Science
Grade 3
Session 2: Living Systems

May 3, 2023

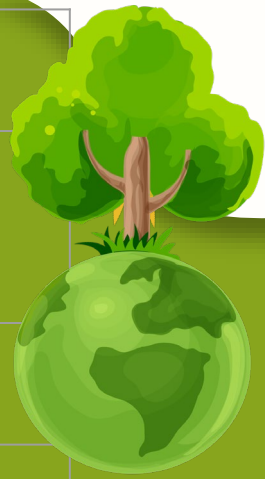
Facilitators:
Chris Zarski (CARC)
Nicole Lamoureux (ERLC)
Ted Zarowny (ERLC)

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.

AGENDA

01	**Backgrounder** • Phases of Learning
02	**Conceptual Overview** • Concept Progressions in Living Systems • Key Concepts (Surface Level Instructional Strategies and Activities)
03	**Skills and Procedures** • Key Skills and Procedures (Surface Level Activities)
04	**Understandings** • Relating Concepts & Deepening Understanding (Deep Level)
05	**Integrating Scientific Methods** • Skills and Concepts
06	**Integrating Computer Science** • Skills and Concepts
07	**Assessment** • Formative & Summative
08	**Resources**



Backgrounde
r

Photo by Geoffrey Baumbach on Unsplash

Potential of A Smartphone

Created by Laymik
from the Noun Project

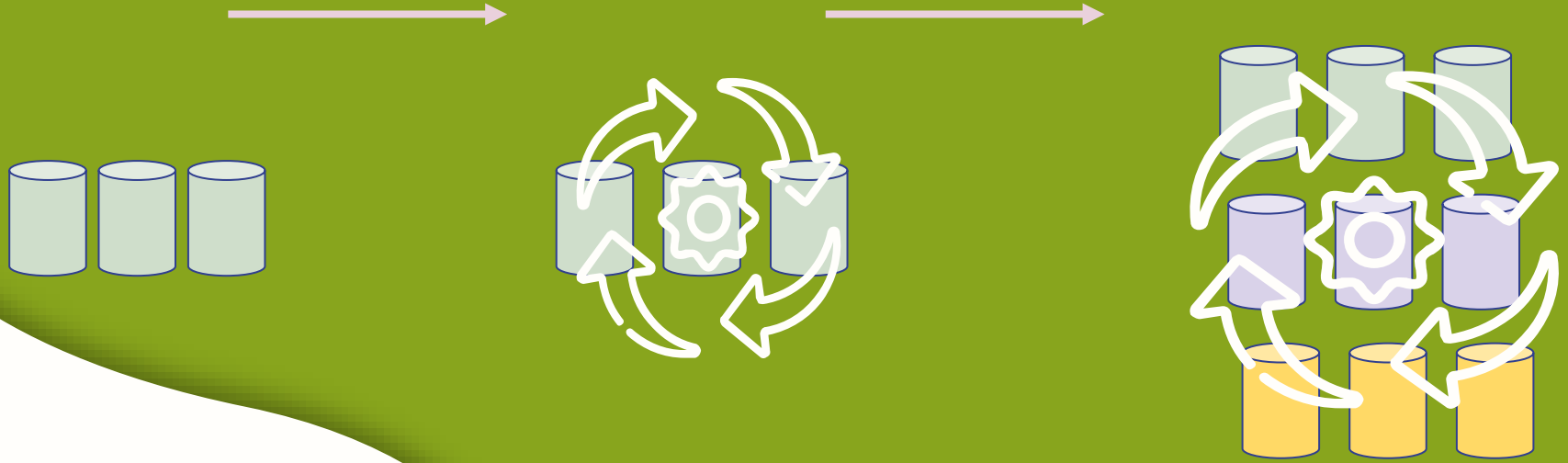
Created by Gem Designs
from the Noun Project

Created by Gem Designs
from the Noun Project

Cell Phone by Laymik from Noun Project

internet by Gem Designs from Noun Project

Potential of A Curriculum

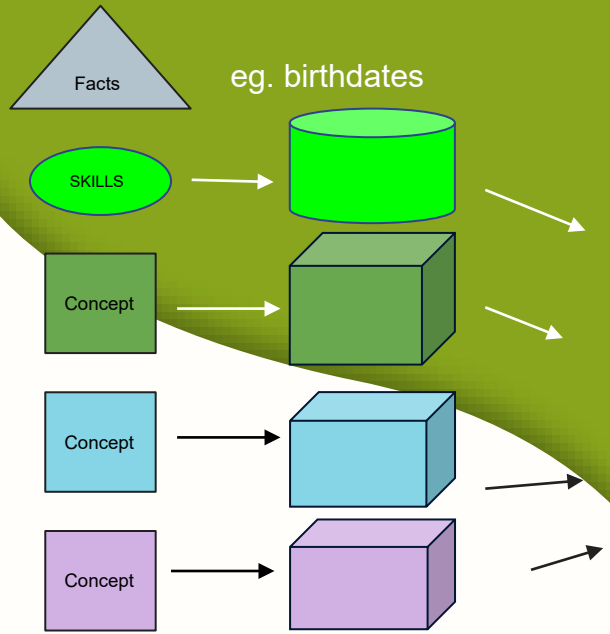


Phases of Learning

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

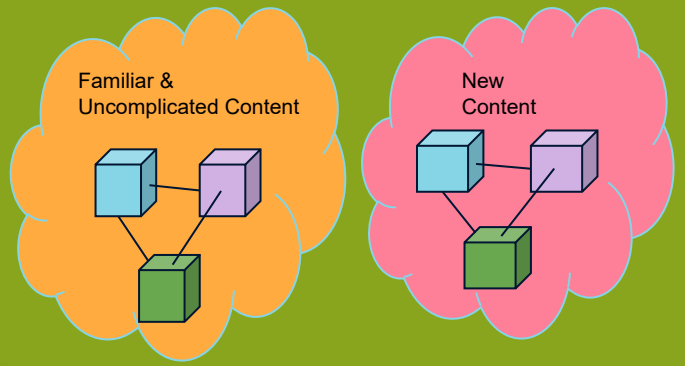
Surface

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



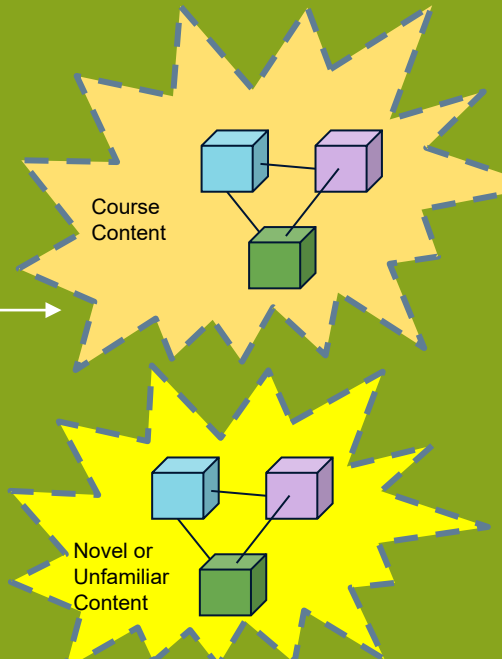
Deep

Making connections between concepts to create deeper understanding and applying skills/ procedures to new situations



Transfer

Applying understandings and skills to a variety of novel and unrelated contexts.



Conceptual Overview

Photo by Maros Misove on Unsplash

Concepts

What is a concept?

A concept is …

- an organizing idea of 1 -2 words;
- with distinct attributes;
- that are shared across multiple examples.

Photo by Fernando Andrade on Unsplash

Photo by charlesdeluvio on Unsplash

Orange: Photo by Dessy Dimcheva on Unsplash

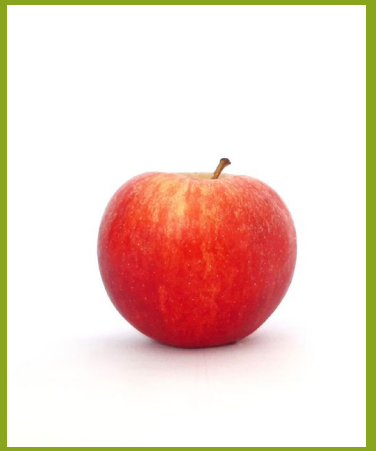
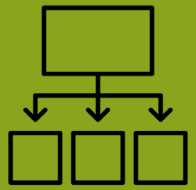


Photo by Sami Ahmed on Unsplash



Created by Made by Made from the Noun Project

Concepts are the way we organize our world - they are like categories which we make to group things that have similar qualities.

Created by S fahrudin from the Noun Project

Concepts are like file folders. We name the file and store information in that file that have certain attributes (eg. “Science Activities,” “Assessments.” “Bills,” etc.)

Created by B. Agustín Amenábar Larraí from the Noun Project

When we play “I Spy,” we are essentially identifying **concepts** (eg. “something that is red,” “something that is heavy,” etc.)

What concepts do you “see” in this image?

Concepts

Guiding Question	How do plants and animals interact?	
Learning Outcome	**3LS1.1 Students analyze and describe how plants and animals interact with each other and within environments.**	
Knowledge	Understanding	Skills & Procedures
A food chain shows the order in which plants and animals depend (dependence) on each other for food. A food chain can be represented (representation) in many ways, such as • illustrations • diagrams • stories • words A food chain represents one possible way that plants and animals interact. Plants and animals are part of many different food chains	Plants and animals interact with each other in various environments in ways that can be represented with food chains.	Represent various food chains in local and other Canadian environments.

A story is the telling of events in written, spoken, graphic, or other form to inform, entertain or convey a message.

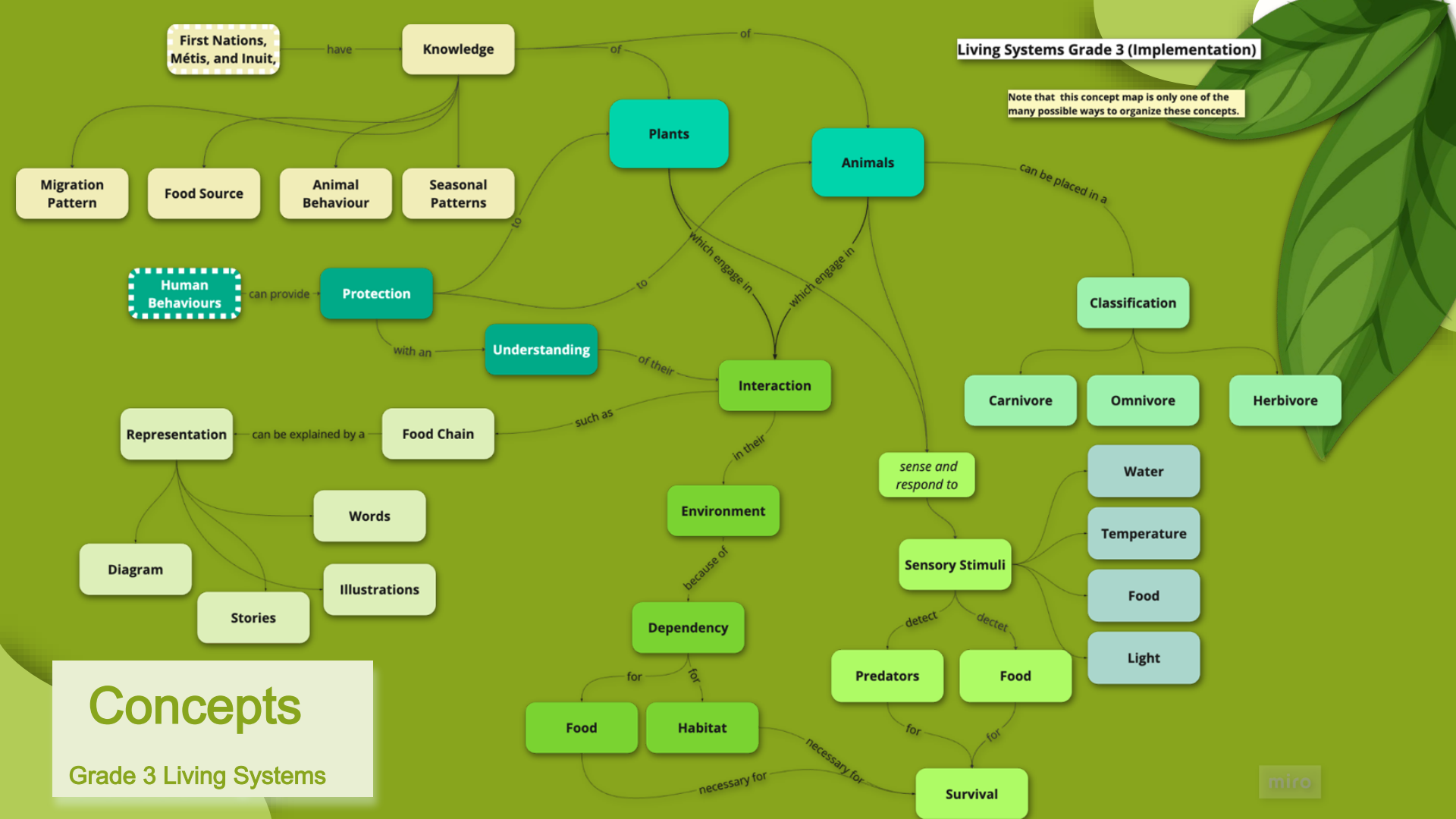
Examples of stories can be autobiography, myth, legend, etc.

Concepts

Guiding Question	How do plants and animals interact (interaction) ?	
Learning Outcome	**3LS1.1 Students analyze (analysis) and describe (description) how plants and animals interact (interaction) with each other and within environments.**	
Knowledge	Understanding	Skills & Procedures
A food chain shows the order in which plants and animals depend (dependence) on each other for food. A food chain can be represented (representation) in many ways, such as • illustrations • diagrams • stories • words A food chain represents one possible way that plants and animals interact. Plants and animals are part of many different food chains	Plants and animals interact with each other in various environments in ways that can be represented with food chains.	Represent various food chains in local and other Canadian environments.

A story is the telling of events in written, spoken, graphic, or other form to inform, entertain or convey a message.

Examples of stories can be autobiography, myth, legend, etc.


First Nations, Métis, and Inuit,
have
Knowledge
of
of
Plants
Animals
Migration Pattern
Food Source
Animal Behaviour
Seasonal Patterns
Living Systems Grade 3 (Implementation)
Note that this concept map is only one of the many possible ways to organize these concepts.
can be placed in a
Classification
Carnivore
Omnivore
Herbivore
Human Behaviours
can provide
Protection
to
to
which engage in
which engage in
with an
Understanding
of their
Interaction
such as
Representation
can be explained by a
Food Chain
in their
Words
Diagram
Illustrations
Stories
Environment
because of
Dependency
for
for
Food
Habitat
necessary for
necessary for
sense and respond to
Sensory Stimuli
Water
Temperature
Food
Light
detect
detect
Predators
Food
for
for
Survival
Concepts
Grade 3 Living Systems
miro

Living Systems Concept Progressions

Concept Progressions
Science Curriculum (March 2023)
Kindergarten to Grade 6

LIVING SYSTEMS

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
	Guiding Question: *How do plants and animals survive?*	**Guiding Question:** *How do plants and animals grow?*	**Guiding Question:** *How do plants and animals interact?*	**Guiding Question:** *In what ways do the structures of organisms support their survival?*	**Guiding Question:** *How are organisms supported by biological processes and systems?*	**Guiding Question:** *In what ways are ecosystems complex?*
	Learning Outcome: *Students investigate and examine needs of plants and animals.*	**Learning Outcome:** *Students investigate the growth and development of plants and animals and consider their relationship to humans.*	**Learning Outcome:** *Students analyze and describe how plants and animals interact with each other and with the environment.*	**Learning Outcome:** *Students analyze organisms and relate their external structures to functions.*	**Learning Outcome:** *Students investigate the internal systems of organisms and explain how they support biological processes.*	**Learning Outcome:** *Students investigate the characteristics and components of ecosystems.*

LIVING SYSTEMS

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
	Guiding Question: *How do plants and animals survive?*	**Guiding Question:** *How do plants and animals grow?*	**Guiding Question:** *How do plants and animals interact?*	**Guiding Question:** *In what ways do the structures of organisms support their survival?*	**Guiding Question:** *How are organisms supported by biological processes and systems?*	**Guiding Question:** *In what ways are ecosystems complex?*
	Learning Outcome: *Students investigate and examine needs of plants and animals.*	**Learning Outcome:** *Students investigate the growth and development of plants and animals and consider their relationship to humans.*	**Learning Outcome:** *Students analyze and describe how plants and animals interact with each other and with the environment.*	**Learning Outcome:** *Students analyze organisms and relate their external structures to functions.*	**Learning Outcome:** *Students investigate the internal systems of organisms and explain how they support biological processes.*	**Learning Outcome:** *Students investigate the characteristics and components of ecosystems.*

		KEY CONCEPTS			KEY CONCEPTS	
	Animals	**Animal**	**Carnivore | Herbivore | Omnivore**	**External Structure**	**Biological Systems**	**Components: Abiotic & Biotic**
	Dependence	**Behaviour: Human**	**Classification**	**Function**	**Organism: Complex**	**Diversity**
	Environment	**Development**	**Environmental Protection**	**Microorganism**	**Biological Processes**	**Ecosystem Types**
	Living Things	**Development: Stage**	**FNMI Knowledge of Plants and Animals**	**Organism**	**Biological Systems: Animals: Internal**	**Ecosystem & Diversity**
	Needs	**Effect: Positive, Negative**	**Food Chain**	**Sensory Structure**	**Digestive | Respiratory | Circulatory | Musculoskeletal**	**Ecosystem: Characteristics**
	Plants	**FNMI Relationship to Land**	**Interaction**	**Structure**	**Biological Systems: Animals: Transport Systems**	**Ecosystem: Components**
	Similarity	**Life Cycle**	**Stimuli**		**Xylem**	**Ecosystem: Greenhouse Gas Storage**
	Difference	**Offspring**	**Stimuli Response**		**Phloem**	**Ecosystem: Role: Plants**
	Humans	**Pattern**	**Survival**			**FNMI: Sacred Plants**
	Diversity	**Plant**	**FNMI: Respectful interaction with natural materials.**			**Interdependence - Relationships**
		Relationship	**FNMI: Plant and animal behaviours and patterns**			**Interdependence: Plants and Animals**
		Relationship to Land				**Organisms**
		Stages of Development				**Photosynthesis**
						Photosynthesis: Chlorophyll

Key Concepts

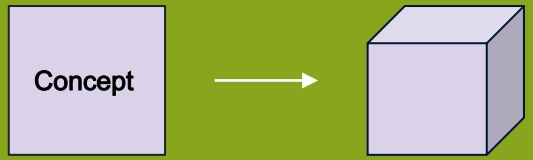
- Relationship
- Dependence
- Interaction
- Food Chain
- Herbivore, Carnivore, Omnivore
- Decomposers, Consumers, Producers
- Living Things
- Non-Living Things
- Plant
- Animal
- Environment
- Senses
- Sensory Stimuli
- Survival
- Human Behaviour (Actions)
- Impact
- Protection

Key Concepts

- Relationship
- Dependence
- Interaction
- Food Chain
- Herbivore, Carnivore, Omnivore
- Decomposers, Consumers, Producers
- Living Things
- Non-Living Things
- Plant
- Animal
- Environment
- Senses
- Sensory Stimuli
- Survival
- Human Behaviour (Actions)
- Impact
- Protection

Surface Level

Instructional Approaches & Activities



Definition

Creating/Identifying examples and non-examples in new contexts

Surface Strategy

Card Sort

In a card sort, students are given a series of labelled cards with information on them (words, images, etc.)

Students and asked to organise and sort them into groups or categories that they think are appropriate.

Examples

Concepts

Living and Non-Living Things

Plants

Animals

Review of Key Concepts from Grade 1

Lens:
Observation/Discussion

What is the **relationship** between the ‘things’ you placed in the “**Living**” column?

What is the **relationship** between the pictures of things you placed in the “**non-living**” column?

Review Card Sort - Living/NonLiving

Same Cards for Animal / Plant
Header Cards for Card Sort

Plants and **Animals** have **similarities** and **differences.** How can you describe or model this?

Why did you group them this way?

Which animals can you name in each group by name.


4
no legs
no movement
2
No Legs
move

Surface Strategy

Case Study

Case studies provide students with realworld situations that students can relate to and understand.

Depending on the questions or activity following the case study, this approach can be used at

- surface level
- deep level
- transfer level

Examples
Concepts

Carnivore
Omnivore
Herbivore

Case Study approach Could be the first time any of the concepts are introduced.

Also provides pre-assessment opportunities to determine the level of student understanding.

WHO EATS WHO?/The Food Chain/✨Kids Books Read Aloud

Surface Strategy

Frayer Model

The Frayer Model is a graphic organizer used to help students develop a understanding of new concepts.

The model includes four main components:

- Definition
- Characteristics
- Examples
- Non-examples

Examples
Concepts

Four sample starting points for Frayer Models

Human Behaviour

Interaction

Grade 2

Human relationship with land can be both positive and negative.

Look at the pictures. Which are positive (respectful) uses of the land? Is there evidence that there are negative uses of the land (environmental destruction)?

Walk around your school yard or surrounding area. Do you see any positive (respectful) uses of the land? Any negative effects on the land?

Use a Frayer Model to draw a positive and negative example.

Frayer Model Template

Surface Strategy

Concept Attainment

A concept attainment strategy is similar to a card sort in that students are looking for patterns or similarities in the information that is presented

The difference is that the teacher prearranges the examples into groups of examples of the concept, and non-examples.

Examples and nonexamples are presented one at a time as the attributes of the concept becomes apparent. Using a **Frayer Model** after a concept attainment activity helps reinforce the concepts.

Examples

Concepts

Relationship

Cause & Effect & Impact

Dependence

Similarity & Difference

Investigation

Conclusion

Analysis

Criteria

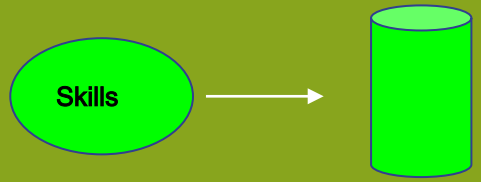
Prediction

Skills & Procedures

Photo by Lukasz Szmigiel on Unsplash

Surface Level

Instructional Approaches & Activities



Knowing the steps/procedures.

Performing the steps/procedures.

Skills and Procedures

Skills and procedures " are what students do to demonstrate knowledge and understanding."

3LS1.1: **Represent** various food chains in local and other Canadian environments.
3LS1.2: **Classify** animals in a food chain as carnivores & herbivores & omnivores .
3LS1.3: **Investigate and discuss** how plants and animals respond to stimuli in their environments in order to survive.
3LS1.4: **Discuss** First Nations & Métis & Inuit connection with the environment to their knowledge of and relationships with plants and animal
3LS1.4: **Demonstrate respectful and safe practices** during observations of plants and animals in the local environment.
3LS1.4: **Explain i**nterconnections in the environment including how plants depend on animals and how animals depend on plants to survive.
3LS1.4: **Discuss** First Nations & Métis & Inuit connection with the environment to their knowledge of and relationships with plants and animals.

Living Systems

- Compare & Contrast
- Represent
- Investigate
- Discuss
- Classify

Consider other contexts these skills can be introduced and practiced.

- Art?
- English Language Arts and Literature?
- Math
- Physical Education and Wellness?
- Social Studies
- Resolving Conflicts?

Surface Strategy

Direct Teaching of Skills Strategy

In the direct teaching of skills strategy, the skill or procedure is explicitly taught using. The strategy involves the following:

- breaking a skill or procedure into its steps
- ensuring students understand any concepts in the steps
- explaining the steps to the students
- demonstrating the steps to the students
- providing guided practice

Examples

Skills & Procedures

Investigating

What do living things need to stay alive?

Surface level - facts about living things

Story
What's Alive / Living vs Non-Living
https://www.youtube.com/watch?v=OkmR6tURgQA

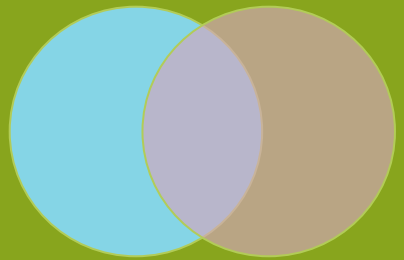
Living or Non-Living Read Aloud
https://www.youtube.com/watch?v=TjwkFSFa0AI

Surface Strategy

Venn Diagram Compare & Contrast:

A Venn diagram consists of overlapping circles, each circle representing a different set or different item

The shared area (overlapping section) are the elements that belong to both sets or items (similarities) The area not overlapping are difference.

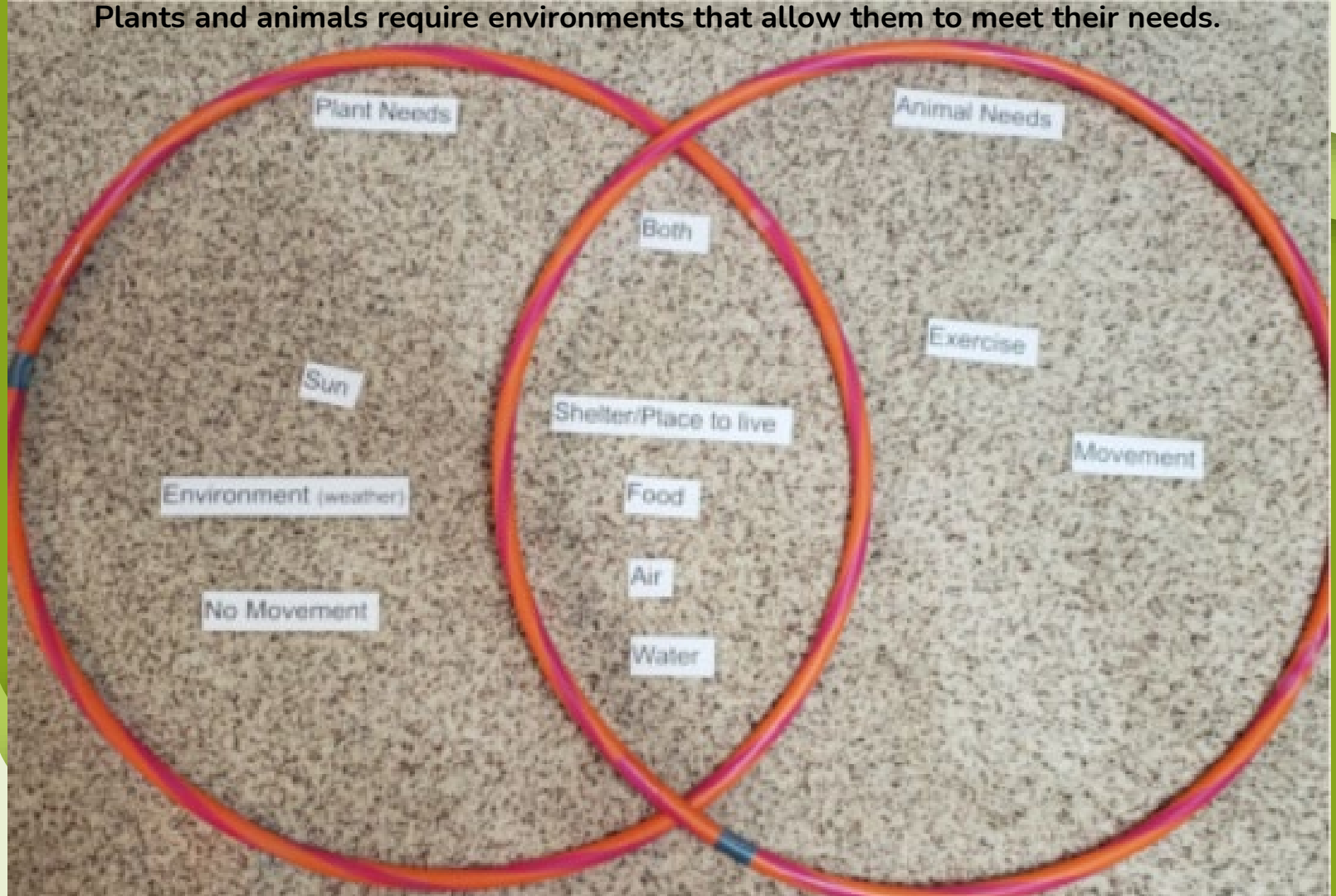


Examples

Skills & Procedures

Compare & Contrast

Plants and animals require environments that allow them to meet their needs.



Compare and Contrast

Similarities/ Differences

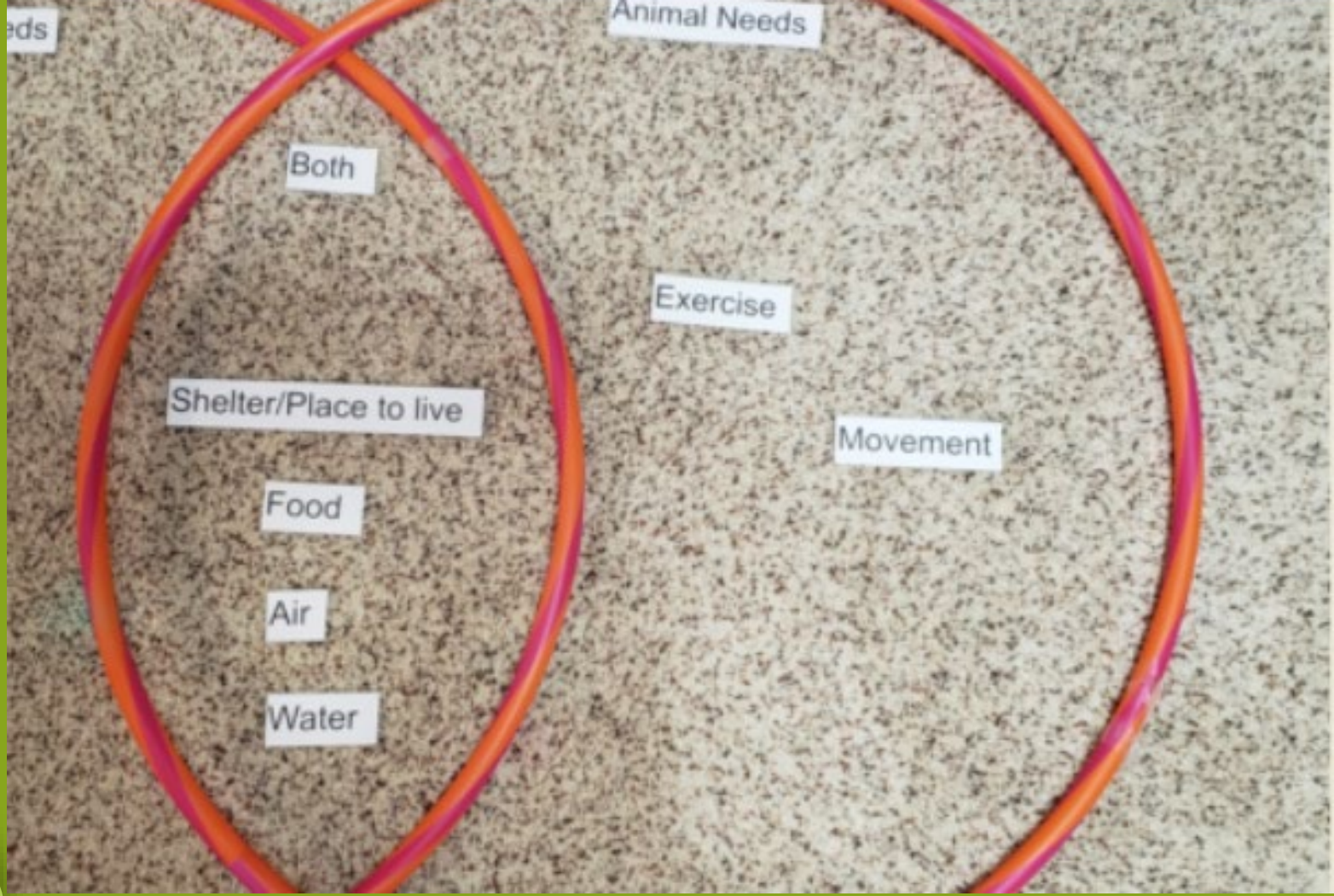
What is a '**need**'?

What are **basic needs** for ALL **living things**?

Header Cards

How do animals get food?

Movement is likely to come up in the discussion.
Have students take the plant and animal cards and sort them on how each moves.

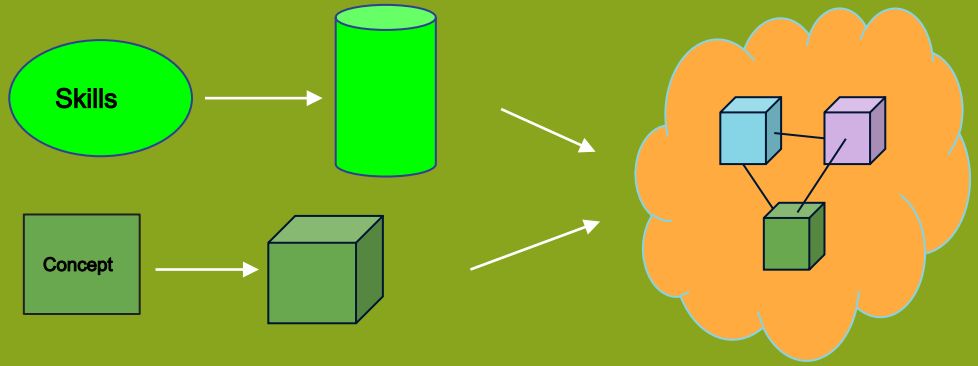


Understandings

Photo by Jonah Brown on Unsplash

Deep Level

Instructional Approaches & Activities



Create relationships between concepts (build understandings) and test them in different contexts using different skills.

Surface

Deep

Understandings

Understanding is "how facts and knowledge fit together in a logical and meaningful order."

3LS1.1 **Plants** and **animals** interact with each other in various **environments** in ways that can be represented with **food chains**

3LS1.2: **Animals** can be classified as **carnivores** , **herbivores** , and **omnivores** based on what they eat.

3LS1.3: **Plants** and **animals** sense and respond to **stimuli** in order to survive.

3LS1.4: **Awareness** and **consideration** of the **interactions** of **plants** and **animals** in local **environments** helps **humans** protect them.

Deep Strategy

Making Concept Maps

Concept maps are graphic organizers that connect concepts together with lines.

The concept map demonstrate a logical and meaningful relationship between those concepts.

Plants and animals interact with each other in various environments.

Interaction

Plant

Environment

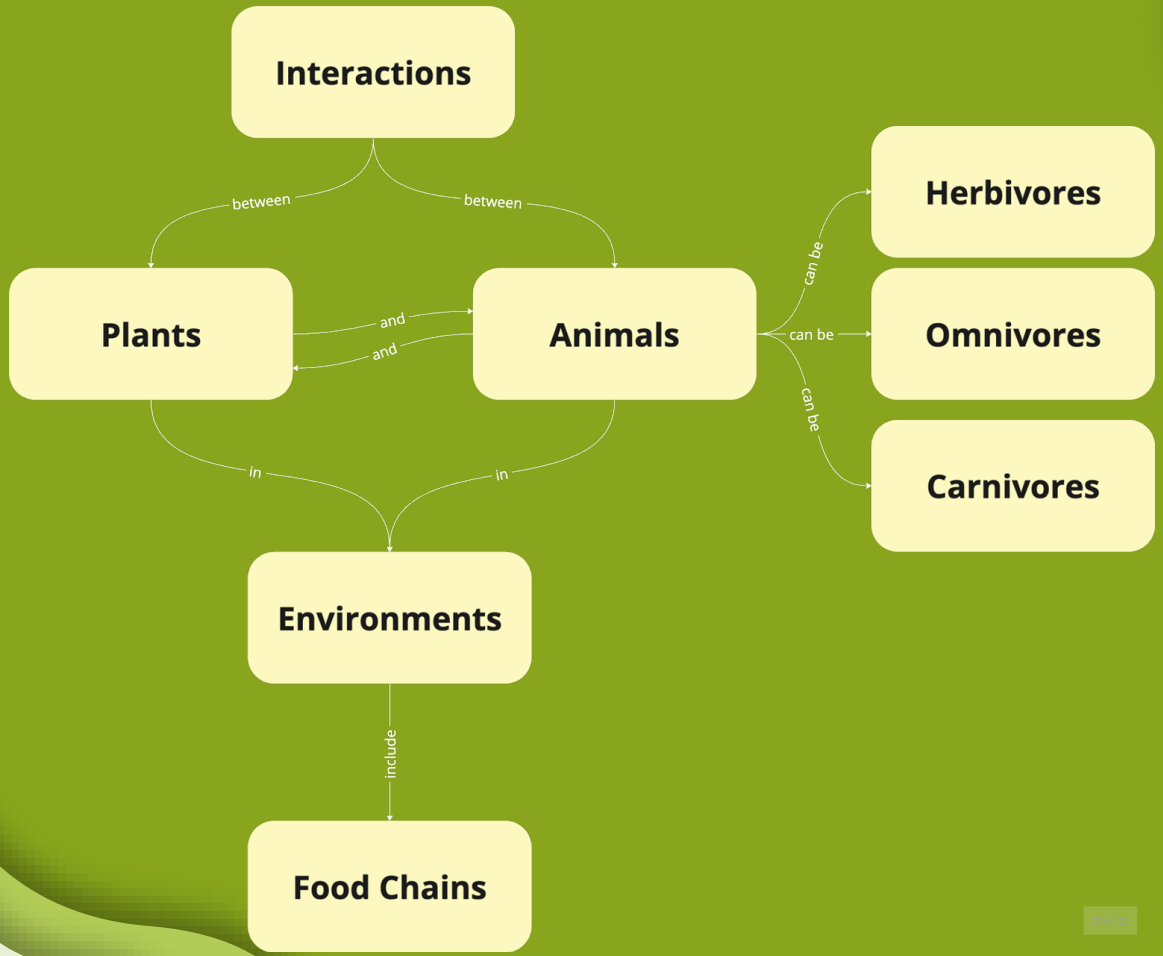
Omnivor

Animal

Carnivore

Food Chain

Herbivore


Interactions
between
between
Plants
and
and
Animals
can be
can be
can be
Herbivores
Omnivores
Carnivores
in
in
Environments
include
Food Chains

Ocean?

Whale?

Deep Strategy

Discussing

Discuss means to explore and examine a topic or issue by

- ***talking*** *about a topic or issue with others, exchanging ideas and opinions in a collaborative and respectful manner*
- providing a detailed and thorough analysis or examination of a particular topic or issue.

Skills & Procedures

Discussion Checklist

(Some) Discussion Formats

Gallery Walk (Chat Stations)	Snowball Discussion	Conver-Stations	Concentric Circles
Pinwheel Discussion	Think-Pair-Share	Circle of Viewpoints	Fishbowl
4 Corners	Spectrum Sort	Silent Discussions (eg. Mentimeter, Padlet)	See-Think-Wonder

Deep Strategy

Representing

Representing means to effectively communicate one's understanding of a particular subject, concept, topic to understanding to others, whether through writing, speaking, or some other form of expression.

(Some) Representation Ideas

Concept Map	Infographic	Mind Map	Skit
Comic Strip	Podcast	Poem/Song	Dance
Diagram	Charts & Tables	Gif Animation	Model
Infomercial	Mash-Up	News Report	Puppet Show
Role Play	Board Game	Kahoot!	Diorama

3LS1.1: Understanding

Plants and **animals** interact with each other in various **environments** in ways that can be represented with **food chains.**

and (Food Webs) represent interactions with our Native Animals and Plants?

When you are hungry, how do you decide what you are going to eat?
Discuss with your partner(s) and make a list of your deciding factors.
(likes, allergies, physically can eat it, can digest it, availability ...)

How do you think animals decide what they would eat? (types of food they CAN eat, no meat, no vegetation, aquatic world vs land animal, ...)

Identifying Alberta Animals

Use your cards to group them based on one of 4 statements:

We know the name and what it eats.	We know the name but not sure what it eats.
We don't know the name but think we know what it eats.	We don't know the name, don't know what it eats.

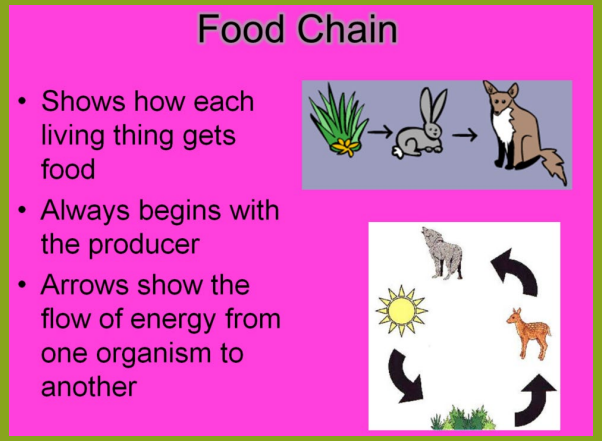
Identifying Alberta Animals

You have a set of cards:

- Sort your cards based on whether you know what the animal or plant is called.
- Talk with other groups about the animals or plants that you placed in any “don’t know” group.
- Re-sort your cards into categories. Explain you categories. How are the items you placed in each category related?

What is a food Chain? “Eat and be eaten!”

- Shows how each living thing interacts to obtain its food.
- Some animals eat plants and some animals eat other animals.
- Plants make their own food (uses the sun energy)



Grass → Hare → Owl

Flow of energy in the system.

Representing energy flow

You have a set of cards:

- Use your cards to create at least 3 different food chains
- How long will the chain be?
- Describe the flow of energy in words.

3LS1.2: Understanding

Animals can be classified as **carnivores** , **herbivores** , or **omnivores** based on what they eat.

How do we classify(identify) animals based on what they eat?

Parts of a Food Chain

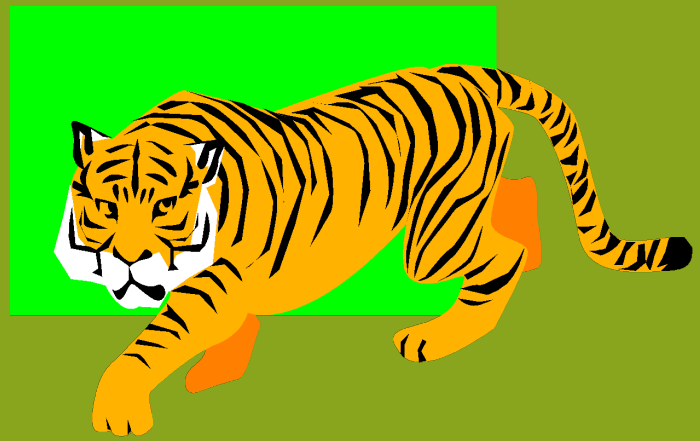
- Producers
- Consumers
- Decomposers

Producers

- Producers make their own food
- Green plants use energy from the sun to make food
- Producers are on the bottom of the food chain

Consumers

- Consumers hunt, gather, and store food because they cannot make their own.



Decomposers

- Help break down dead matter and return nutrients into the soil. Examples are: Mushrooms (Fungi), earthworms, termites, bacteria.

Three Types of Consumers

- Herbivores
- Carnivores
- Omnivores

Herbivores

- Animals who eat plants such as:
  - grasshoppers
  - rabbits
  - squirrels
  - deer
  - moose

Can you find some herbivores from your card sort?

Carnivores

- Animals who only eat other animals such as:
  - hawks
  - wolves
  - cougars

Can you find some carnivores from your card sort?

Omnivores

- Animals who eat both plants and animals such as:
  - humans
  - bears

Can you find some Omnivores from your card sort?

Decomposers

- Microorganisms that are able to break down large molecules into smaller parts
- Decomposers return the nutrients that are in a living thing to the soil

Food Webs are optional and not required

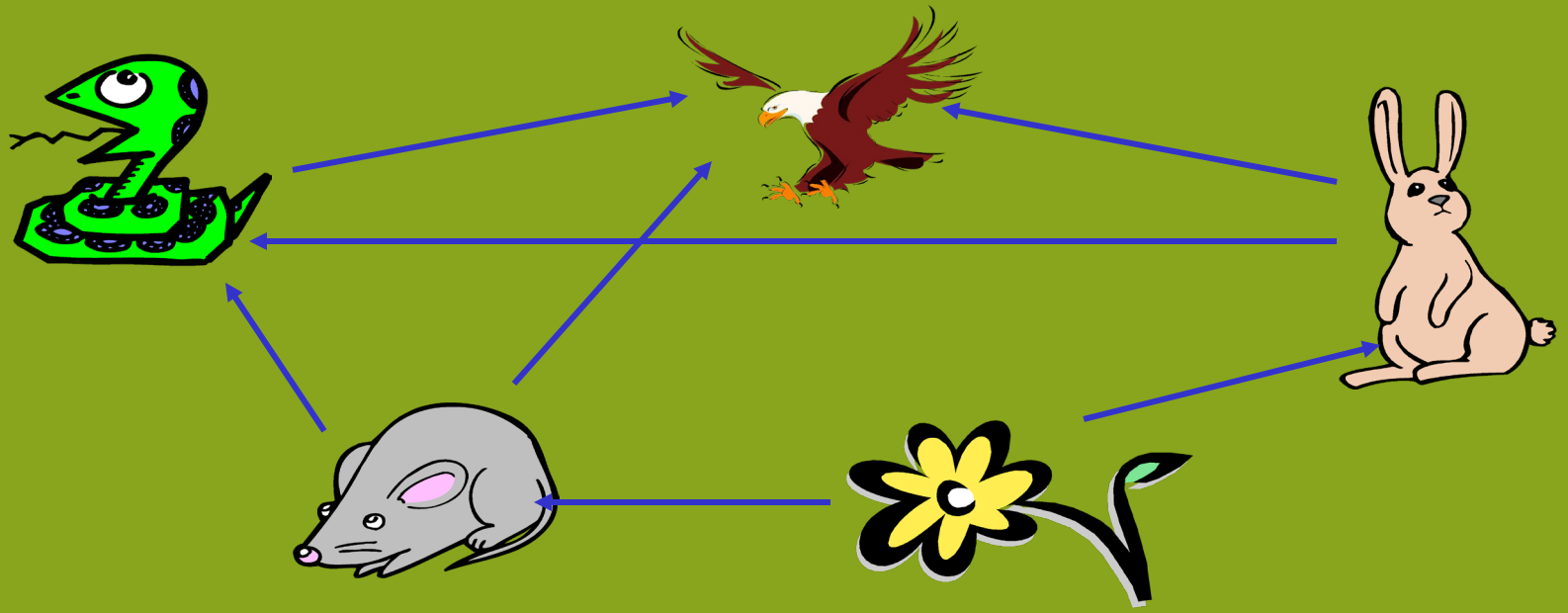
What is a Food Web?

- A more realistic way of looking at the relationship of plants and animals in an environment.

- Several food chains linked together.

Food Webs

- How many food chains can you make from this food web?

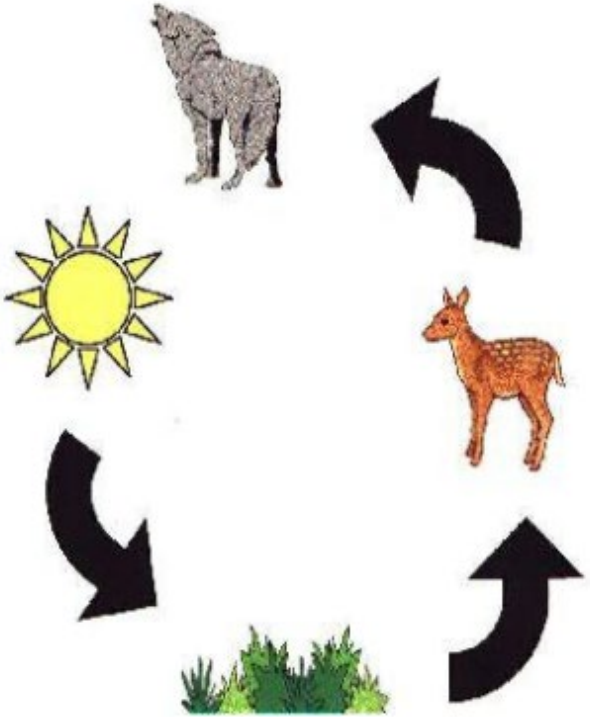


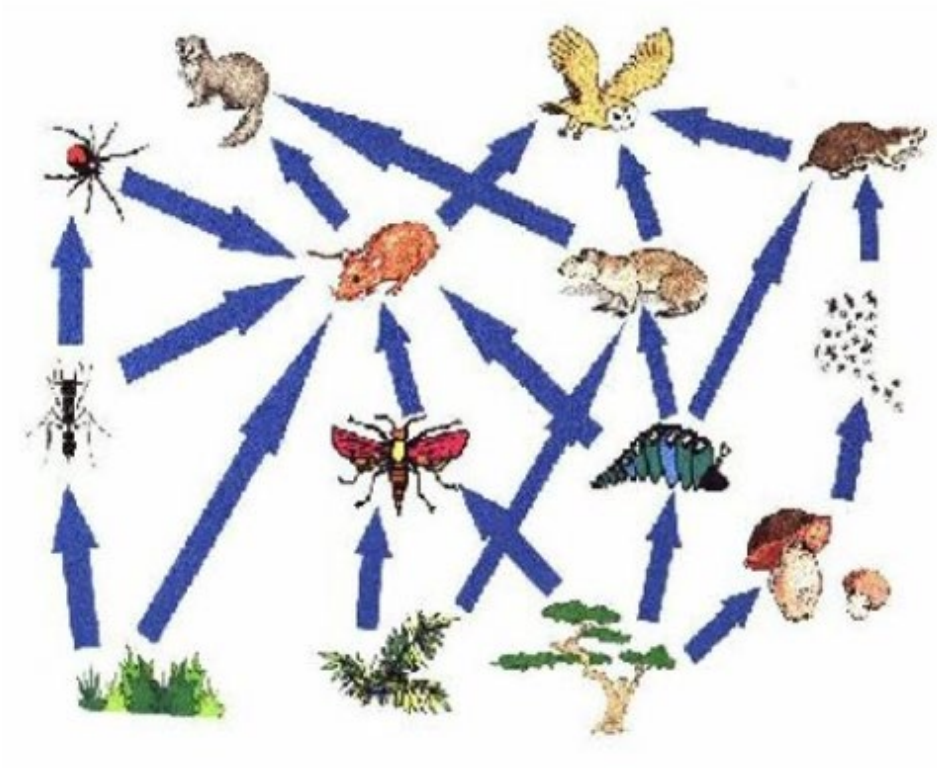
Representing energy flow

You have a set of cards:

- Sort your cards into Producers, Consumers and Decomposers.
- Sort your Consumers even further into Herbivores, Carnivores and Omnivores.
- Using your cards, design a food web.
- Describe at least 3 Food Chains that come out of your web.
- Add additional animals or plants where you would like!

Food chains and **food webs** model the flow of **energy** in an ecosystem.





3LS1.3: Understanding

Plants and **animals** sense and respond to **stimuli** in order to survive.

How do **plants and animals sense and respond to stimuli in order to survive?**

Review Senses in Kindergarten Matter to bridge.

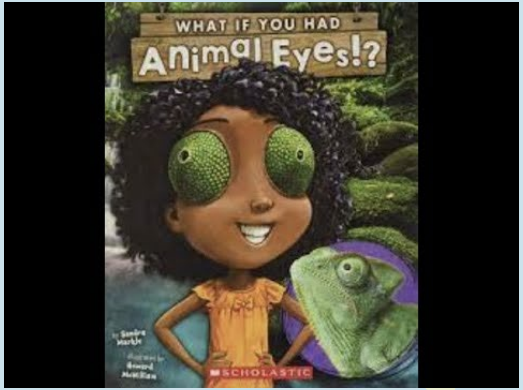
Animal Senses

Visual Perception, Hearing, Taste, Smell

Animal Senses: Smell

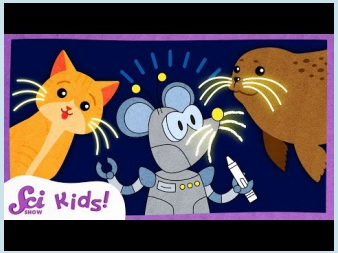
What If You Had Animal Eyes!?

Audio Book



Case Study

Why Do Animals Have Whiskers?



Plant Senses: Sight

Like us, plants see light. Just as we have photoreceptors in our eyes, plants have their own throughout their stems and leaves

Plant Senses: Touch:

Branches sway in the wind, insects crawl across leaves, vines search out supports to cling to: plants live in a very tactile world

Plant Senses: Taste:

A plant's taste is as interconnected with smell as it is in humans – but they use it to sense danger and drought and even to recognise relatives

Home of Our Plants and Animals

Alberta Prairies

Common species among the four Natural Subregions include: **Carnivores: Coyote, American badger, red fox, swift fox**. **Ungulates: Elk, pronghorns, mule deer and white-tailed deer**. Historically, bison roamed the Canadian prairies prior until they were hunted nearly to extinction in the 1870s and 1880s.

Mountains

Wildlife. Mammals: **Elk and bighorn sheep, moose, mountain goats, grizzly bear, black bear, wolf, coyotes, pikas, marmots, Columbian ground squirrel**. Woodland caribou are only found in the northern parts of this natural region.

Forest

In Alberta, widespread mammal species in the boreal forest include the black bear, moose, deer, red squirrel, snowshoe hare, southern red-backed vole, shrew, chipmunk, deer mouse, and ermine. Less common species include the fisher, wolverine, river otter, Canada lynx, and gray wolf (NRC 2006).

Anatomy of a Boreal Forest

Boreal Forest - Hinterlands

Lakes and Rivers

Let's play BINGO

Transfer

What environment do you live in? Describe the animal and plants commonly found in your surrounding.

Represent one Food Chain and Food Web that identifies the flow of energy in your area.

How healthy is your plant and animal environment? What evidence do you have? (Could also be with the next section)

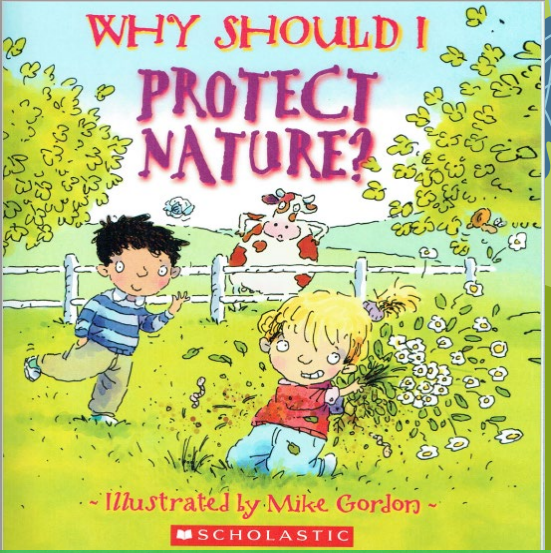
3LS1.4: Understanding

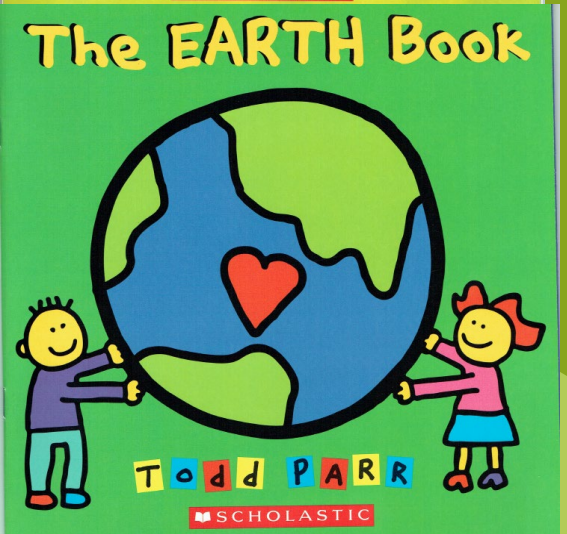
Awareness and consideration of the interactions of plants and animals in local environments helps humans protect them.

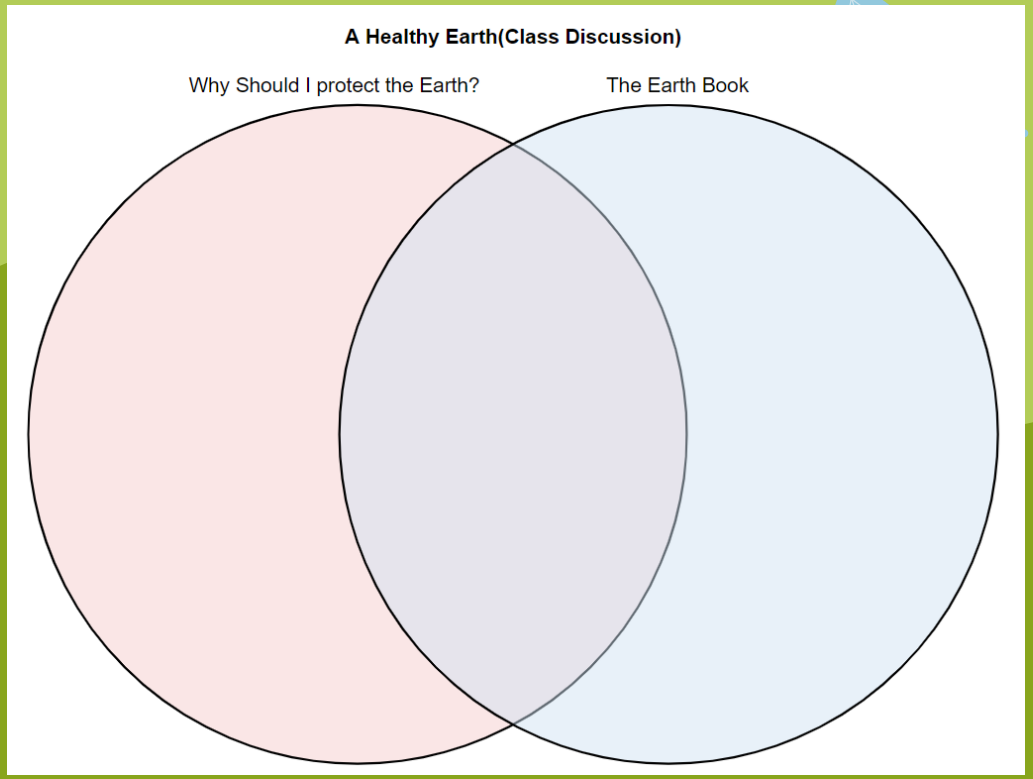
Respecting and Protecting our Environment

Why Should I Protect Nature? by Jen Green

What do you wonder about this picture?







What have we learned about our earth safety? Future?

I Am Earth (starter video)

I AM EARTH READ ALOUD by Rebecca and James McDonald

https://www.youtube.com/watch?v=xZj5rdZ2oBw

How do we ensure that we minimize disturbing plants and animals from their daily routines.

Stock image #C027/0416

cbc.ca

How does counting and tracking populations help maintain them?

Grizzly Studies

Science and Conservation

- Protecting species
- Saving cold water fish
- Bison
- Helping bats find homes

Studying the Woodland Caribou

Mother Earth

First Nations, Métis, and Inuit knowledge of plants and animals includes: knowledge related to animal behaviour, diet, migration paths, patterns.

Resources

Link

Pgs.
53-90

Carrie-Anne Reads
Lessons from Mother Earth
by Local Author Elaine McLeod

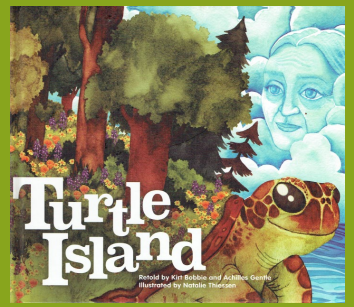
Cultural values and beliefs influence how we relate to the land, plants and animals.

Carrie-Anne Reads
Lessons from Mother Earth
by Local Author Elaine McLeod

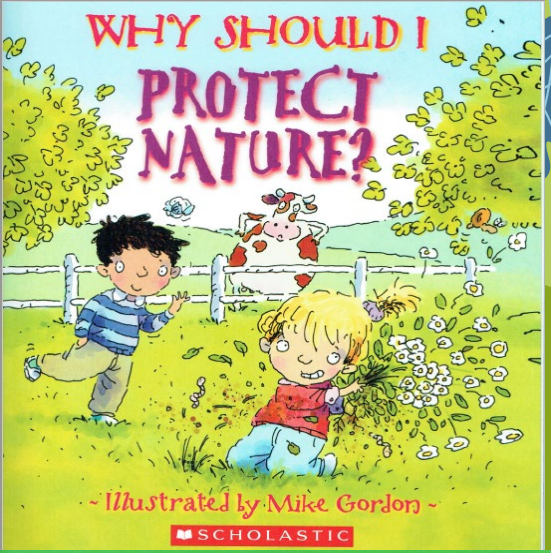
Learning from the Land

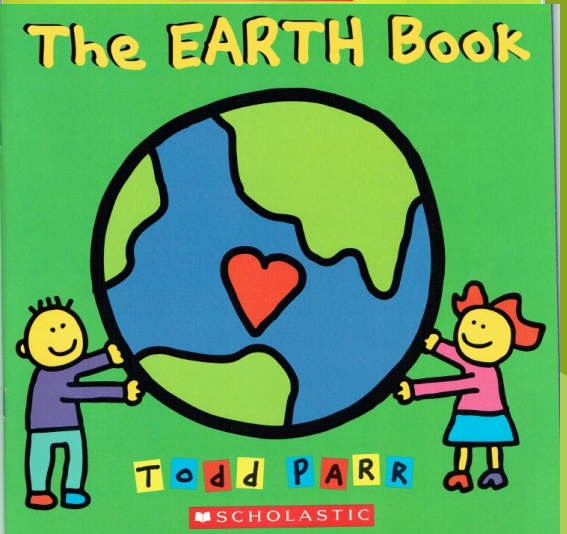
Treaty 7 Storytime | Trudy Wesley: “Ne Îethka Makochî Chach” | Calgary Public Library

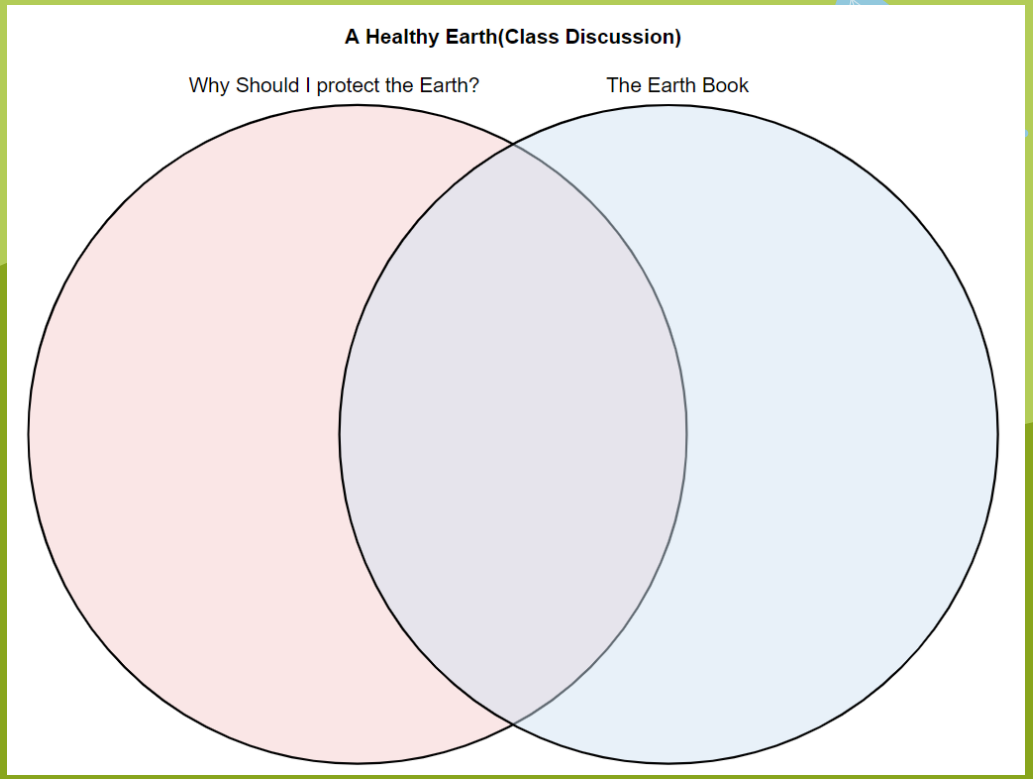
Turtle Island



Aski and Turtle Island - Book For Kids Read Aloud







What have we learned about our earth safety? Future?

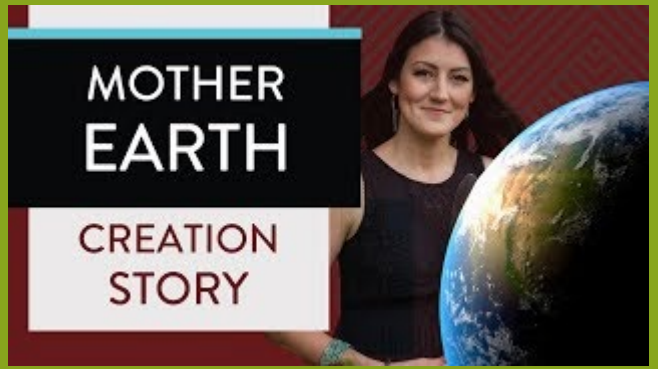
I Am Earth (starter video)

I AM EARTH READ ALOUD by Rebecca and James McDonald

https://www.youtube.com/watch?v=xZj5rdZ2oBw

Sacred Relationship Short

Connecting to the Spirit of Mother Earth



Creation Story 🌎 (The MOTHER Earth Creation Story - Indigenous Teaching)

Integrating Scientific Methods

Photo by Zoe Schaeffer on Unsplash

Scientific Method	
Investigation Grade 2	**Investigation Grade 3**
Steps followed during an investigation include ● asking questions ● making **predictions** ● planning the investigation (CS) ● **observing** and **recording data** ● **analyzing** data reaching **conclusions** ● **discussing** observations and **conclusions**	Grade 3 Scientific Methods focuses on ● Data ● Data Accuracy & Trustworthiness ● Data Sources ● Data Analysis

Integrating Computer Science

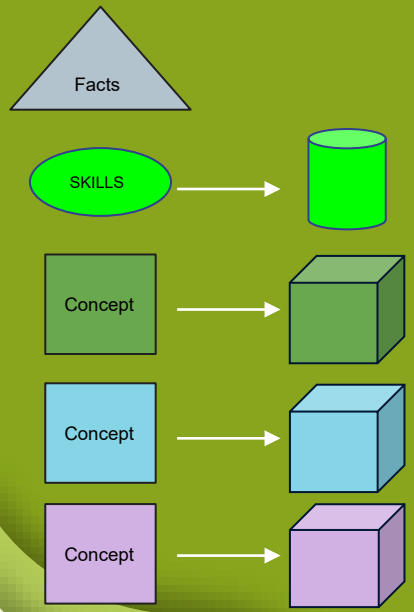
Computer Science Grade 1	Computer Science Grade 2	Computer Science Grade 3
Skills	**Knowledge**	**Skills**
Follow instructions with two or three steps given in different forms. Sequence (order) two or three instruction steps to achieve a desired outcome.	**Instructions** can be created to be precise, reliable, and efficient to achieve the desired outcome. **Concepts** • precision • reliable • efficient • debugging • outcome • repeated steps	**Computational Thinking** • **breaking a task into smaller chunks** • **finding patterns and similarities in tasks** • **identifying the important details when reading or solving a problem** • **designing instructions** • **working backward if a mistake is made** **Creative Thinking**

Assessment

Photo by imagenation.jpeg on Unsplash

Phases of Assessment

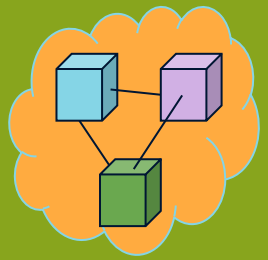
Surface



Pre Assessment

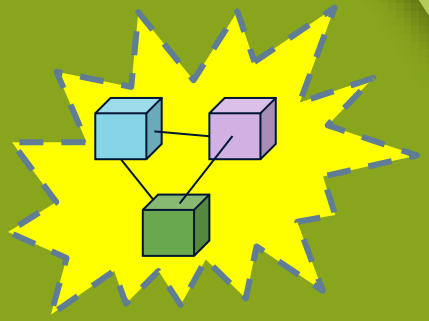
FORMATIVE ASSESSMENTS

Deep



FORMATIVE ASSESSMENTS

Transfer



SUMMATIVE ASSESSMENT

Using Skills and Procedures as Assessments

Surface: Fact Surface: Conc ept or Skill Deep: Making Connections or Testing (Applying) Connections

3LS1.1: **Represent** various **food chains** in local and other Canadian environments.
3LS1.2: **Classify** animals in a food chain as **carnivores** & **herbivores** & **omnivores**.
3LS1.3: **Investigate and discuss** how **plants** and **animals** respond to **stimuli** in their **environments** in order to **survive (survival).**
3LS1.4: **Reflect on** and **share** **actions** that can be taken to protect **(protection) plants** and **animals** in local **environments.**
3LS1.4: **Demonstrate** **respectful (respect) and safe (safety) practices** during observations of plants and animals in the local environment.
3LS1.4: **Explain** **interconnections (relationships)** in the **environment** including *(how plants depend on animals and how animals depend on plants to survive)* **interdependence.**
3LS1.4: **Discuss** First Nations & Métis & Inuit connection with the environment to their knowledge of and relationships with plants and animals.*

Resources


Photo by imagenation.jpeg on Unsplash
Montagne de Bruisson
Mourèze
PR
29
MOYEN
3H • 7.5KM
SITUATION
PARKING
DÉNIVELÉE

Sparkle Box

Resource to consider

Additional resources to Supplement your lessons

Animals on the Move - NG Science

Living and Non-Living Things | Science for KIDS!

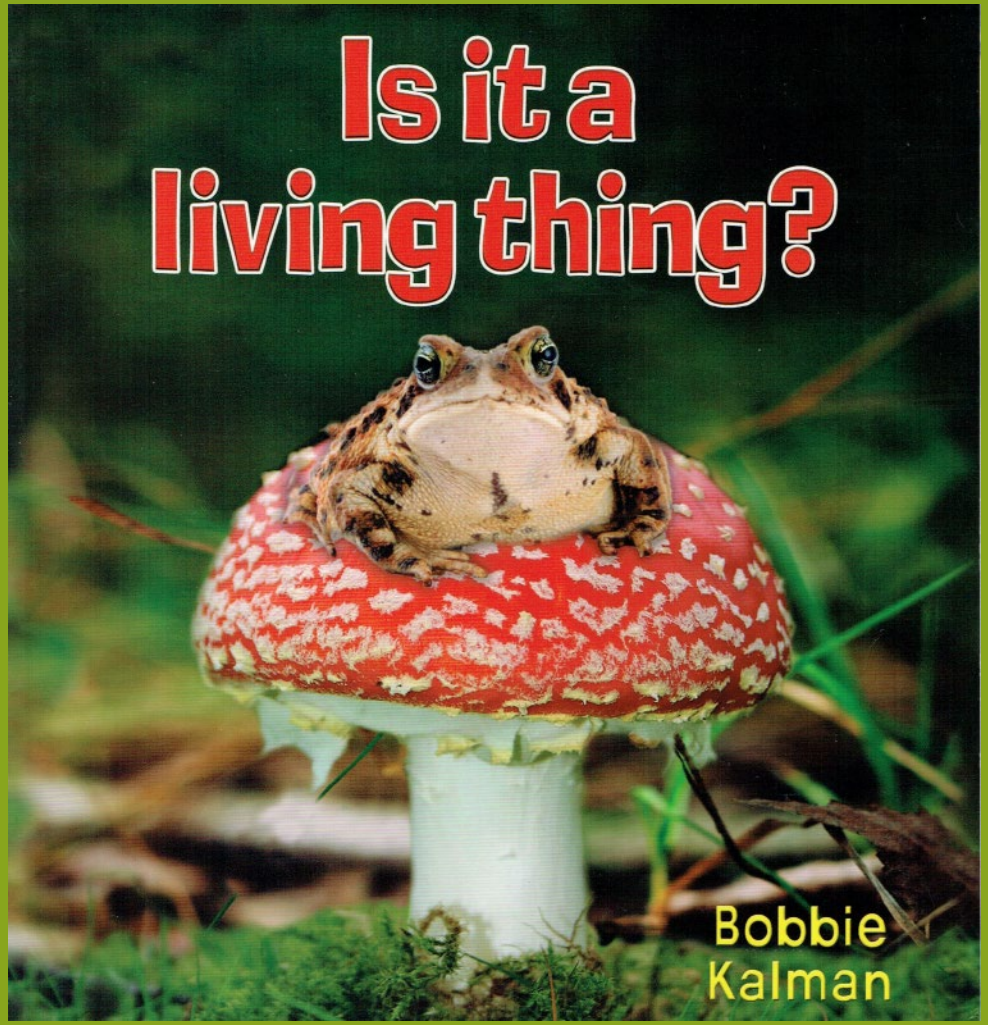
Living vs Nonliving
PBS Learning Media Lesson Plan

The needs and characteristics of Living Things
Lesson Plans and additional resources
Source: mrcollinson.ca

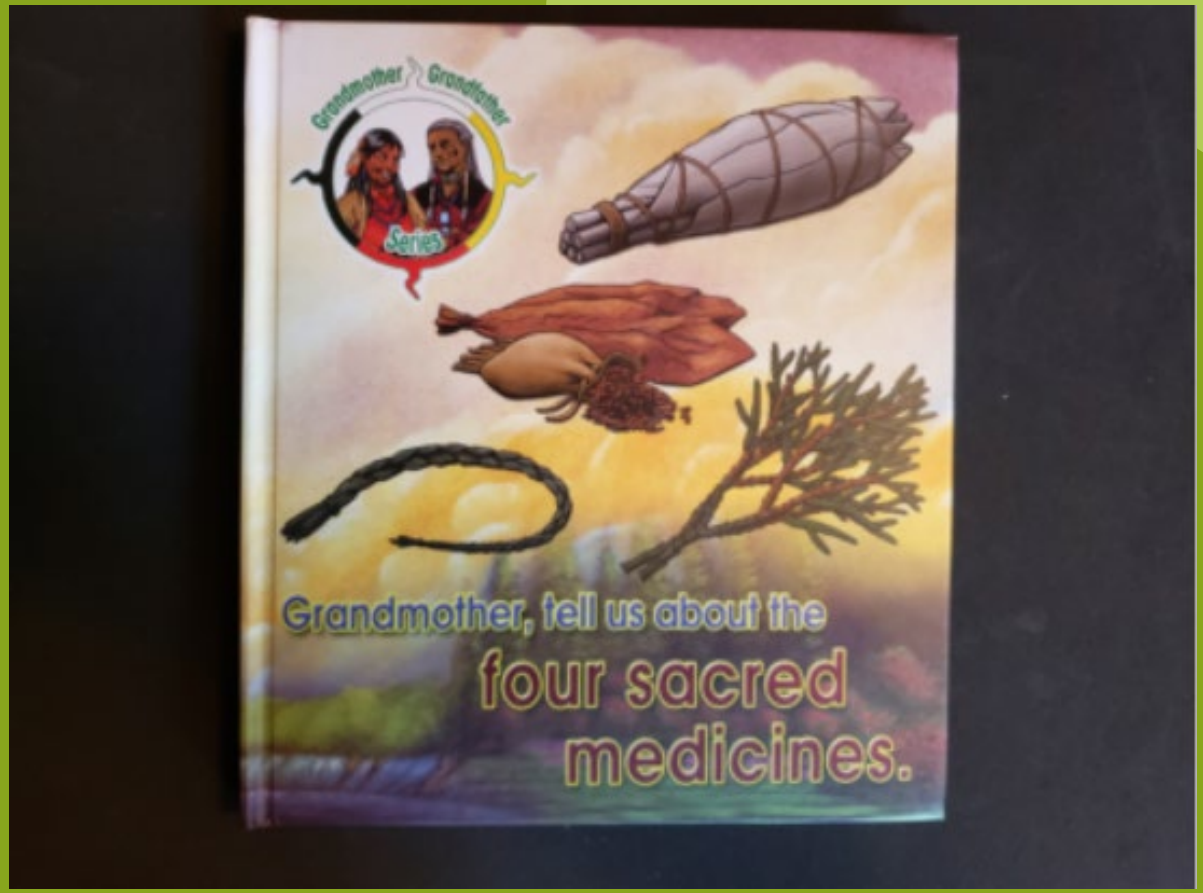
Lesson using the Inquiry Approach - 5E's

Is it a living thing?

Author: Bobbie Kalman
Publisher: Crabtree Publishing Company
ISBN 9780778732549



A Compare and Contrast Book (with a teacher guide)



Grandfather and Grandmother Series - NativeReflections.com

Sample: The Achievement Chart for Science and Technology, Grades 1–6 Ontario Ministry of Education

Knowledge and Understanding – Subject-specific content acquired in each grade (knowledge), and the comprehension of its meaning and significance (understanding)				
Categories	**Level 1**	**Level 2**	**Level 3**	**Level 4**
	The student:			
Knowledge of content (e.g., facts, terminology, definitions)	demonstrates limited knowledge of content	demonstrates some knowledge of content.	demonstrates considerable knowledge of content	demonstrates thorough knowledge of content
Understanding of content (e.g., concepts, ideas, theories, principles, procedures, processes)	demonstrates limited understanding of content	demonstrates some understanding of content	demonstrates considerable understanding of content	demonstrates thorough understanding of content
Thinking and Investigation – The use of critical and creative thinking skills and inquiry and problem-solving skills and/or processes				
Categories	**Level 1**	**Level 2**	**Level 3**	**Level 4**
	The student:			

Thanks!

Do you have any questions?

Chris Zarski (czarski@carc.ab.ca)
Ted Zarowny (ted.zarowny@erlc.ca)