Science
Grade 6
Session 2: Living Systems

May 9, 2023

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Alberta Regional Professional Development Consortia
Adult learning for students' sake

Central Alberta Regional Consortium

Edmonton Regional Learning Consortium

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**

Backgrounder

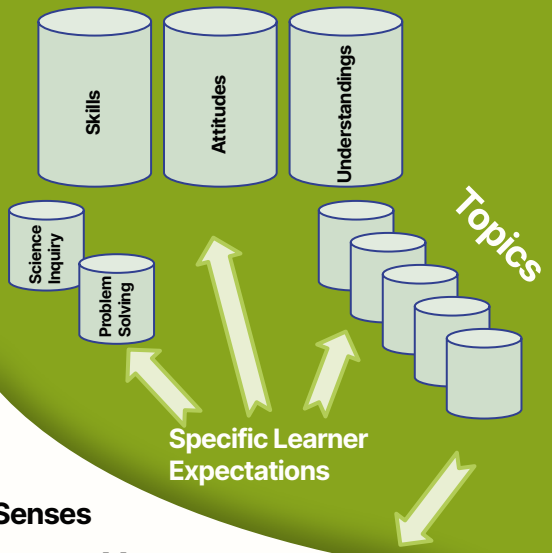
Photo by Geoffrey Baumbach on Unsplash

Potential of A Smartphone

Cell Phone by Laymik from Noun Project

internet by Gem Designs from Noun Project

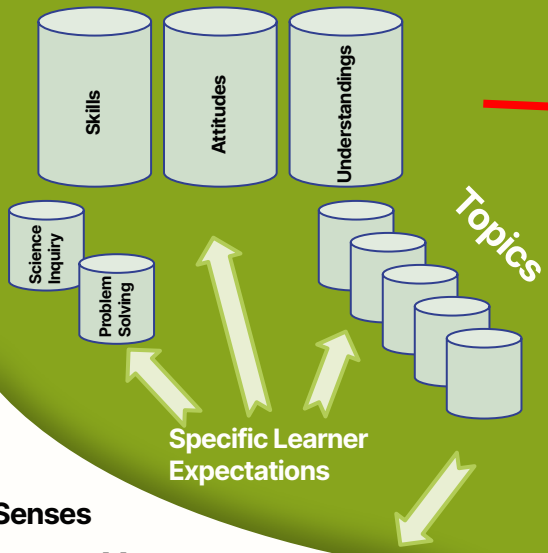
Potential of A Curriculum (1996)

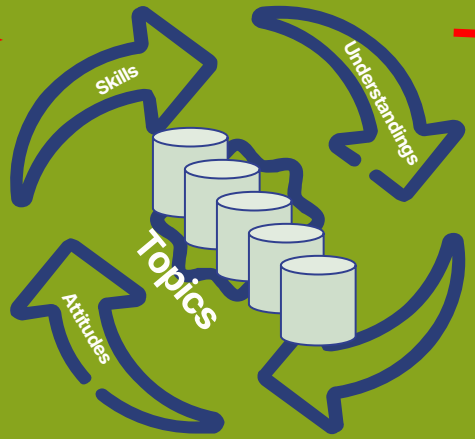


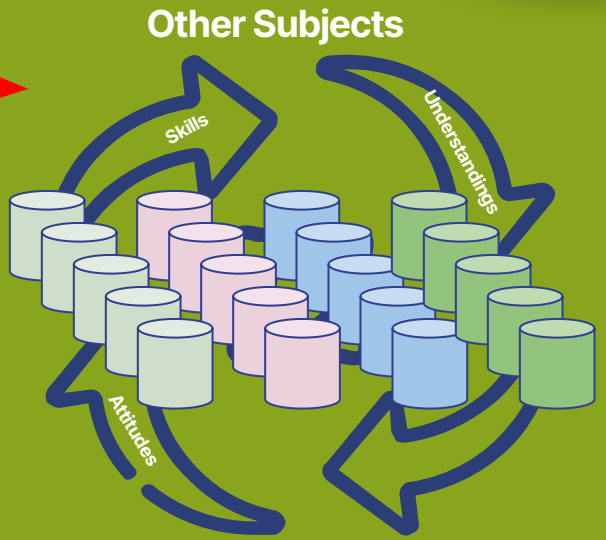
Senses
Magnet
Seasonal Change
Food Chain
Magnet
Need
Rocks
Material

Science Vocabulary

Potential of A Curriculum (1996)







Senses
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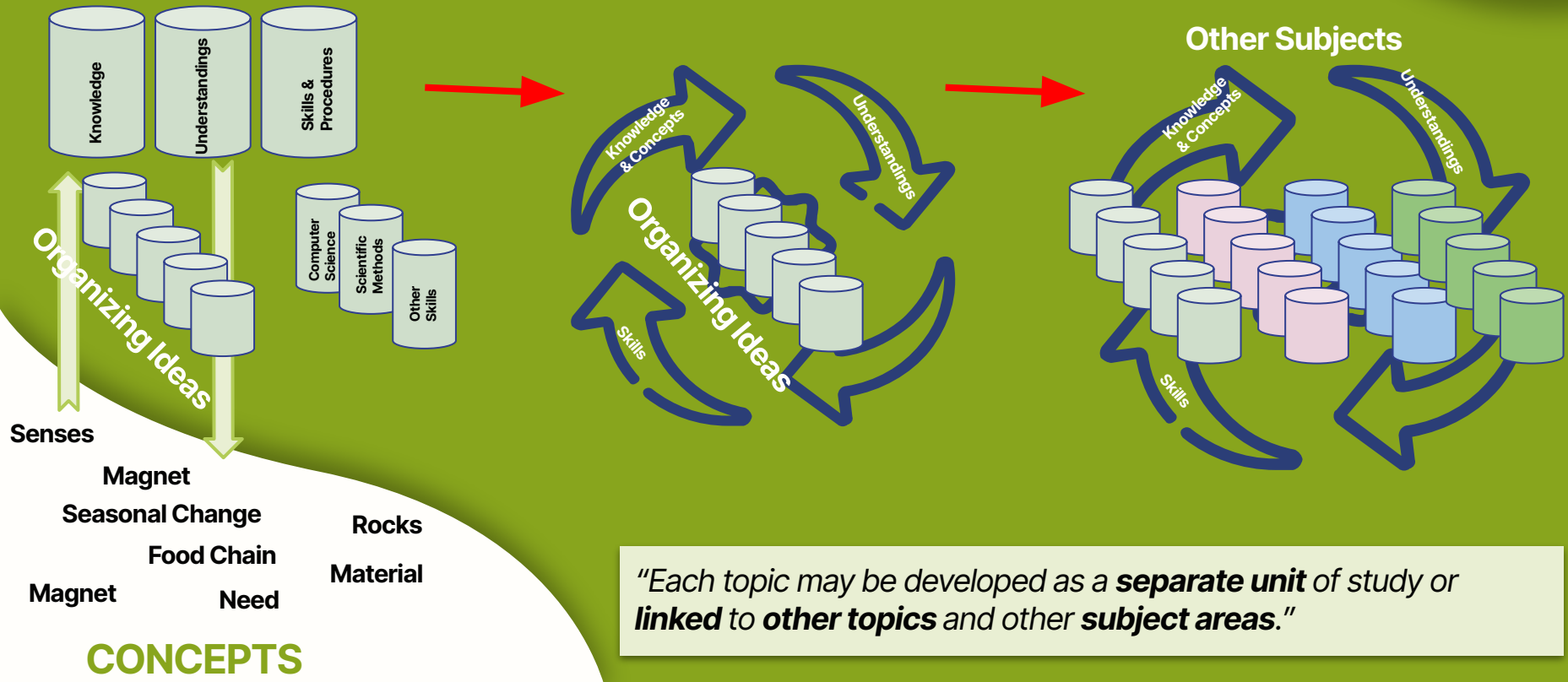
Rocks

VOCABULARY / TERMS

*"Each topic may be developed as a **separate unit** of study or **linked** to **other topics** and other **subject areas**."*

Potential of A Curriculum (2023)



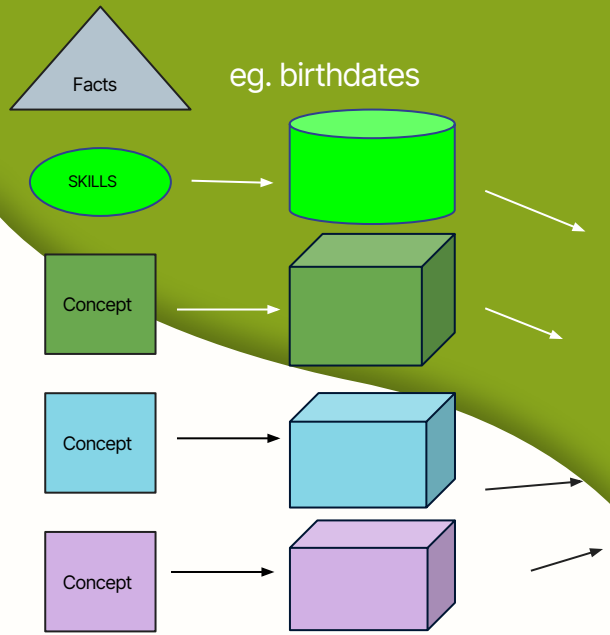
*"Each topic may be developed as a **separate unit** of study or **linked** to **other topics** and other **subject areas**."*

Phases of Learning

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

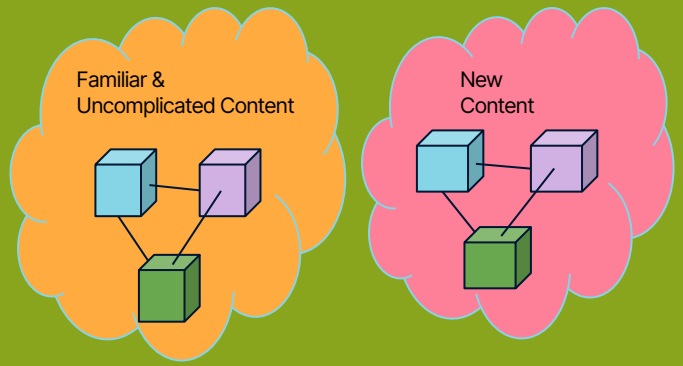
Surface

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



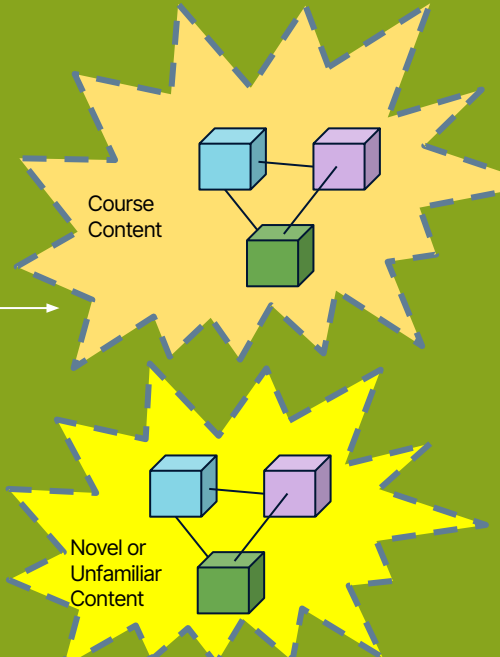
Deep

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.

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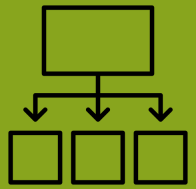
Orange: Photo by Dessy Dimcheva on Unsplash

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	**In what ways are ecosystems complex?**	
Learning Outcome	**6LS1: Students investigate the characteristics and components of and interactions within ecosystems.**	
Knowledge	Understanding	Skills & Procedures
Ecosystems are complex systems of biotic and abiotic components. Biotic components of an ecosystem include plants, animals, and micro- organisms.	The components and characteristics of an ecosystem affect the diversity of the organisms that live in it.	Represent (representation) and connect (connection) the biotic and abiotic components of an ecosystem. Locate and responsibly examine (examination) a local ecosystem in nature using appropriate materials and tools.

Concepts

Guiding Question	**In what ways are ecosystems complex (complexity)?**	
Learning Outcome	**6LS1: Students investigate (investigation) the characteristics and components of and interactions within ecosystems.**	
Knowledge	Understanding	Skills & Procedures
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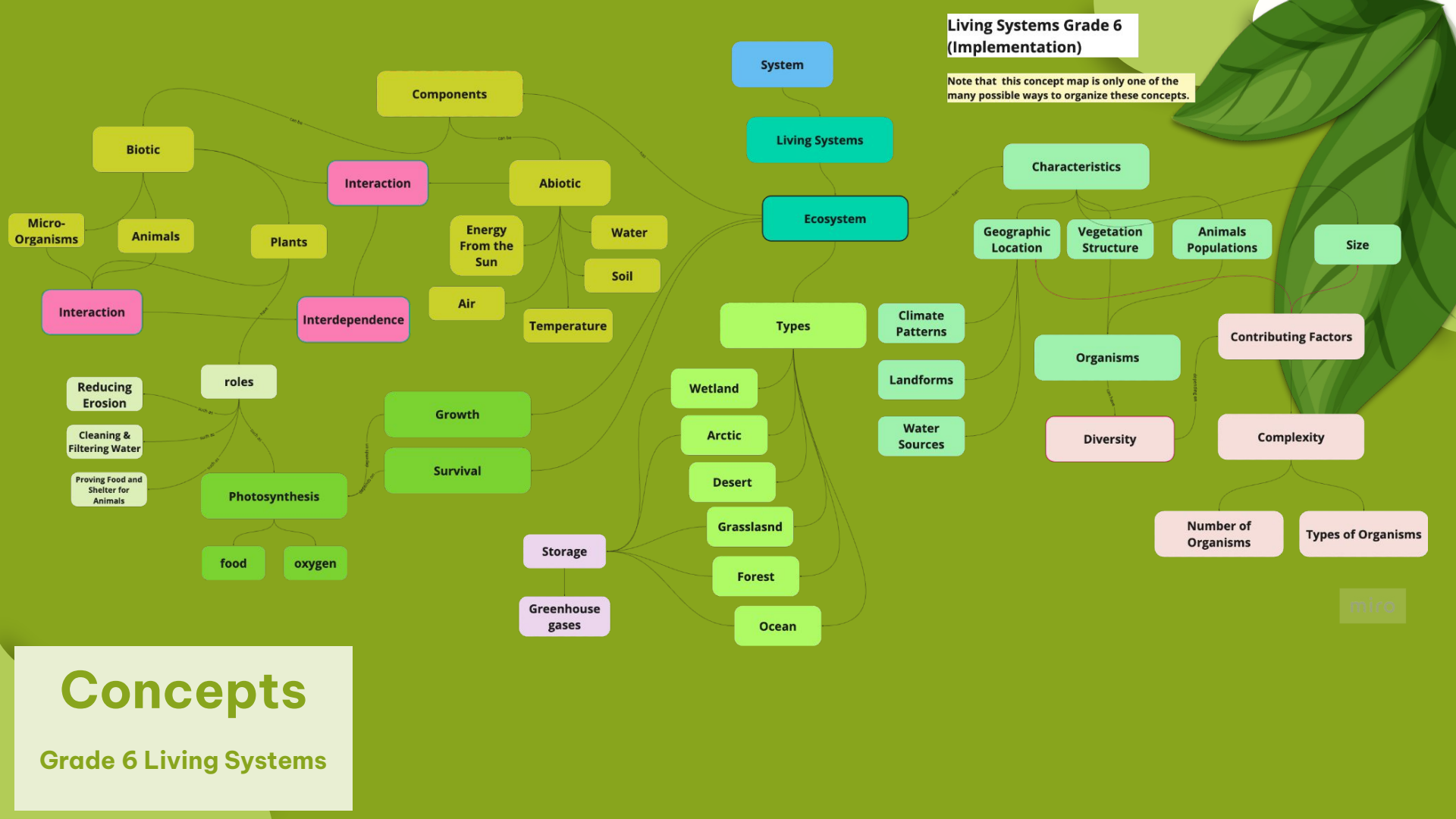

Concepts

Grade 6 Living Systems

Key Concepts

Grade 6 Living Systems

- Ecosystem
- Abiotic Component
- Biotic Component
- Characteristic
- Diversity
- Complexity
- Component

Previous Grades

- System
- Plant
- Animal
- Survival
- Growth (Life Cycle)
- Organism
- Interaction
- Environment
- Relationship

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

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

Examples

Concepts

- Living and Non-Living Things
- Plants
- Animals
- Function

Review of Key Concepts from Grade 1 & 3

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?

Applications of Card Sort to Grade 4

Using your cards, sort (classify) the organisms according to:

a) Appearance - have students describe what appearance is common to each group they created. Make a list of words (classifications) that students use on the board to help students understand “appearance” related characteristics.

Repeat the same for

b) Habitat

c) Structures. You may wish to use the “features” poster from Grade 1 to assist students in identifying structures.

Applications of Card Sort to Grade 6

Sort your organisms based on the type of ecosystem they might live in. Be prepared to describe the ecosystem and why you placed the organism in it.

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jonathan-cooper-fTpzd-PjyDQ-unsplash


brett-jordan-xG5calE3tLU-unsplash


Photo by Zamurovic Brothers from Noun Project


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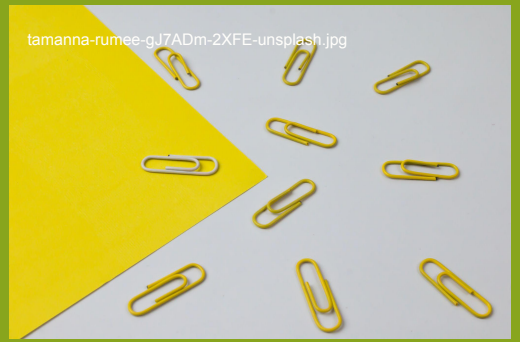
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Card Sort (Concept: Function)

Function: the job that something or someone does.

Surface Strategy

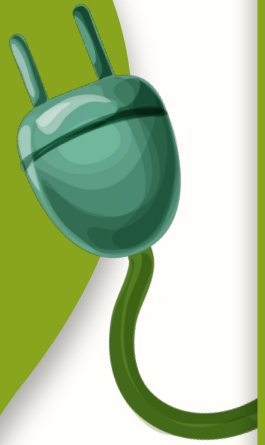
Frayer Model

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

This model is often used in conjunction with another learning activity where students are introduced to the concept.



Examples
Concepts

Four sample starting points for Frayer Models

System (see next slide)

Component

Function

Characteristic

Interaction

Organism

Complexity

CONCEPT: System

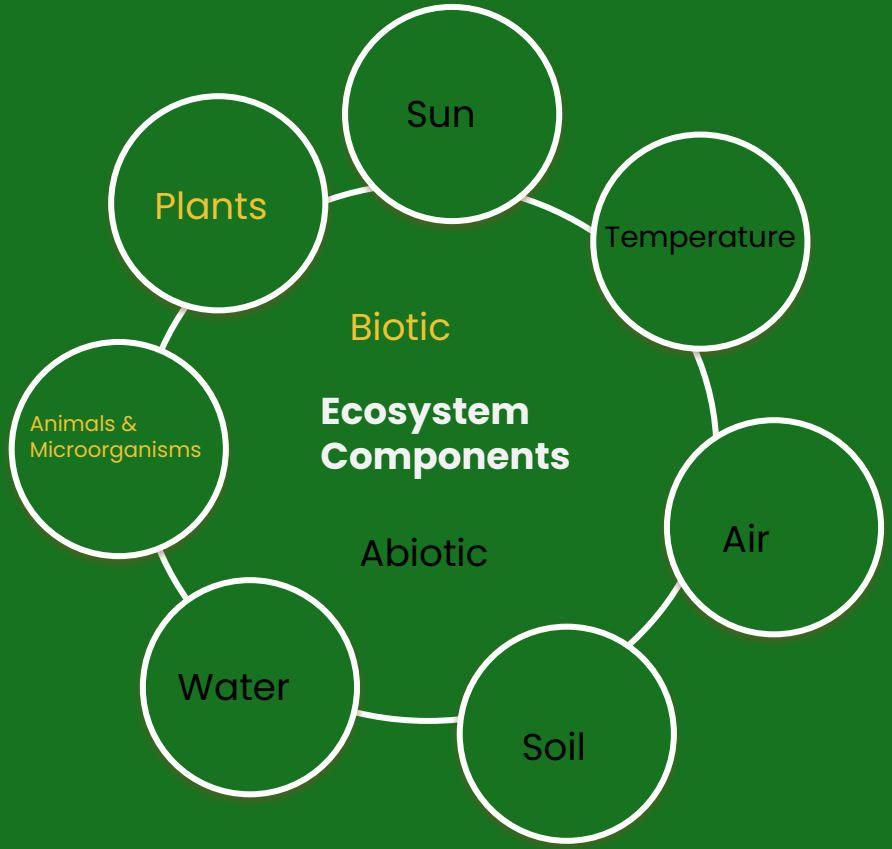
A system is a group parts or components that have a function and interact or work together to carry out a purpose to solve a problem.

1. View the Video: https://www.youtube.com/watch?v=GOMIBdM6N7Q
2. Complete the table.
3. What is a good name for this **system?**
4. What is the **purpose** of his **syststem?**
5. Students complete this Frayer Model.

Part	Function	Describe the Interaction
Coffee Mug		
Fuse		
Hair Dryer		
Roll of Tape		

Ecosystem Components

Biotic



Abiotic

Represent the connections between components.

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 pre-arranges the examples into groups of examples of the concept, and non-examples.

Examples and non-examples 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 & Concept Map

Dependence

Diversity

Investigation

Conclusion

Analysis

Criteria

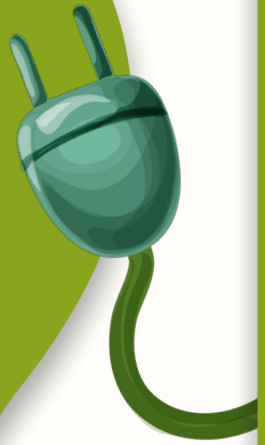
Prediction

Observation

Surface / Deep Strategy

Spectrum Sort

In a spectrum sort, students place images, examples, etc. on a spectrum and justify its placement.



Examples

Concepts

Complexity

Sample Spectrum Sort

Place the following somewhere on the spectrum.
Justify your choice.

Group 1: stone, animal, plant

Group 2: hopscotch, jogging, basketball

Low Complexity

High Complexity

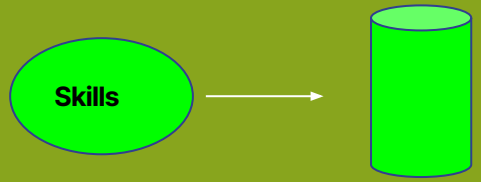
Complete a Frayer Model on "complexity."

Skills & Procedures

Photo by Lukasz Szmigiel on Unsplash

Surface Level

Instructional Approaches & Activities



Knowing the steps/procedures.

Performing the steps/procedures.

Living Systems

Investigate
(controlled experiment)

Represent (create a model or simulation)

Relate

Compare & Contrast

Examine

Discuss

Skills and Procedures

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

6LS1.1: **Represent** and **connect** the biotic and abiotic components of an ecosystem.
6LS1.1: **Locate and responsibly examine** a local ecosystem in nature using appropriate materials and tools.
6LS1.1: **Relate** the preservation of various ecosystems to possible actions that address climate change.
6LS1.1: **Create a model or simulation to represen**t a chosen ecosystem and its characteristics.
6LS1.1: **Compare** the characteristics of two ecosystems.
6LS1.1: **Examine** the diversity of animals and plants in various ecosystems in relation to abiotic components.
6LS1.2: **Explain** the process of photosynthesis and its importance in an ecosystem.
6LS1.2: **Design and perform a controlled experiment** to demonstrate the importance of light to photosynthesis.
6LS1.2: **Design and perform a controlled experiment** to show that a plant is releasing oxygen.
6LS1.2: **Design and perform a controlled experiment** to show that a plant contains starch.
6LS1.3: **Examine** ways that plants and animals rely on each other to meet their needs.
6LS1.3: **Discuss** plants that are considered sacred to First Nations and Métis

Computer Science at a Glance

Grade K-2	Grade 3	Grade 4	Grade 5	
Instructions	Computational Thinking Creative Thinking	Design Processes Design uses algorithms (sequence of instructions) to produce artifacts.	Design can be used by humans or machines to meet needs. ● Design can be used to create algorithms and translate them into code ● Visual block-based languages & loops. ● Design functionality. ● Design usability.	Process of Abstraction. Structures used in coding ● sequences ● conditionals (if-then-else statements) ● loops Positive or Negative Impacts

Scientific Methods at a Glance

Grade 2

Steps followed during an investigation include

- asking questions
- making predictions
- planning the investigation
- observing and recording data
- analyzing data
- reaching conclusions
- discussing observations and conclusions

Grade 3

Focus on observing and recording data (accuracy, objectivity)

Grade 4

Relationship between data (qualitative; quantitative) evidence (reliability;validity) and knowledge.

Grade 5

Evidence, ethics, controlled experiment (dependent and independent variables)

Grade 6

Examine the role of explanations in science.

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

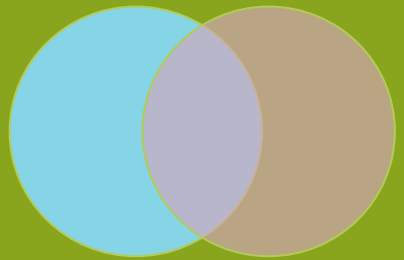
Compare & Contrast

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.

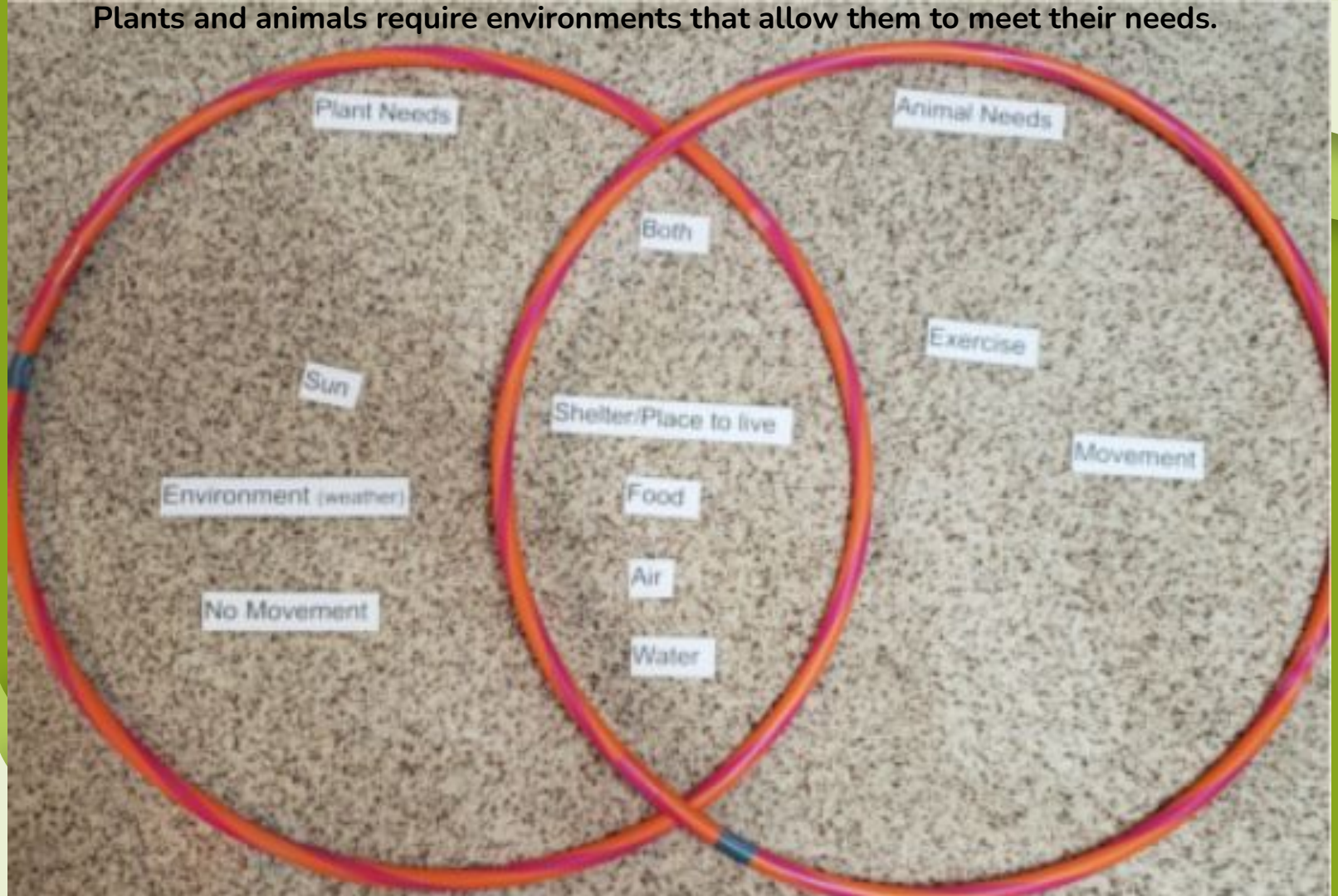


Examples

Skills & Procedures

Compare & Contrast

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



Compare and Contrast

Similarities/ Differences

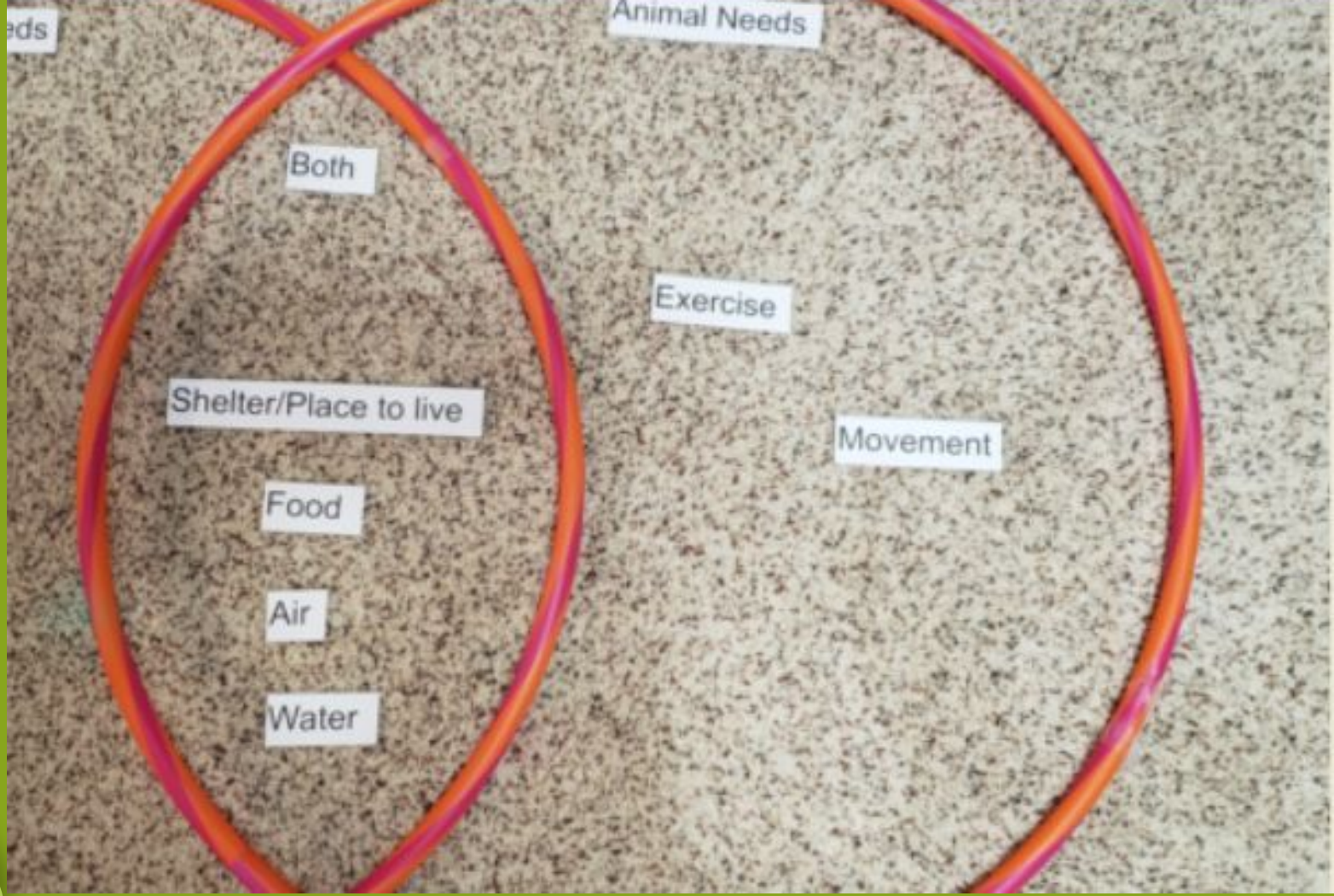
What is a '**need**'?

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

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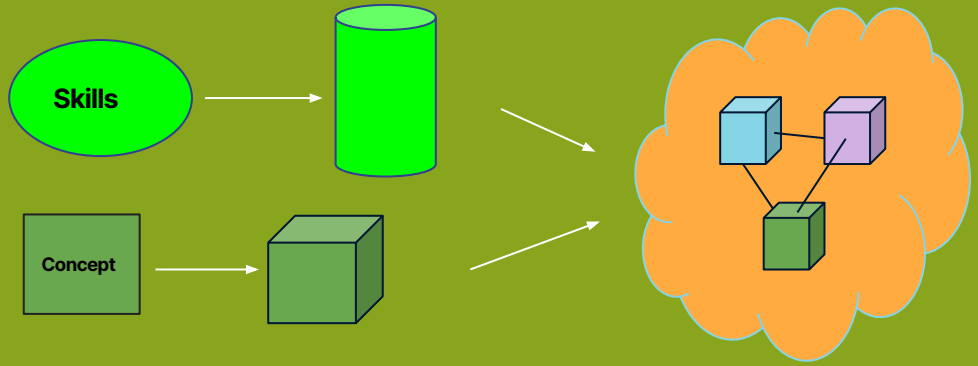
Deep Level

Instructional Approaches & Activities



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

Surface

Deep

Understandings

6LS1.1: The **components** and **characteristics** of an **ecosystem** affect the **diversity** of the **organisms** that live in it.

6LS1.2: Photosynthesis is a **process** that supports **growth** and **survival** in a variety of **ecosystems.**

6LS1.3: There are significant **relationships** between **plants** and **animals** within **ecosystems**.

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

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.

(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

6LS1.1: Understanding

The **components** and **characteristics** of an **ecosystem** affect the **diversity** of the **organisms** that live in it.

Deep Strategy

Comparing and Contrasting

Examples

Understanding

6LS1.1:
The components and characteristics of an ecosystem affect the diversity of the organisms that live in it

Understanding : The **components** and **characteristics** of an **ecosystem** affect the **diversity** of the **organisms** that live in it

Skills & Procedures (Compare the characteristics of two ecosystems)

Focus/Criteria (Characteristics of the Ecosystem)	Ecosystem A	Ecosystem B	Same or Different?
Geographic Location			
Size			
Complexity			
DESCRIBE THE DIVERSITY			
Compare/Contrast Scale: Different > Somewhat Different > Somewhat Similar > Similar			
Conclusion:			

6LS 1.2

Ecosystems: Components and Characteristics. How do they affect the diversity of organisms?

What makes this home?

Consultant

Leanne Iacuone, M.A.T., NBCT, ATC
Riverside School District

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pages cm
Summary: "There's no place like home! But why is home so great? It's a place that meets your needs. You feel safe. The food is good. And you have somewhere to sleep. But what is good for you is very different than what camels or fish need. They need different things to survive and make their own home, sweet home!"—Provided by publisher.
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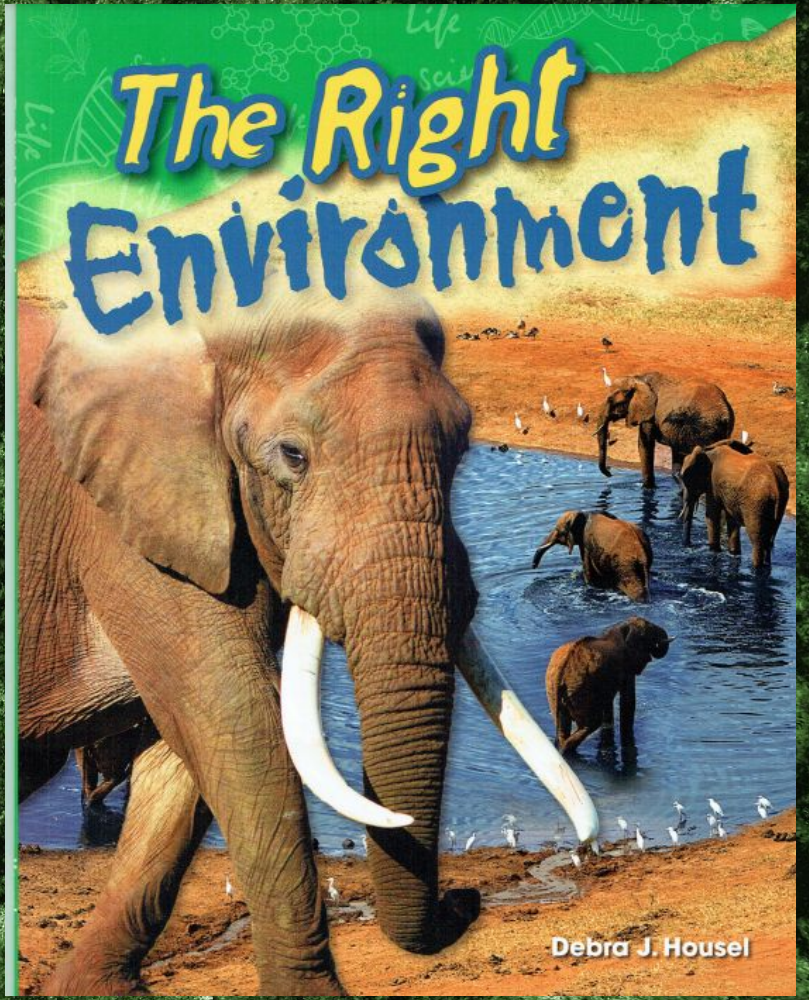


6LS 1.2

What are the characteristics of ecosystems?

@Getty Images

(K. Elliott, NOAA, Hidden Ocean 2005)

Brenon Jackson Dias Vertelo

Climate patterns
Size
Vegetation structure
Animal populations
Geographic location

How do characteristics of an ecosystem affect the diversity of organisms?

Surface to deep - Research and Analyze.


The
Grassland
Ecosystem!


esa
THE ARCTIC


NGScience
Desert Ecosystems

6LS1.2: Understanding

Photosynthesis is a **process** that supports **growth** and **survival** in a variety of **ecosystems.**

You could use the following book as a Case Study reading it before any information relating to Photosynthesis has been shared. Use the book to draw out what students heard, learned and still wonder.

Photosynthesis

Torrey Maloof

Consultant

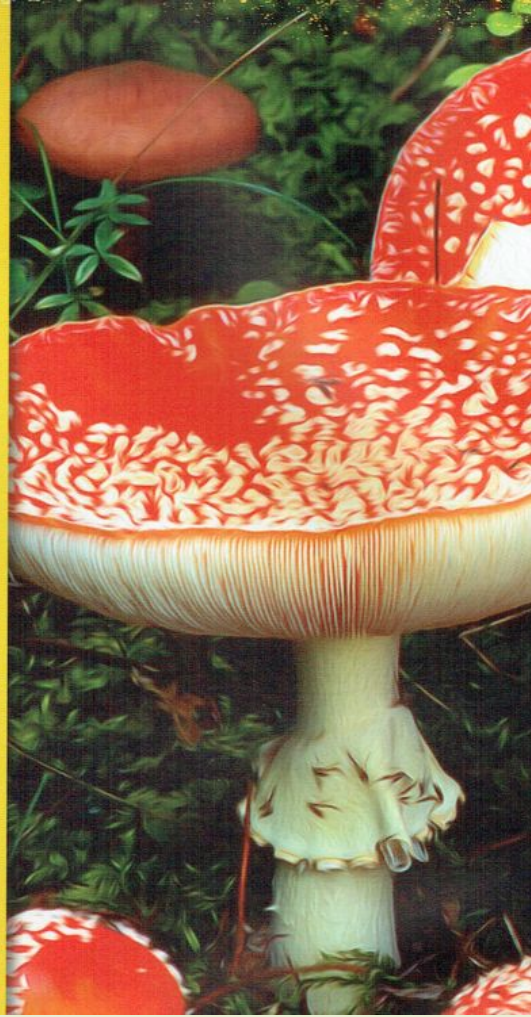
Leanne Iacuone, M.A.T., NBCT, ATC
Riverside Unified School District

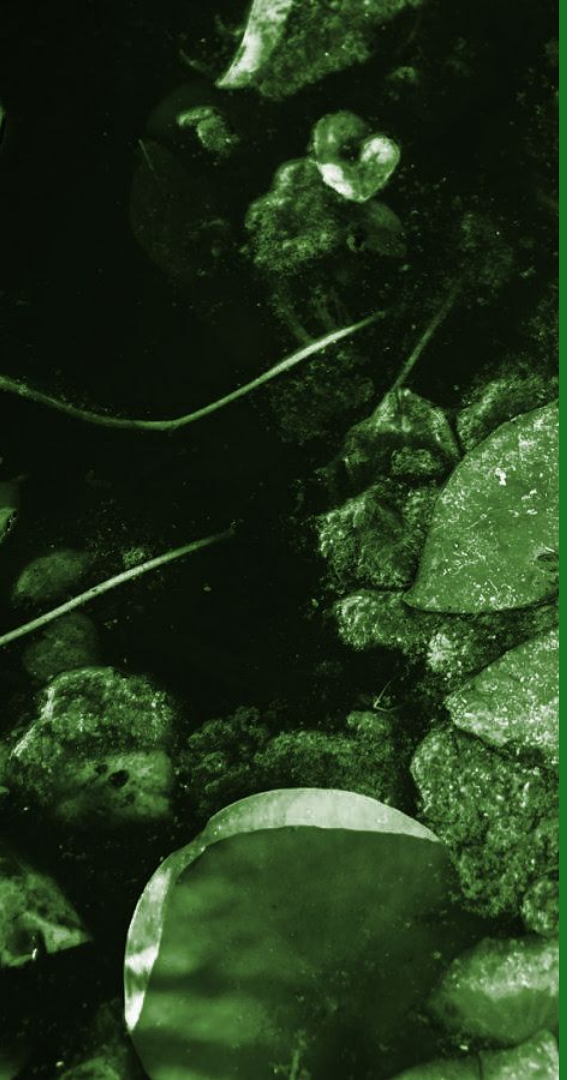
Image Credits: p.27 Blend Images/Alamy; pp.20–21 (bottom) Cultura Creative/Alamy; pp.12–13 (illstrations) Tim Bradley; pp.8–9 (background) Lonely Planet Images/Getty Images; pp.8–9 Inhabitos; pp.2–4, 6–7, 10–11 (bottom), 12–14, 15 (bottom) 19, 22–25 (background), 25–26, 30–32 iStock; p.17 (top) Nossant Jean Michel/SIPA/Newscom; p.21 (top) Reuters/Newscom; p.5 NOAA; p.20 (left) NOAA MESA Project; p.15 (top & middle) Diego Stocco/Gianfilippo De Rossi; p.11 (top) Fletcher & Baylis/Science Source; pp.28–29 (illustrations) Janelle Bell-Martin; all other images from Shutterstock.

Library of Congress Cataloging-in-Publication Data

Maloof, Torrey, author.
Photosynthesis / Torrey Maloof.
pages cm
Summary: "Have you ever seen a tree at the grocery store buying dinner? Probably not! Plants create their food in a very different way. They make their own food through photosynthesis"—Provided by publisher.
Audience: K to grade 3.
Includes index.
ISBN 978-1-4807-4640-4 (pbk.)
ISBN 1-4807-4640-1 (pbk.)
ISBN 978-1-4807-5084-5 (ebook)
1. Photosynthesis—Juvenile literature.
2. Plants—Juvenile literature. I. Title.
QK882.M285 2015
572.46—dc23

2014034231



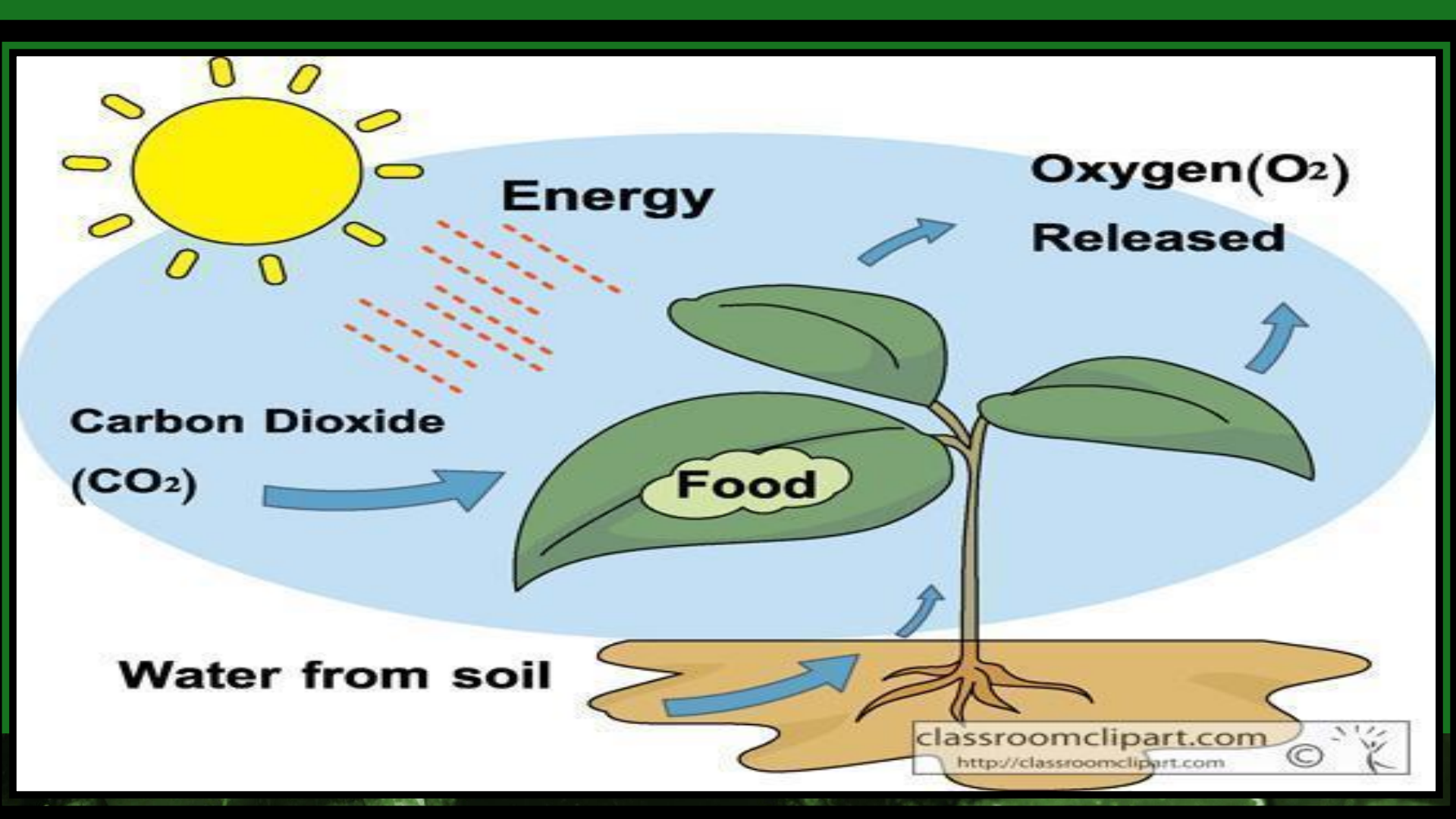


Life Giving Air

Photosynthesis

Photosynthesis

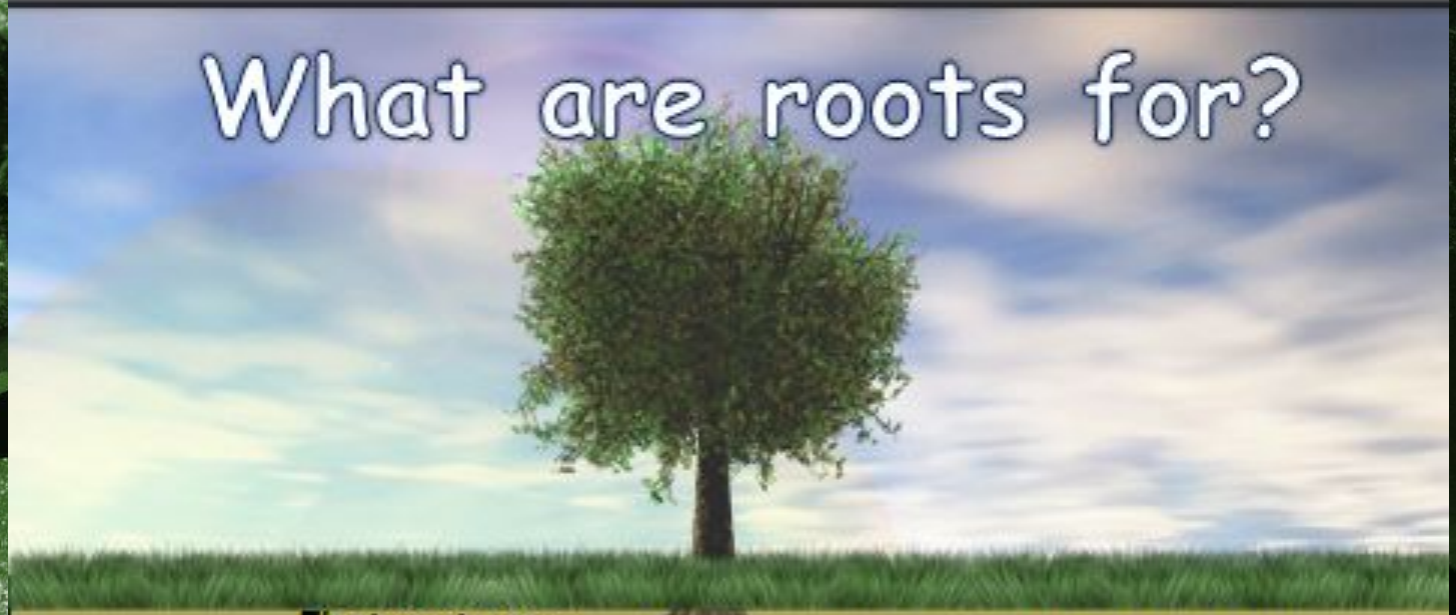
Photo (light) synthesis (making something)


Energy
Oxygen(O_2)
Released
Carbon Dioxide
(CO_2)
Food
Water from soil
classroomclipart.com
http://classroomclipart.com

Parts of a plant

- **Root** is for anchorage and uptake of water and minerals.
- **Stem** supports the rest of the plant and contains the vascular bundles (**xylem** which moves water around the plant) (**phloem** which moves sugars around the plant).

What are roots for?



First roots grow

They need to go into the soil

The soil has water

The roots have little hairs

They also get the water

And send it through the roots

They grow from the seed

To help keep the plant still

And it has nutrients

They grab the nutrients

They suck it up!

Up to the plant!

Parts of a plant

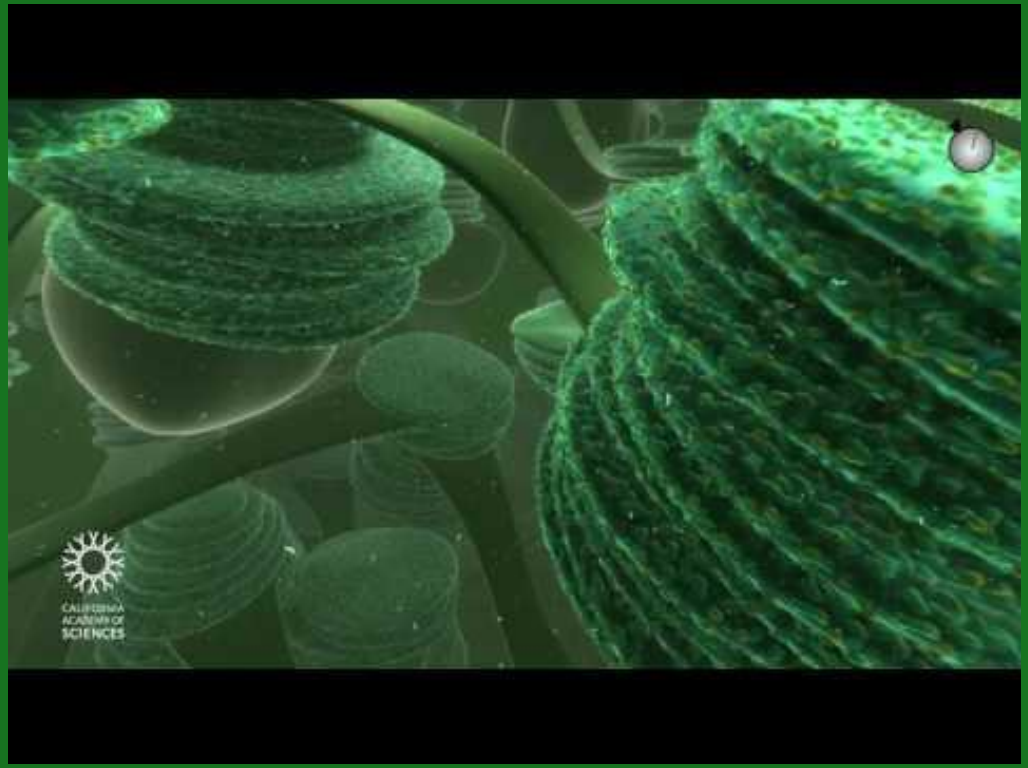
- **Leaf** this is where sunlight turns **water** and **carbon dioxide** into **glucose** and **oxygen** in the presence of **chlorophyll**.
- **Flower** is where **pollination** takes place and seed production occurs. This ensures the life cycle of the plant continues.

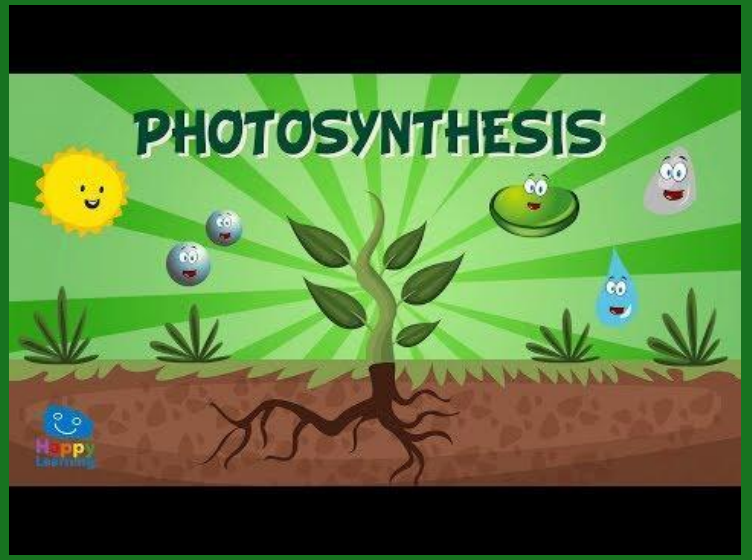
leaf-

the part of a plant that uses sunlight and air to help the plant make food

Getty images

Travelling Inside a Leaf





Light is absorbed into the leaf by cells called chlorophyll

Oxygen is released back into the atmosphere

$$\text{Light} + CO_2 \longrightarrow \text{Sugars} + O_2$$

Carbon Dioxide is taken into the plant through a whole in the leaves

The sugars produced is cellulose, for growth, and glucose, for food.


PHOTOSYNTHESIS
FOR KIDS

Transfer

- **Represent** the **connections (relate)** between components of two new ecosystem by recording observations using words & tables & graphs & diagrams & photographs or other representations.

How does *Wahkohtowin* within an ecosystem affect the diversity of organisms?


GRAPHIC LIBRARY
EXPLORING
ECOSYST
WITH
MA
GRAPHIC LIBRARY
UNDERSTANDING
PHOTOSYNTHES
WITH
MAXAX
SUPER SCIEN
by Lian
illustrated by Richard Dominguez and Charles
GRAPHIC LIBRARY
UNDERSTANDING
GLOBAL WARMING
WITH
MAX AXIOM
SUPER SCIENTIST
by Agnieszka Biskup
illustrated by Cynthia Martin and Bill Anderson

Deep Strategy

Investigation

Investigations are useful strategies for developing understandings or deepening understanding.

Examples

Understanding

Understanding 6LS1.1

The components and characteristics of an ecosystem affect the diversity of the organisms that live in it.

Example: Investigation (Represent) to develop/deepen understanding

Skills & Procedures: 6LS1.1: **Represent and connect** the biotic and abiotic components of an ecosystem.

Investigating Problem: How do the components and characteristics of an ecosystem affect the diversity of the organisms that live in it? (Understanding)

Sample Investigation Procedures:http://www.edugains.ca/resourcesFL/Resources/TeachingLearningExamples/Elementary/Grade6_Biodiversity.pdf

Note: This link provides further investigations that meet all the Skills and Procedures in 6LS1.1 except modelling. Activities could be divided into groups.

6LS1.3: Understanding

There are **significant relationships** between **plants** and **animals** within **ecosystem**

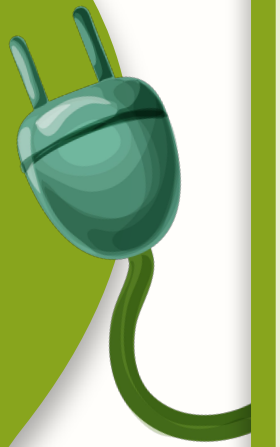
Surface - Deep - Transfer Strategy

Case Study

Case studies provide students with real-world situations or “cases.” provide students with either a familiar or new context.

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

- surface level
- deep level
- transfer level



Example

Using Wetlands to model the Skills and Procedures and connect the Knowledge to the Understandings.

Case Study approach
Could be the first time any of the concepts are introduced or it extends the card sort (eg. living/non-living; plants/animals, etc)

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

Case Study through
an Indigenous Lens

BEAUTIFUL WETLANDS

02 / 02 / 2022

Plants play a variety of roles in an ecosystem, including

- photosynthesizing
- cleaning and filtering water
- reducing soil erosion
- providing food and shelter for animals Humans, like all animals, depend on plants to produce oxygen used for breathing.

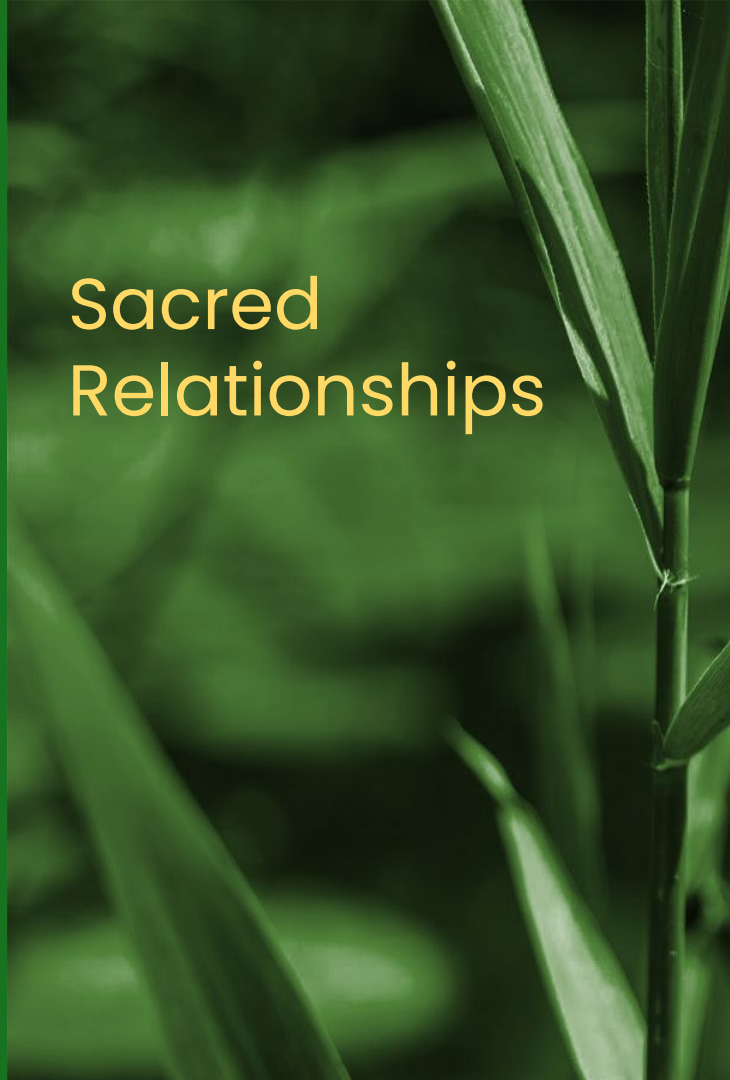
Humans also rely on plants in various other ways, including for

- food
- clothing
- paper
- building materials
- medicine
- fuel

Plants depend on animals, including humans, to generate the carbon dioxide they need to survive. Certain plants are considered sacred to First Nations and Métis, including

- Sage
- sweetgrass
- cedar
- tobacco

The offering of tobacco signifies reciprocity relationships with the plant giving back to the land respect for the plant a sustainable relationship



Sacred Relationships

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

Lesson One – What's In a Story?

Lesson Two – A Sacred Relationship

Lesson Three – People of the Land

Lesson Four – Eco Despair

Sacred Relationships

Science – Wetland Ecosystems

Lesson One – Wetlands… Worlds Apart

Lesson Two – Bogged Down in Wetlands

Lesson Three – See For Yourself

Lesson Four – All Things Big and Small

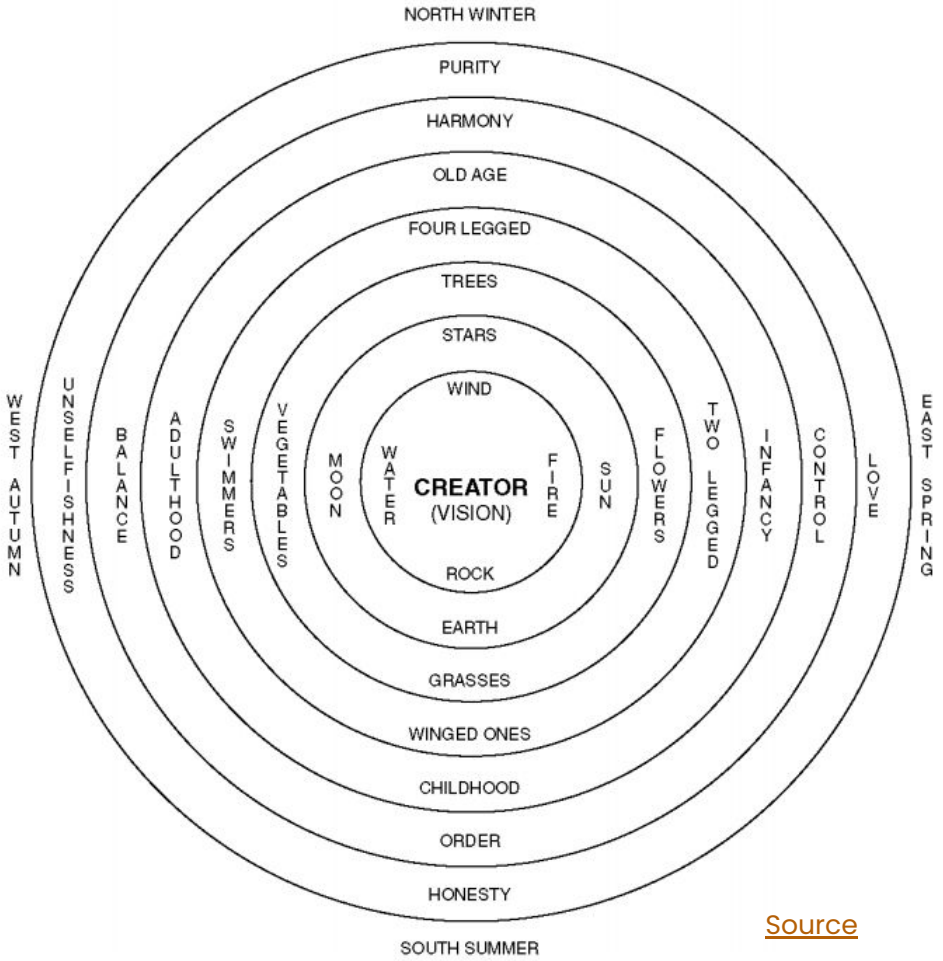
Lesson Five – More Than One Way to Skin a Cattail

Lesson Six – Wetlands Odyssey

Lesson Seven – Not Just Skin Deep

Lesson Eight – Return To The Source (grade 4,5 new curriculum)

CIRCLE OF LIFE



Source

Four plants are widely considered as sacred to First Nations, Inuit and Métis Peoples. They are used in ceremonies and as natural medicines among Indigenous people to offer protection and spiritual health and to connect with our ancestors. These include sweet grass, sage, tobacco and red cedar.

Native people have four sacred medicines.
They are gifts from our grandfathers.

It is said that tobacco sits in the eastern door, sweetgrass in the southern door, sage in the western door, and cedar in the northern door of the medicine wheel.

Grandmother, tell us about the four sacred medicines
Author: Sandra Samatte, Native Reflections, 2014.

https://www.alamy.com/stock-photo/sweetgrass-braid.html?sortBy=relevant

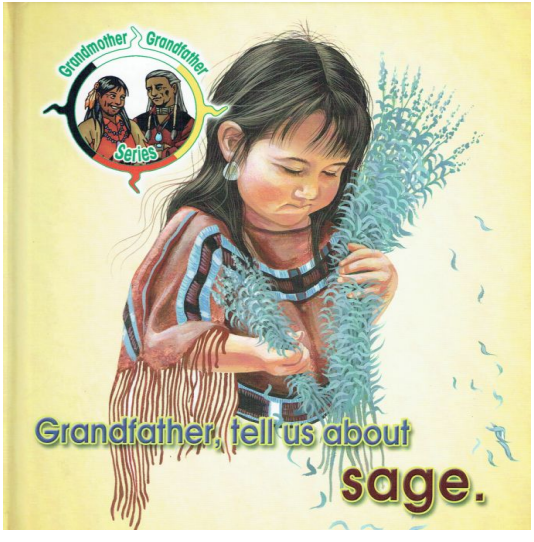
shutterstock .co #1922847236

NATIVE TOBACCO

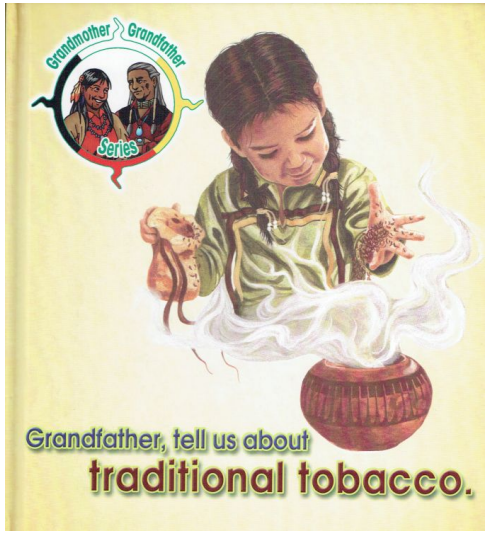
TRADITIONAL USES

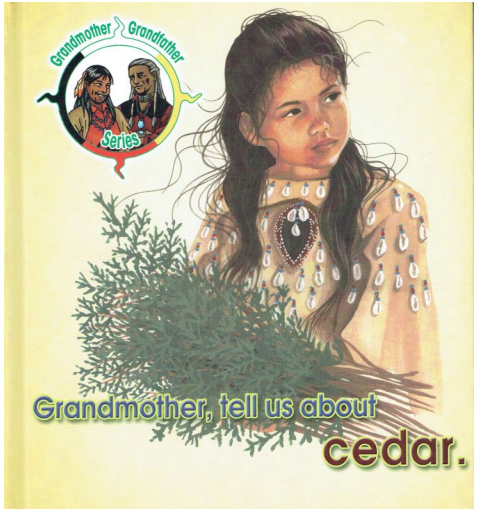
Red Cedar is used in First Nations and Metis Ceremony but not in the Inuit.

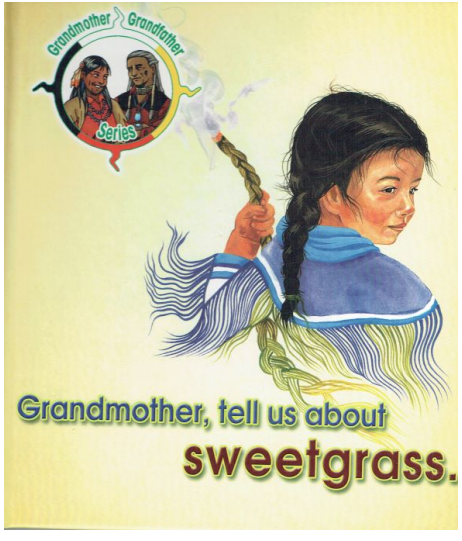
beadeddreams.ca/products/small-cedar-bundle



Grandfather & Grandmother Series







Native reflections

First Nations and Métis people have traditionally used parts of herbs, shrubs, and trees to help treat and cure many body problems. For example, some First Nations people chewed on the leaves of willows to relieve aches and pains. These leaves contain salicylic acid, a compound very similar to aspirin.

Traditional Smudging (include 4 sacred plants.

Plants play a variety of roles in an ecosystem, including

- photosynthesizing
- cleaning and filtering water
- reducing soil erosion
- providing food and shelter for animals Humans, like all animals, depend on plants to produce oxygen used for breathing.

Humans also rely on plants in various other ways, including for

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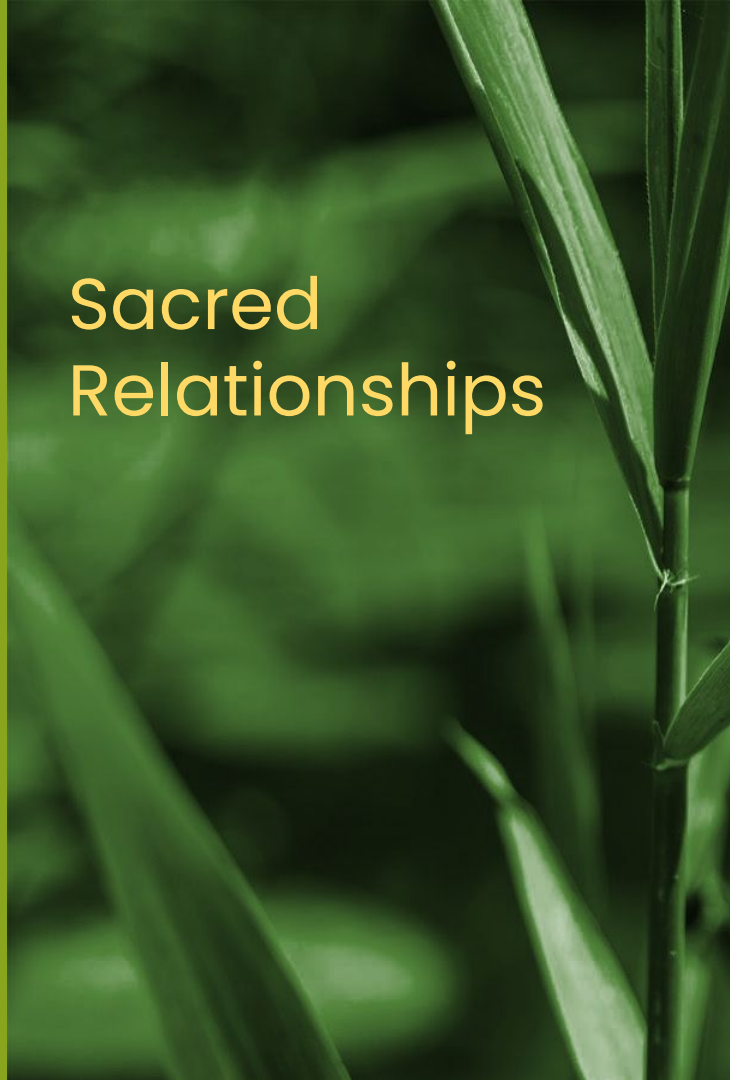

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Lesson Seven – Not Just Skin Deep

Lesson Eight – Return To The Source (grade 4,5 new curriculum)

Resources to Consider

How do plants and animals need each other?

A resource with many possible investigative questions or questions for Transfer.

Example: Describe how the local community and the plants and animals in the local environment are interdependent.

Alaska Education. Reach 2015

Plants, Animals and Ecosystems.

Government of British Columbia

B.C. Conservation Data Centre (CDC)

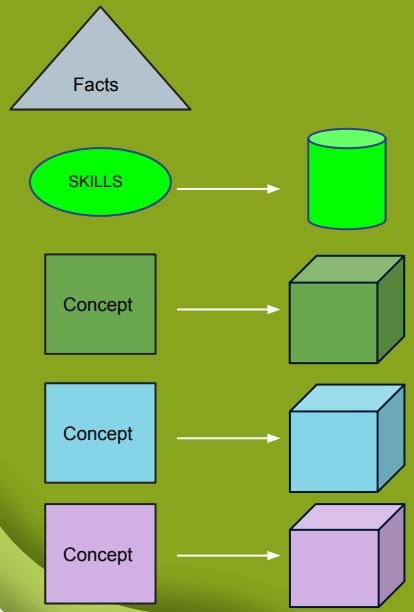
https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems

Assessment

Photo by imagenation.jpeg on Unsplash

Phases of Assessment

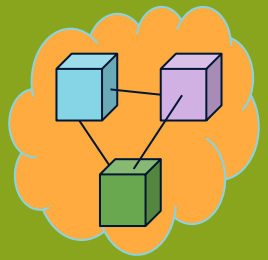
Surface



Pre Assessment

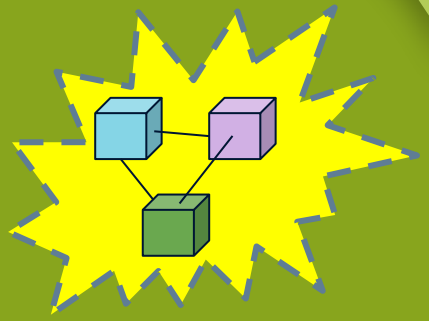
FORMATIVE ASSESSMENTS

Deep



FORMATIVE ASSESSMENTS

Transfer



SUMMATIVE ASSESSMENT

Using Skills and Procedures as Assessments

NEW CONTEXTS!

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

6LS1.1: **Represent** and **connect** the biotic and abiotic components of an ecosystem.
6LS1.1: **Locate and responsibly examine** a local ecosystem in nature using appropriate materials and tools.
6LS1.1: **Relate** the preservation of various ecosystems to possible actions that address climate change.
6LS1.1: **Create a model or simulation to represen**t a chosen ecosystem and its characteristics.
6LS1.1: **Compare** the characteristics of two ecosystems.
6LS1.1: **Examine** the diversity of animals and plants in various ecosystems in relation to abiotic components.
6LS1.2: **Explain** the process of photosynthesis and its importance in an ecosystem.
6LS1.2: **Design and perform a controlled experiment** to demonstrate the importance of light to photosynthesis.
6LS1.2: **Design and perform a controlled experiment** to show that a plant is releasing oxygen.
6LS1.2: **Design and perform a controlled experiment** to show that a plant contains starch.
6LS1.3: **Examine** ways that plants and animals rely on each other to meet their needs.
6LS1.3: **Discuss** plants that are considered sacred to First Nations and Métis

Using Skills and Procedures as Assessments

NEW CONTEXTS!

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

6LS1.1: **Locate and responsibly examine** a local ecosystem in nature using appropriate materials and tools.

Learner Outcome: Students will i**nvestigate** the **characteristics** and **components** of and i**nteractions** within **ecosystems.**

Investigation Problem: Which ecosystem has greater diversity - the schoolyard or a pond?

Students will need to compare and contrast the ecosystem the schoolyard with a pond and use the data as evidence to show that the characteristics, components, and interactions of an ecosystems are connected diversity.

Integrating Scientific Methods

Photo by Zoe Schaeffer on Unsplash

Integrating Computer Science

Resources

Photo by imagenation.jpeg on Unsplash

Sparkle Box

Assemble a skeleton

Additional resources from previous grades

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

Review Senses in Kindergarten Matter to bridge.

Habitats of Our Alberta 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, 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

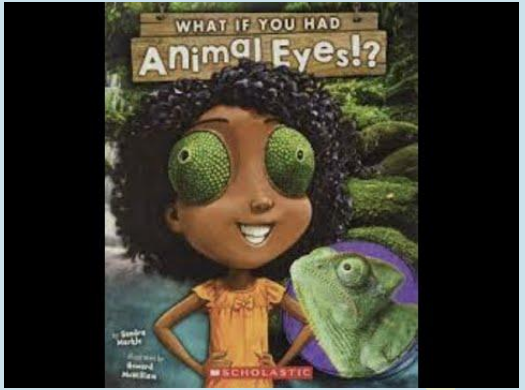
Animal Senses

Visual Perception, Hearing, Taste, Smell

Animal Senses: Smell

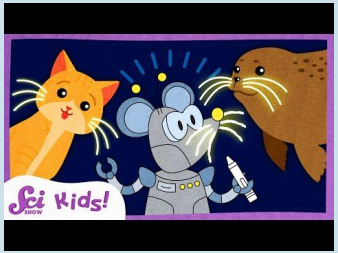
What If You Had Animal Eyes!?

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

Animal Adaptations: Scent Behavior and Communication - Scent Behaviour

Amazing *Animals Senses*

Do plants have senses?

How plants see the world.

New research on plant intelligence may forever change how you think about plants

Why Should I Protect Nature? by Jen Green

What do you wonder about this picture?

Resources

Link

Pgs.
53-90

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

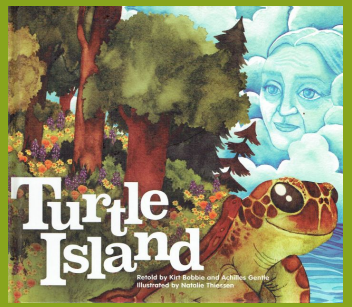
Cultural values and beliefs influence how we relate to the land, plants and animals.

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

Learning from the Land

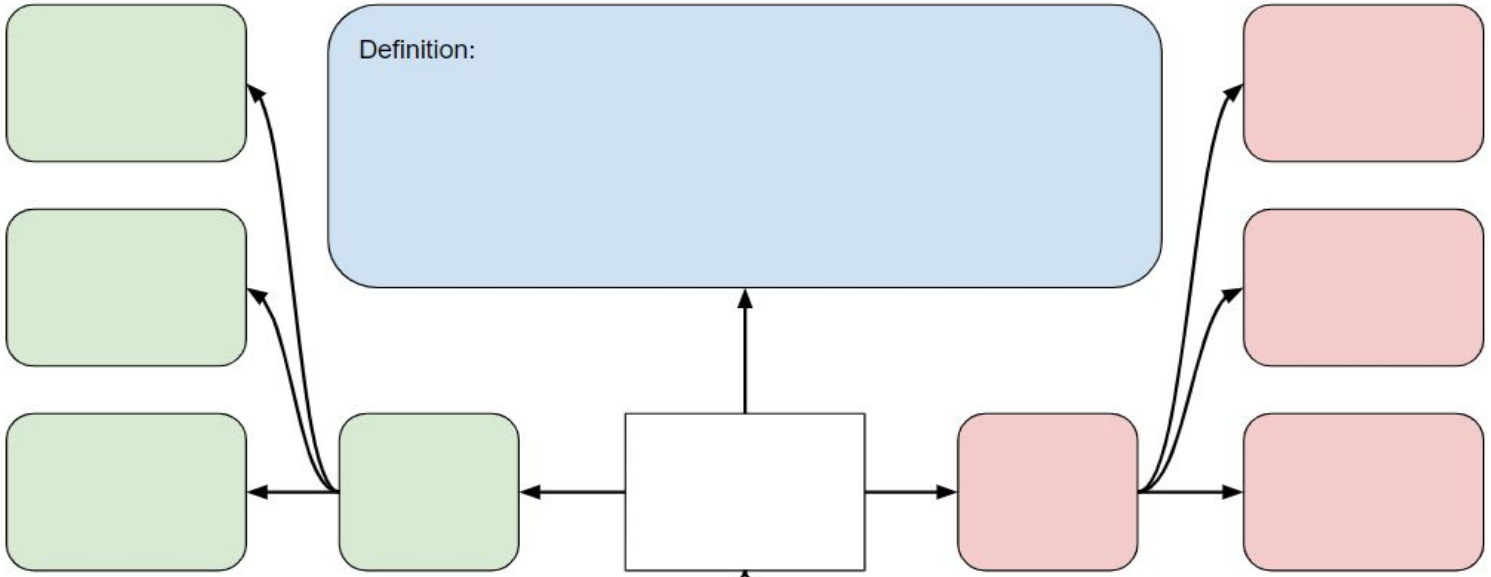
Treaty 7 Storytime | Trudy Wesley: “Ne Îethka Makochî Chach” | Calgary Public Library

Turtle Island



Aski and Turtle Island - Book For Kids Read Aloud

Summing Up My Thinking

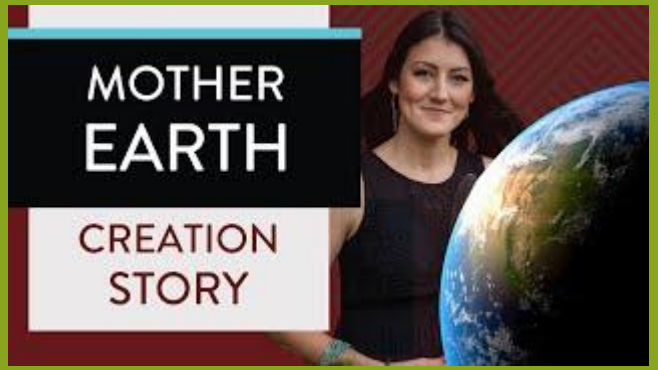


Used in a sentence:

Pictures related to the word:

Sacred Relationship Short

Connecting to the Spirit of Mother Earth



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

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:			

Sources

Ontario Ministry of Education. Financial Literacy Lesson: Grade 6 Science and Technology - Biodiversity Lesson Plan Overview. Edugains. 2013. http://www.edugains.ca/resourcesFL/Resources/TeachingLearningExamples/Elementary/Grade6_Biodiversity.pdf

Thanks!

Do you have any questions?

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

Do you need a longer text?

Mercury is the closest planet to the Sun and the smallest one in the entire Solar System. This planet's name has nothing to do with the liquid metal, since Mercury was named after the Roman messenger god. Despite being closer to the Sun than Venus, its temperatures aren't as terribly hot as that planet's. Its surface is quite similar to that of Earth's Moon, which means there are a lot of craters and plains

Speaking of craters, many of them were named after artists or authors who made significant contributions to their respective fields. Mercury takes a little more than 58 days to complete its rotation, so try to imagine how long days must be there! Since the temperatures are so extreme, albeit not as extreme as on Venus, and the solar radiation is so high, Mercury has been deemed to be non-habitable for humans

The slide title goes here!

Do you know what helps you make your point crystal clear? Lists like this one:

- They’re simple
- You can organize your ideas clearly
- You’ll never forget to buy milk!

And the most important thing: the audience won’t miss the point of your presentation

Maybe you need to divide the content

Mercury

Mercury is the closest planet to the Sun and the smallest one in the Solar System—it's only a bit larger than the Moon

Venus

Venus has a beautiful name and is the second planet from the Sun. It's hot and has a poisonous atmosphere

Here are three important ideas

Mercury

Mercury is the closest planet to the Sun and the smallest of them all

Venus

Venus has a beautiful name and is the second planet from the Sun

Mars

Despite being red, Mars is actually a cold place. It’s full of iron oxide dust

Divide the content in four ideas

Mars
Mars is actually a very cold place

Venus
Venus has extremely high temperatures

Jupiter
Jupiter is the biggest planet of them all

Saturn
Saturn is a gas giant and has several rings

Reviewing concept is a good idea

Mars
Mars is actually a very cold place

Venus
Venus has extremely high temperatures

Neptune
Neptune is the farthest planet from the Sun

Mercury
Mercury is the closest planet to the Sun

Saturn
Saturn is a gas giant with several rings

Jupiter
Jupiter is the biggest planet of them all

Awesome words

“This is a quote, words full of wisdom that someone important said and can make the reader get inspired.”

—Someone Famous

Backgrounder

A picture always reinforces the concept

Images reveal large amounts of data, so remember: use an image instead of a long text. Your audience will appreciate it

98,300,000

Big numbers catch your audience’s attention

9h 55m 23s

Jupiter's rotation period

333,000

The Sun’s mass compared to Earth’s

386,000 km

Distance between Earth and the Moon

Let’s use some percentages

25%

Mars
Despite being red, Mars is actually a cold place. It’s full of iron oxide dust

50%

Mercury
Mercury is the closest planet to the Sun and the smallest of them all

75%

Venus
Venus has a beautiful name and is the second planet from the Sun

Computer mockup

You can replace the image on the screen with your own work. Just right-click on it and select “Replace image”

Tablet mockup

You can replace the image on the screen with your own work. Just right-click on it and select “Replace image”

Phone mockup

You can replace the image on the screen with your own work. Just right-click on it and select “Replace image”

This is a map

Venus

Venus is the second planet from the Sun

Mercury

Mercury is the closest planet to the Sun

Mars

Despite being red, Mars is a very cold place

A timeline always works well

Venus

Venus is the second planet from the Sun

Mercury

Mercury is the closest planet to the Sun

Mars

Despite being red, Mars is a very cold place

Jupiter

Jupiter is the biggest planet of them all

Home energy efficiency checklist

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Mercury is very small							
Venus is a hot planet							
We all live on Earth							
Jupiter is a gas giant							

Yes No

You can use an infographic

Mars
Mars is actually a very cold place

Mercury
Mercury is the closest planet to the Sun

Venus
Venus has extremely high temperatures

Jupiter
Jupiter is the biggest planet of them all

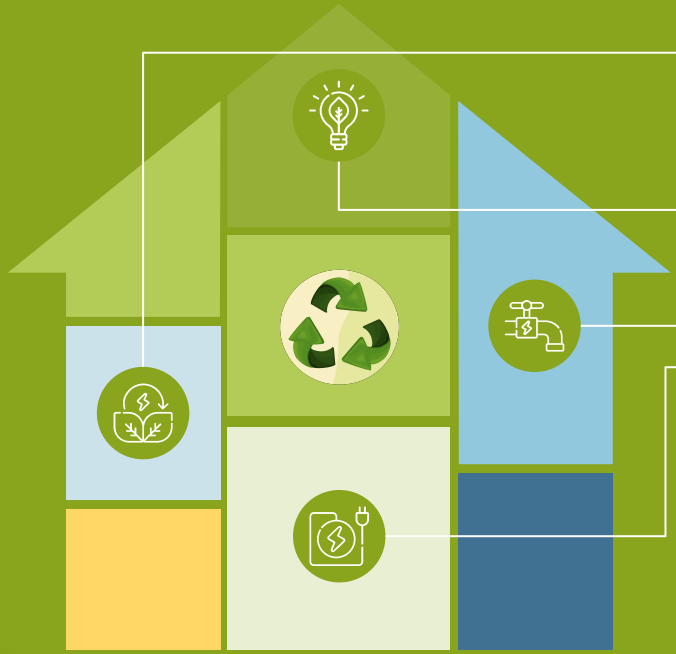
Neptune
It's the farthest planet from the Sun

Saturn
Saturn is a gas giant with several rings

Tables represent your data

	Times	Yes/No	Notes
Activity 1	08:30 am	Yes	Mercury
Activity 2	11:30 am	No	Venus
Activity 3	3:00 pm	Yes	Earth
Activity 4	7:00 pm	Yes	Mars

Energy efficiency tips



Neptune
Neptune is an ice giant

Saturn
Saturn has rings

Jupiter
Jupiter is a gas giant

Earth
We all live on Earth

Sustainable goals calendar

Get on bike

Recycle

Save water

Mon	Tue	Wed	Thu	Fri	Sat	Sun
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

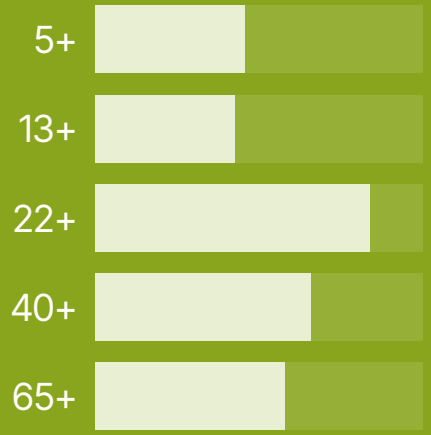
Who cares about energy efficiency?

Gender

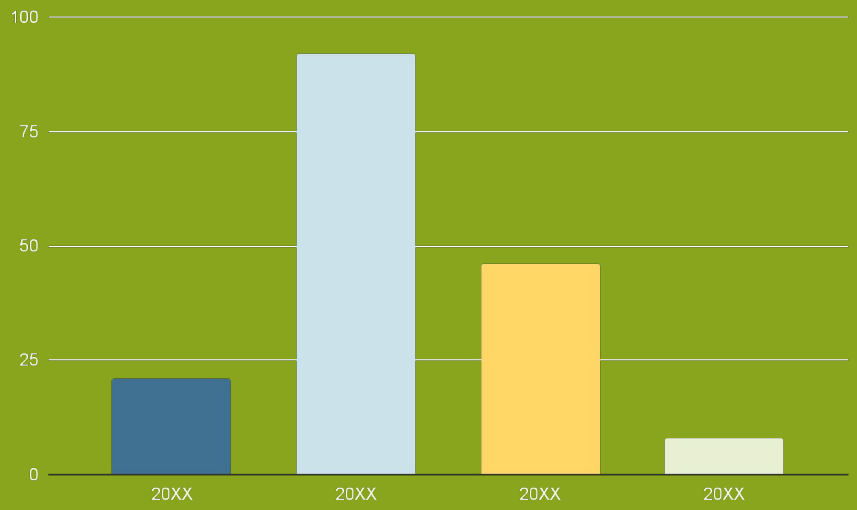
Feminine Masculine Other

Despite being red, Mars is actually a cold place. It’s full of iron oxide dust

Age



You can use this graph



Follow the link in the graph to modify its data and then paste the new one here. **For more info, click here**

Mars

Mars is actually a very cold place

Venus

Venus has extremely high temperatures

Jupiter

Jupiter is the biggest planet of them all

Saturn

Saturn is a gas giant and has several rings

You can use an infographic

Mars

Mars is actually a very cold place

Mercury

Mercury is the closest planet to the Sun

Venus

Venus has extremely high temperatures

Jupiter

Jupiter is the biggest planet of them all

You can use this graph

20%
Mars

Despite being red, Mars is a very cold place

25%
Jupiter

Jupiter is the biggest planet of them all

10%
Venus

Venus is the second planet from the Sun

45%
Mercury

Mercury is the closest planet to the Sun

Follow the link in the graph to modify its data and then paste the new one here. **For more info, click here**

Dos and don’ts

Dos
Mercury is a small planet
Venus has a toxic atmosphere
Earth is the planet with life
Mars is made of basalt

Don’ts
Jupiter is a huge gas giant
Saturn is a gas giant with rings
Neptune is an ice giant
The Moon is a natural satellite

Our team

Jenna Doe
You can speak a bit
about this person here

Timmy Jimmy
You can speak a bit
about this person here

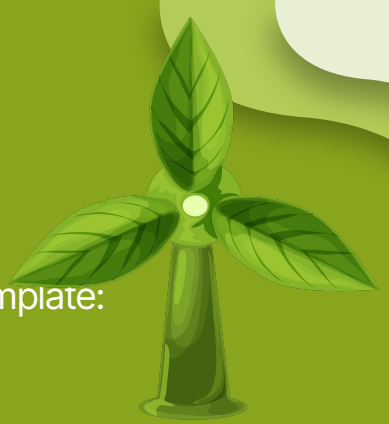
Thanks!

Do you have any questions?

youremail@freepik.com
+34 654 321 432
yourwebsite.com

Icon pack

Alternative resources



Here’s an assortment of alternative resources whose style fits the one of this template:

- Green ecology icons set

Resources

Did you like the resources on this template? Get them for free at our other websites:

Vectors

- Ecology design concept set
- Happy earth day banner template
- Happy earth day web template
- Happy earth day horizontal banner
- Happy earth day poster template
- Vector hand drawn abstract shapes collection

Icons

- Icon Pack: Sustainable Energy | Flat

Photos

- 3d house with solar pannels
- Wind farms fields I
- Wind farms fields II
- Portrait of a beautiful woman engineer

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Pana

Amico

Bro

Rafiki

Cuate

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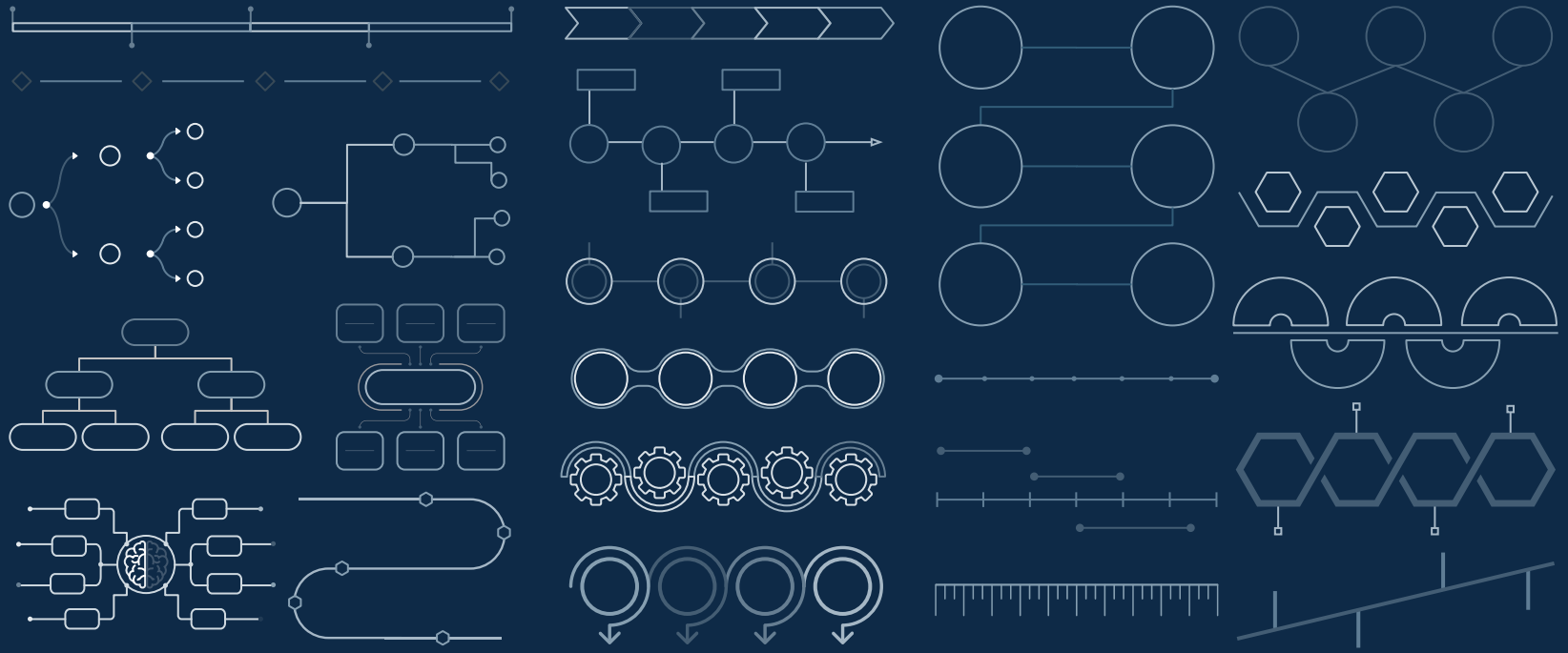
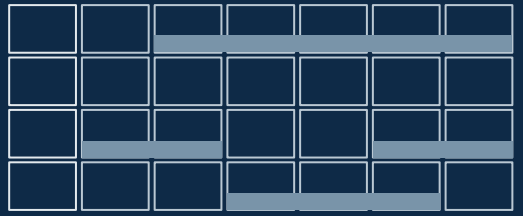
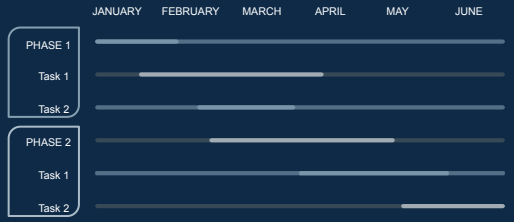
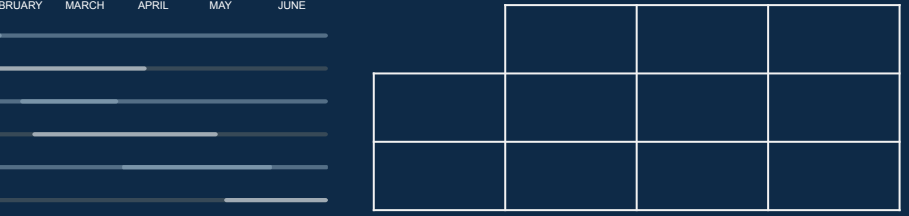
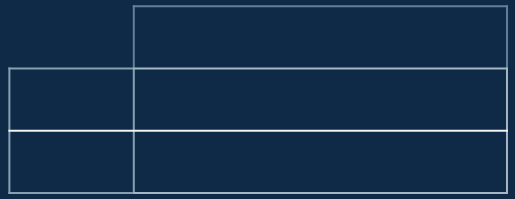
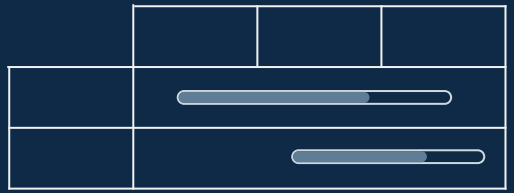


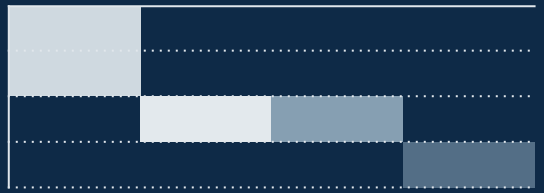


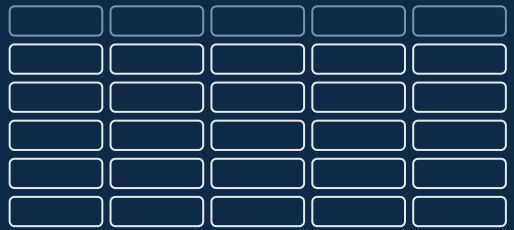

JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
PHASE 1
Task 1
Task 2
PHASE 2
Task 1
Task 2

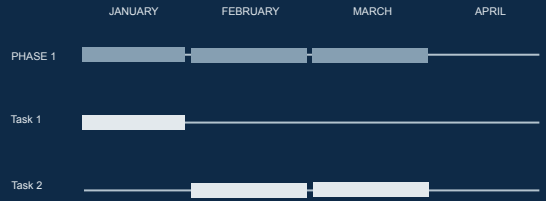








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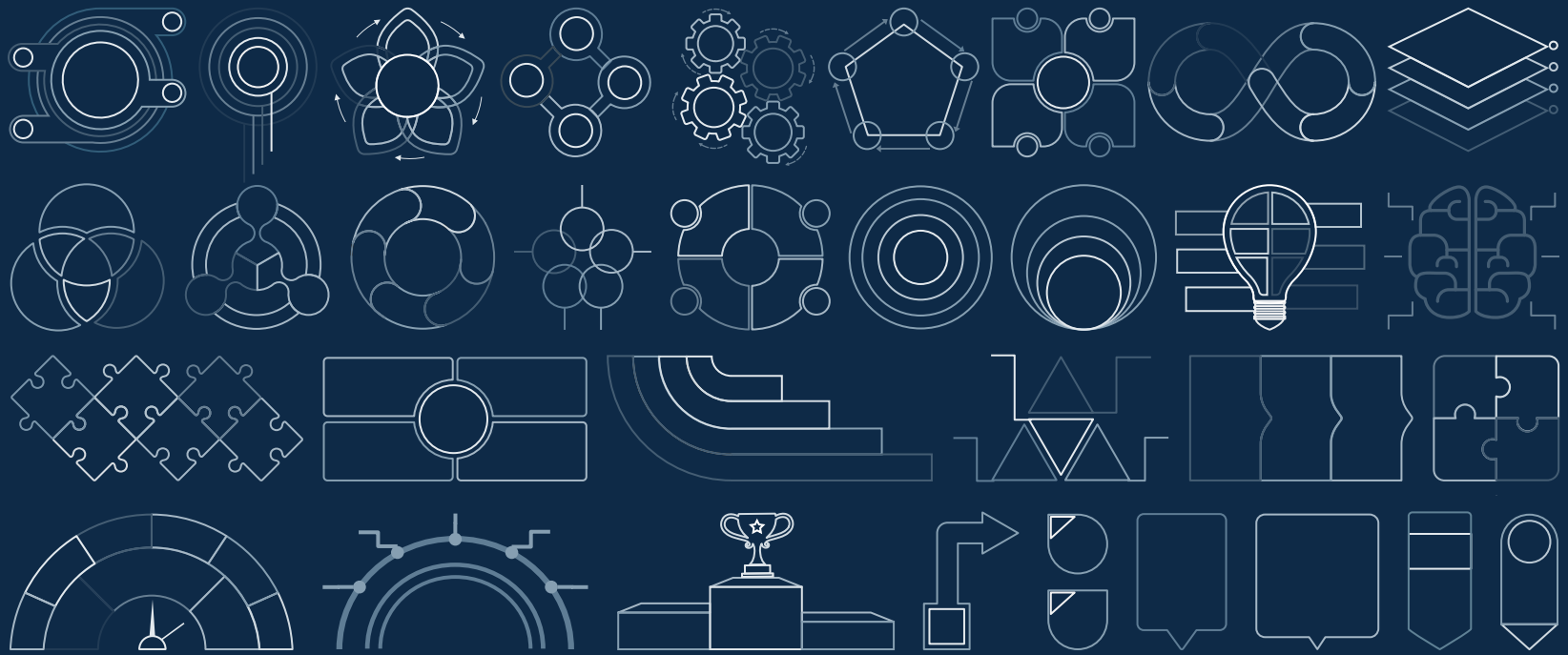

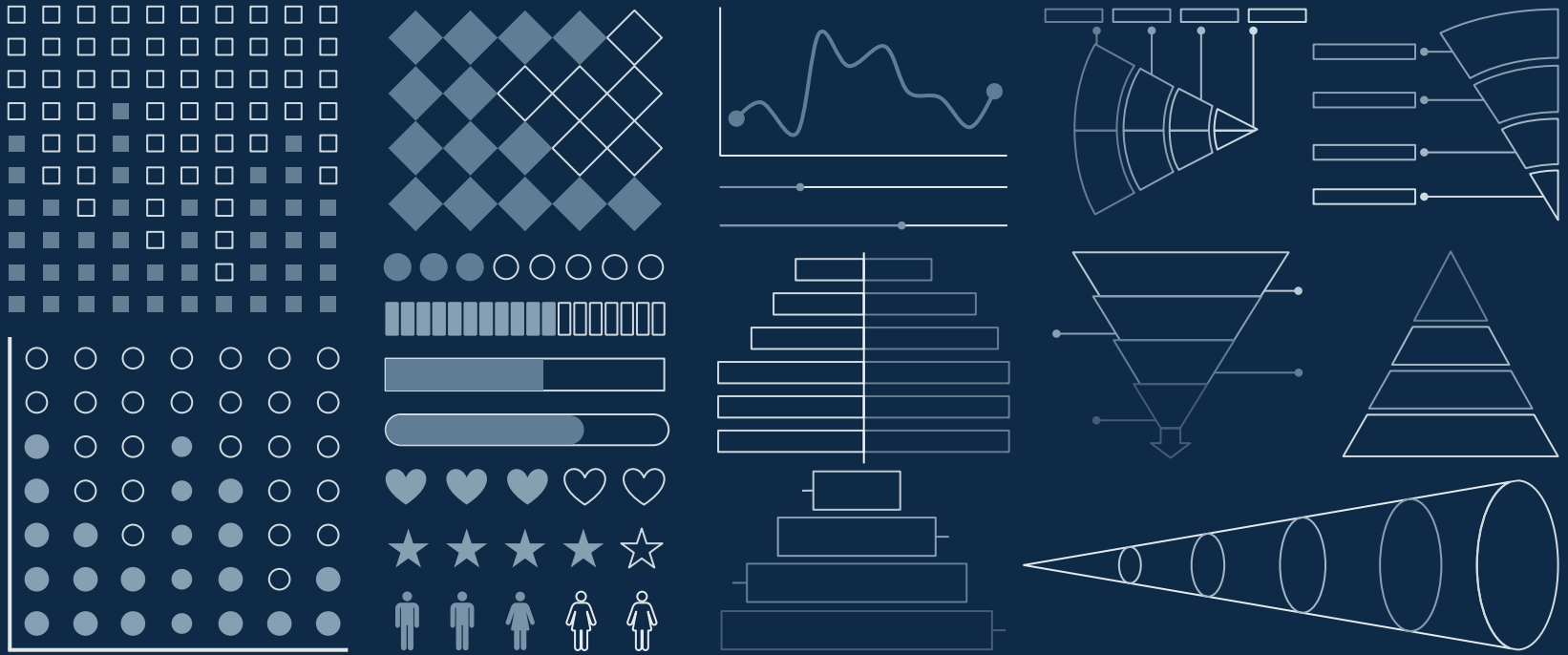

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