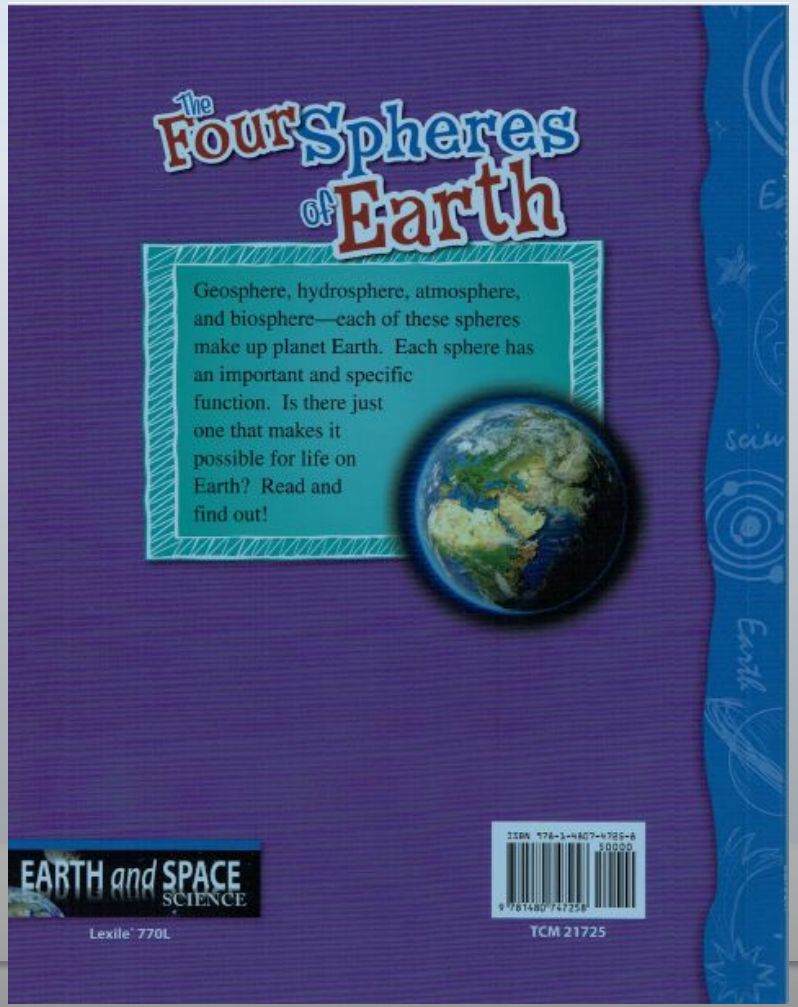
Link

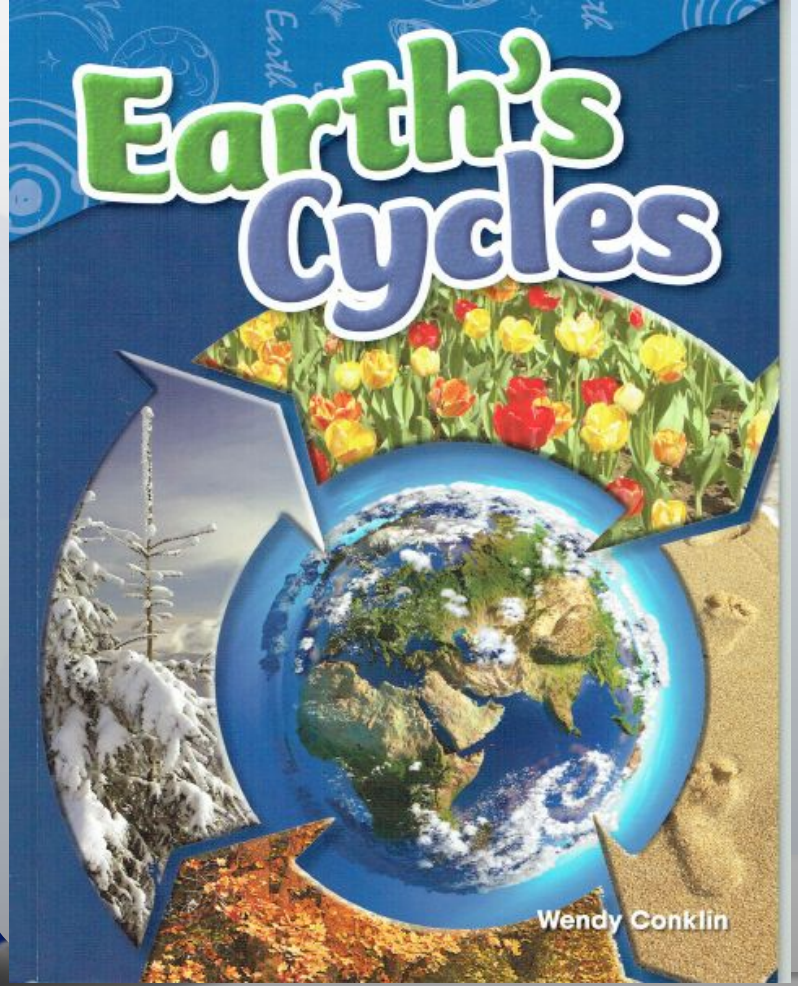
OLogy: American Museum of Natural History

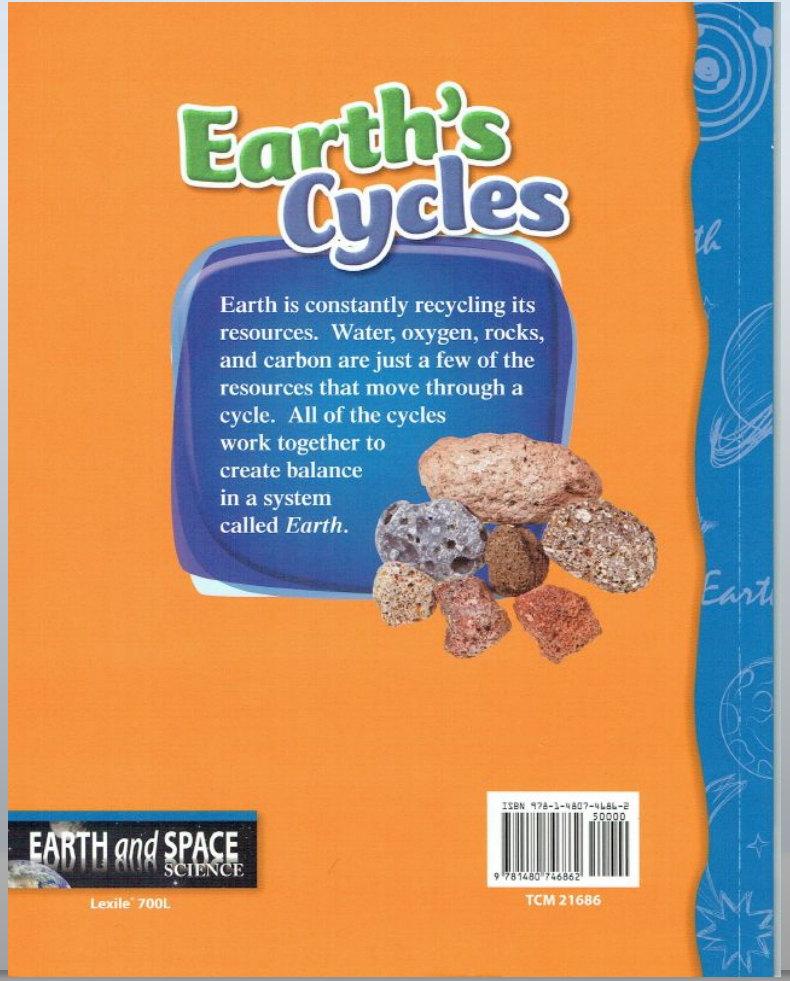
STEM Engagement

Sacred Relationships - Importance of Water and Wetlands


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
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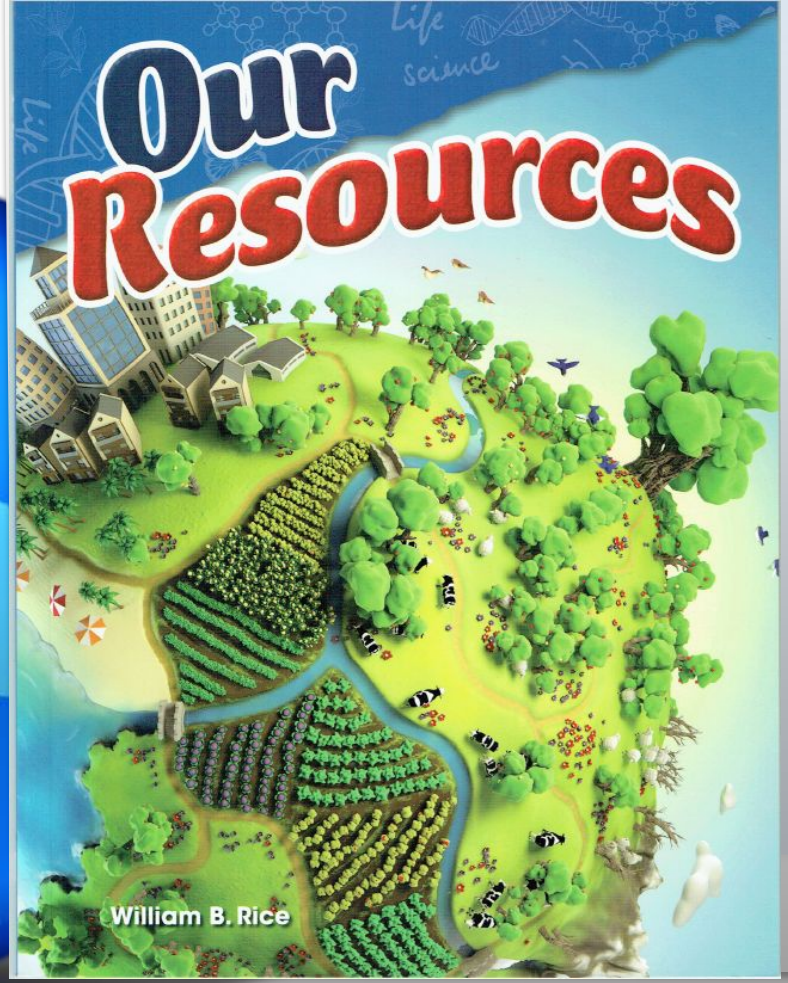
TCM 21686



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

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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*.

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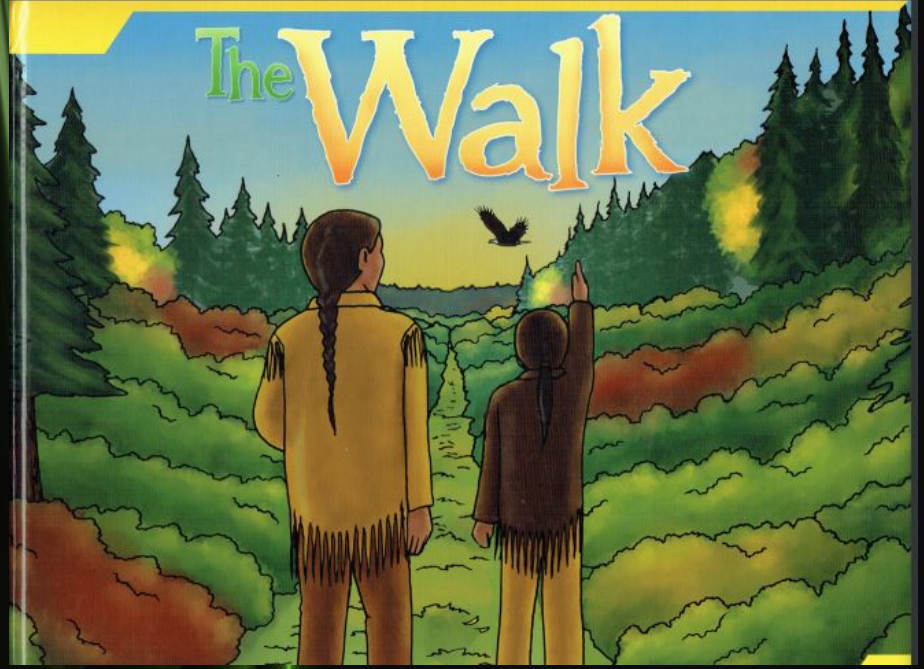

The Walk is a wonderfully drawn story about the Seven Teachings. Join Johnny and an Elder from his community as they go for a walk on a beautiful sunny day. They observe the animals of the Seven Teachings and Johnny is taught by the Elder how important the Seven Teachings are for all of us including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

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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?

Kindergarten CS Connections to Earth Systems

Grade 3 CS Connections to Earth Systems

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?

czarski@carcpd.ab.ca

ted.zarowny@erlc.ca

Photo by Gaelle Marcel on Unsplash

Thank You

Ted Zarowny
ted.zarowny@erlc.ca

Chris Zarski
czarski@carcpd.ab.ca

Transfer

Create a model or Investigate a site and describe the relationship between the resulting landform and the impacts of wind, water or ice over time.

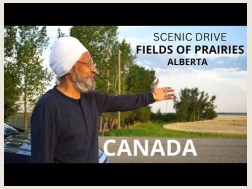
Compare and Contrast two Landforms

Head Smashed in Buffalo Jump

Dinosaur Provincial Park

Mount Edith Cavell

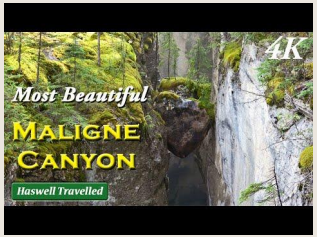
Prairies of Drumheller



Cypress Hills

Wood Buffalo National Park

Maligne Canyon



Banff National Park

Jasper National Park-Maligne Lake

Waterton-Glacier International Peace Park

Writing-on-Stone

Drumheller Badlands