New SCIENCE Curriculum

Energy
Grade 6

November 29, 2023

Facilitators: Chris Żarski & Ted Zarówny

Alberta Regional Professional Development Consortia
Adult learning for students' sake

CC BY NC SA

Land Acknowledgement

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.

Told by Seth Adam Smith

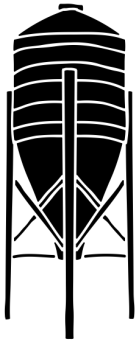
Agenda

1. Looking at The Big Picture - Energy through K-5
   - What is *Movement*?
   - What Moves?
   - What causes objects and people to move?
2. Grade 6 Overview
3. Sample Grade 6 Assessments, Activities and Resources

1 The Big Picture



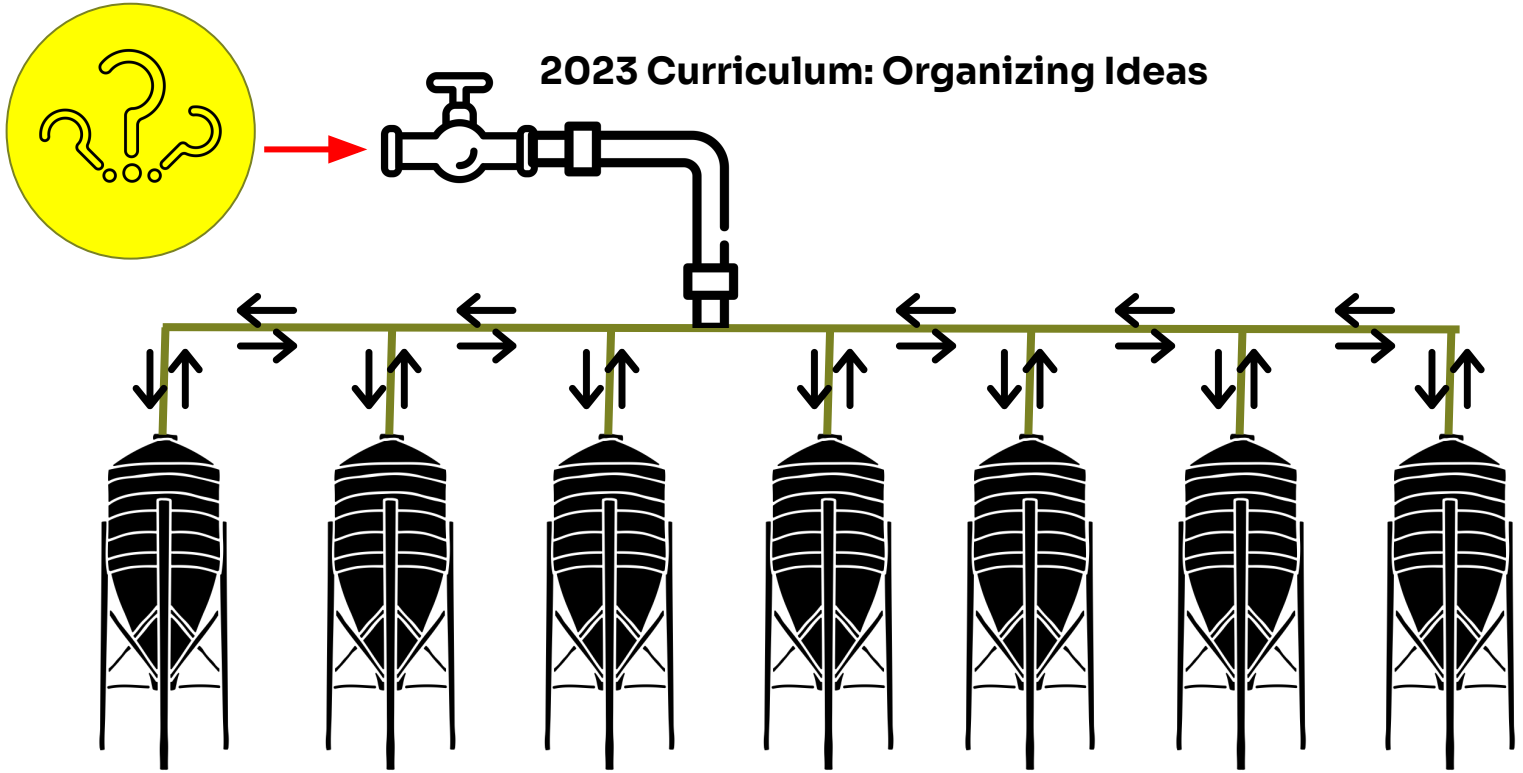




GR. 1	Seasonal Changes	Needs of Animals and Plants	Creating Colour	Building Things	Senses
GR. 2	Small Crawling and Flying Animals	Buoyancy and Boats	Magnetism	Exploring Liquids	Hot and Cold Temperature
GR. 3	Building with a Variety of Materials	Testing Materials and Designs	Rocks and Minerals	Hearing and Sound	Animal Life Cycles
GR. 4	Building Devices and Vehicles	Light and Shadows	Plant Growth and Changes	Waste and Our World	Wheels and Levers
GR. 5	Electricity and Magnetism	Mechanisms using Electricity	Classroom Chemistry	Weather Watch	Wetlands Ecosystems
GR. 6	Air and Aerodynamics	Flight	Sky Science	Evidence and Investigation	Trees and Forests

silo by Hey Rabbit from Noun Project (CC BY 3.0)

2023 Curriculum: Organizing Ideas



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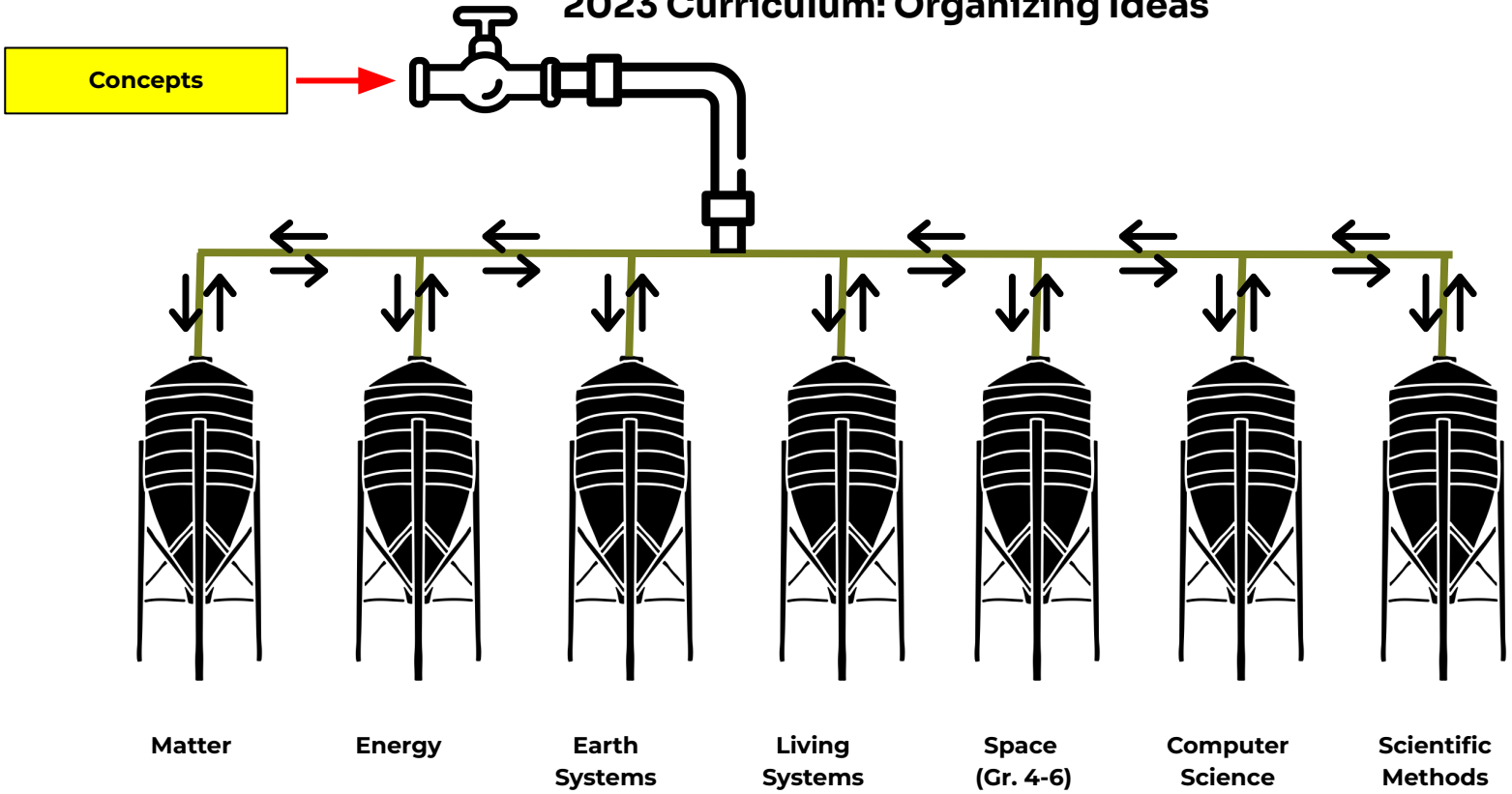

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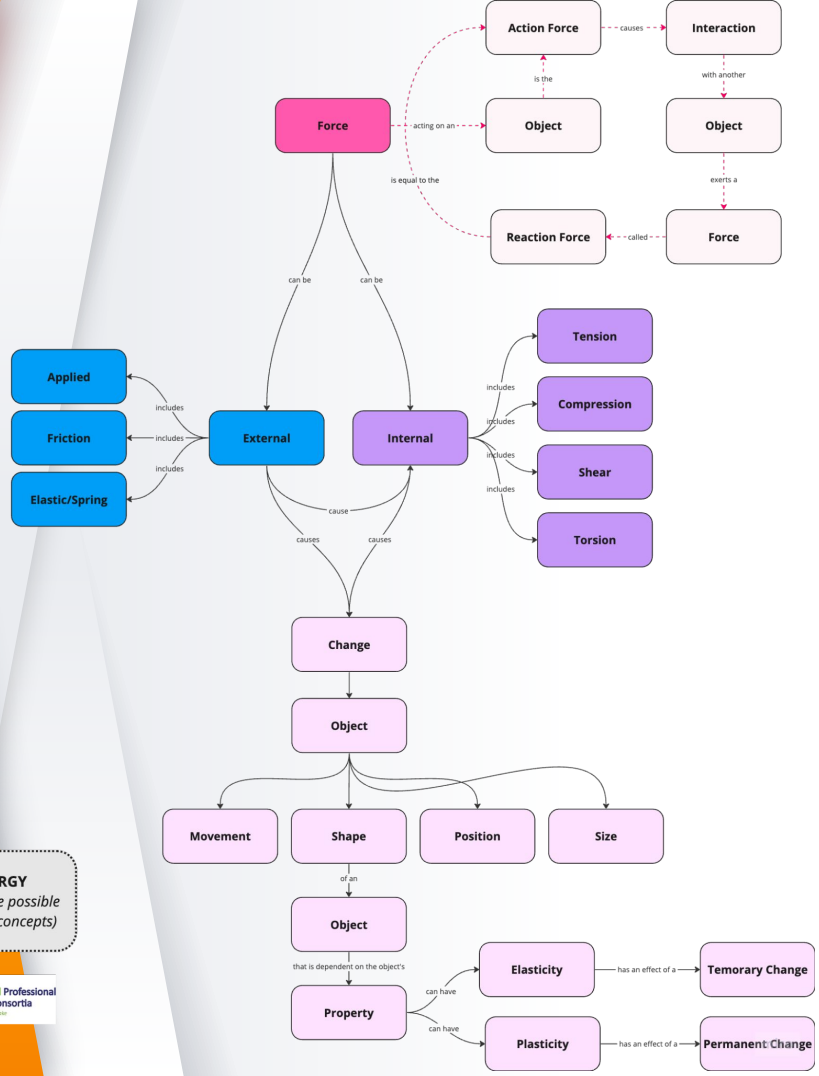
Grade 6.1 Energy
Concept Map



Grade 6.1 ENERGY
(Note: This is only one possible way to organize the concepts)

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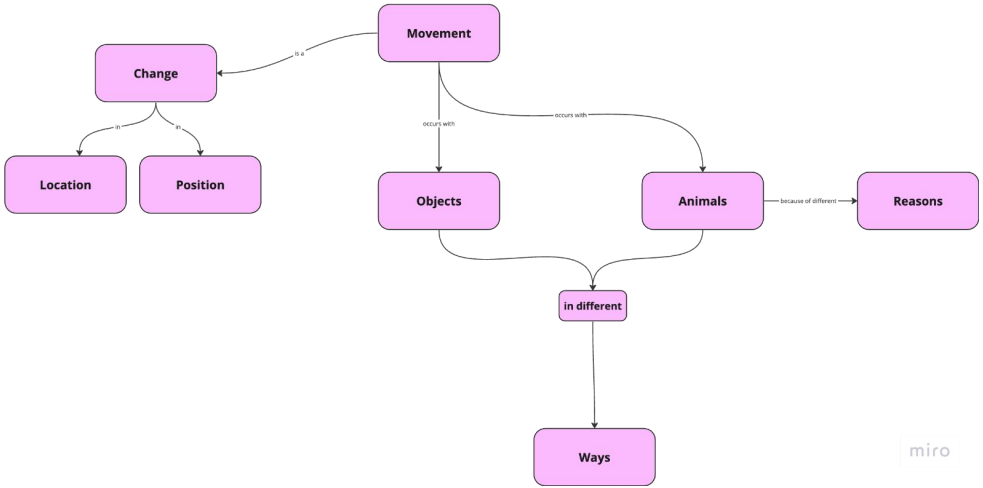
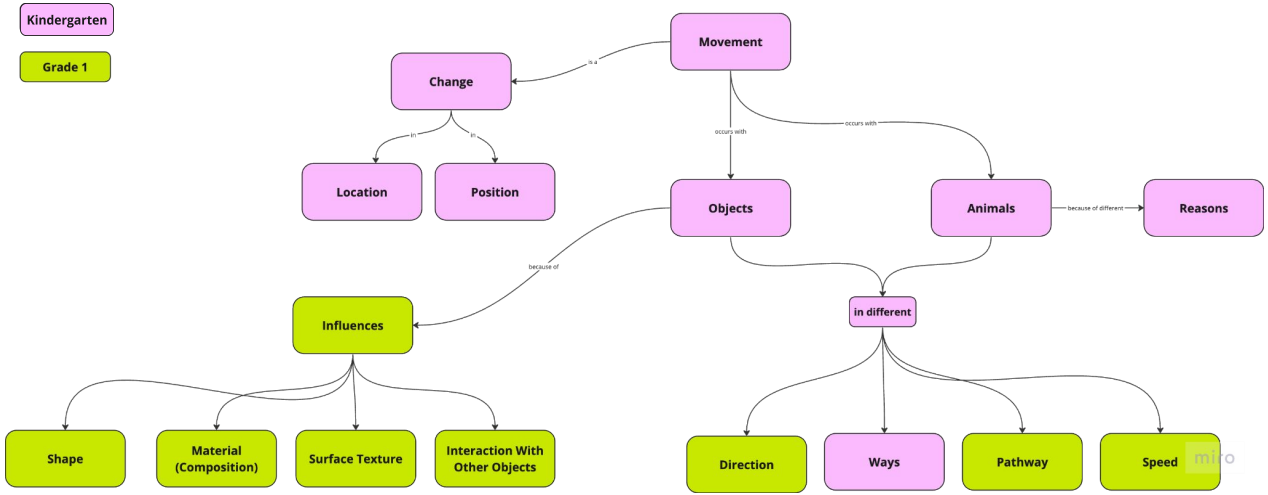
Kindergarten

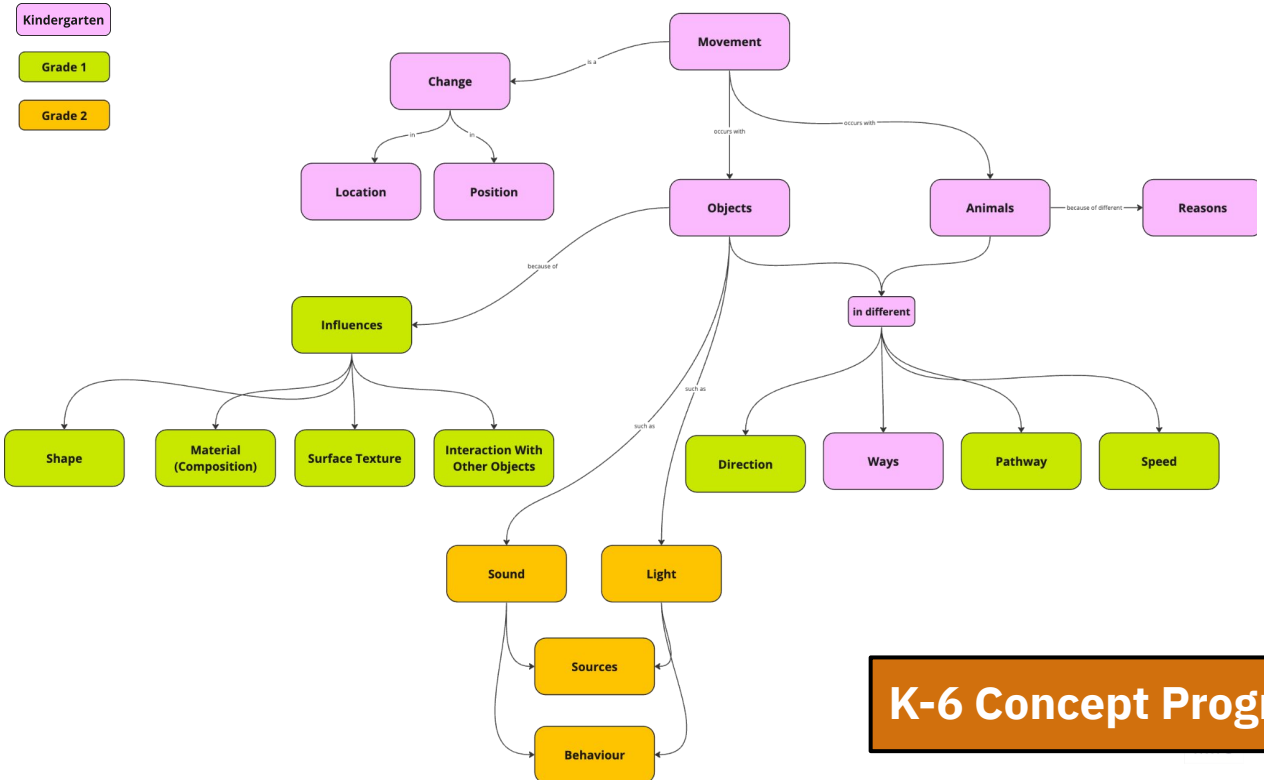


miro

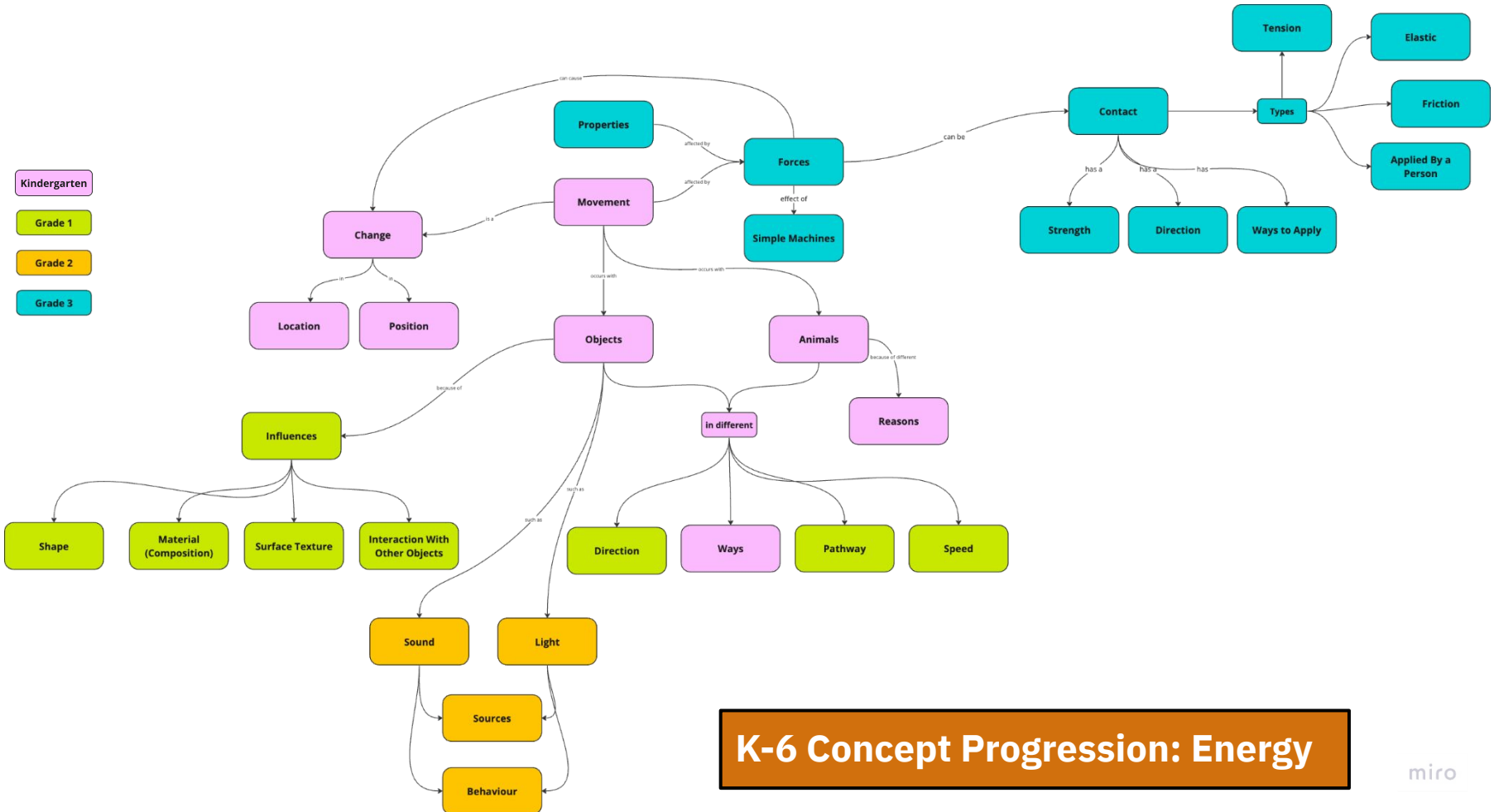
K-6 Concept Progression: Energy



K-6 Concept Progression: Energy

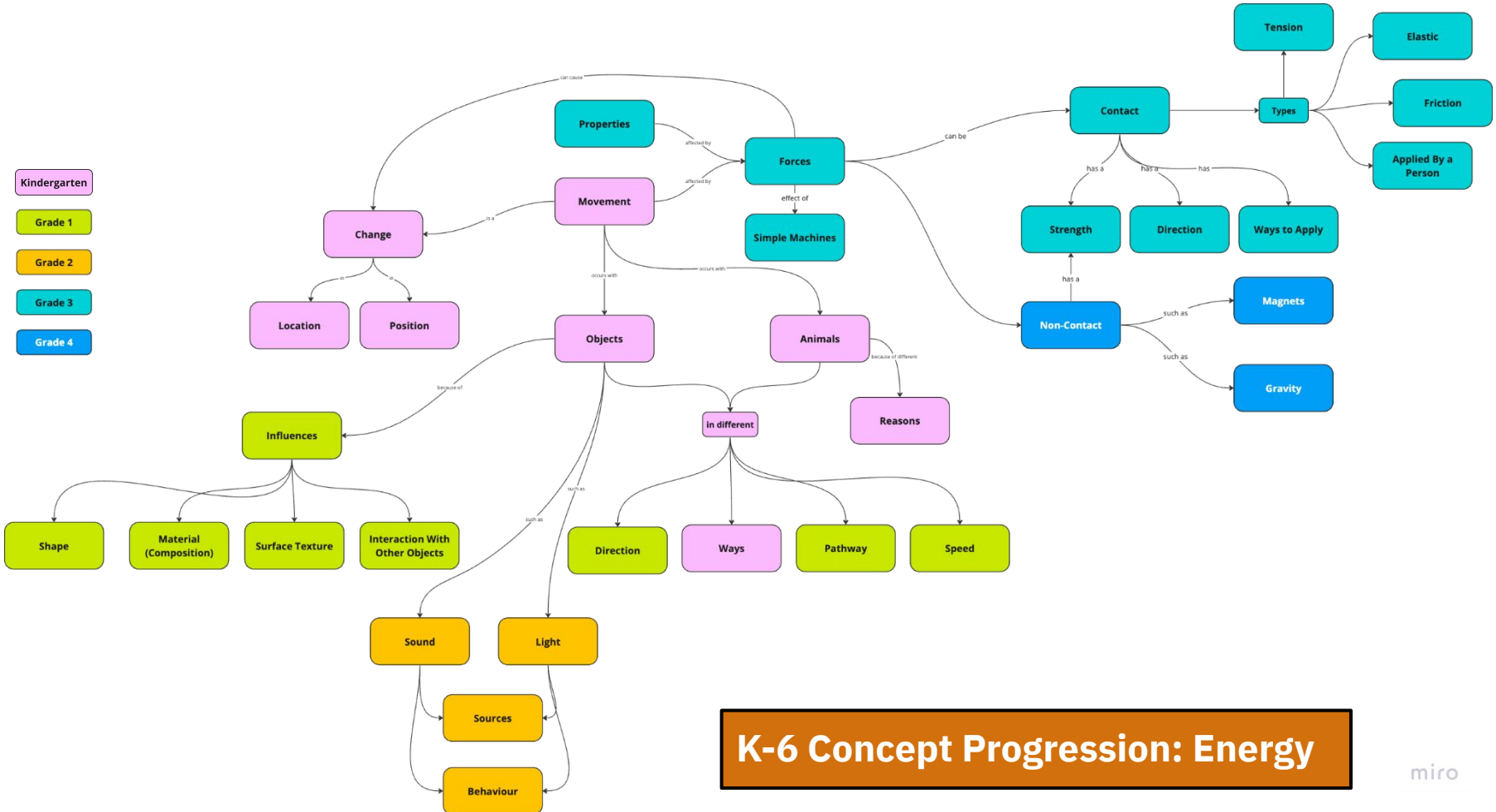


K-6 Concept Progression: Energy



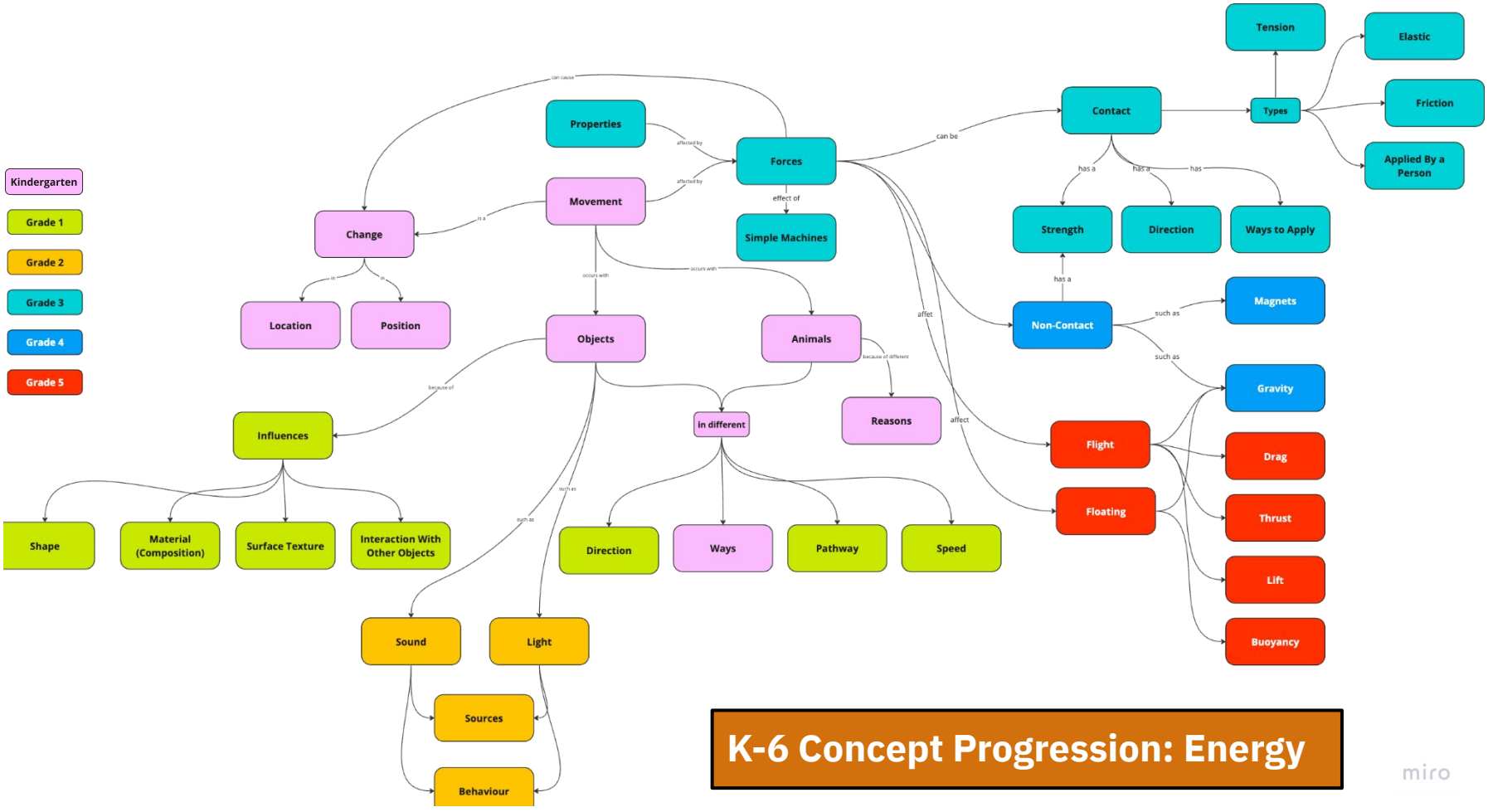
K-6 Concept Progression: Energy

miro



K-6 Concept Progression: Energy

miro



K-6 Concept Progression: Energy

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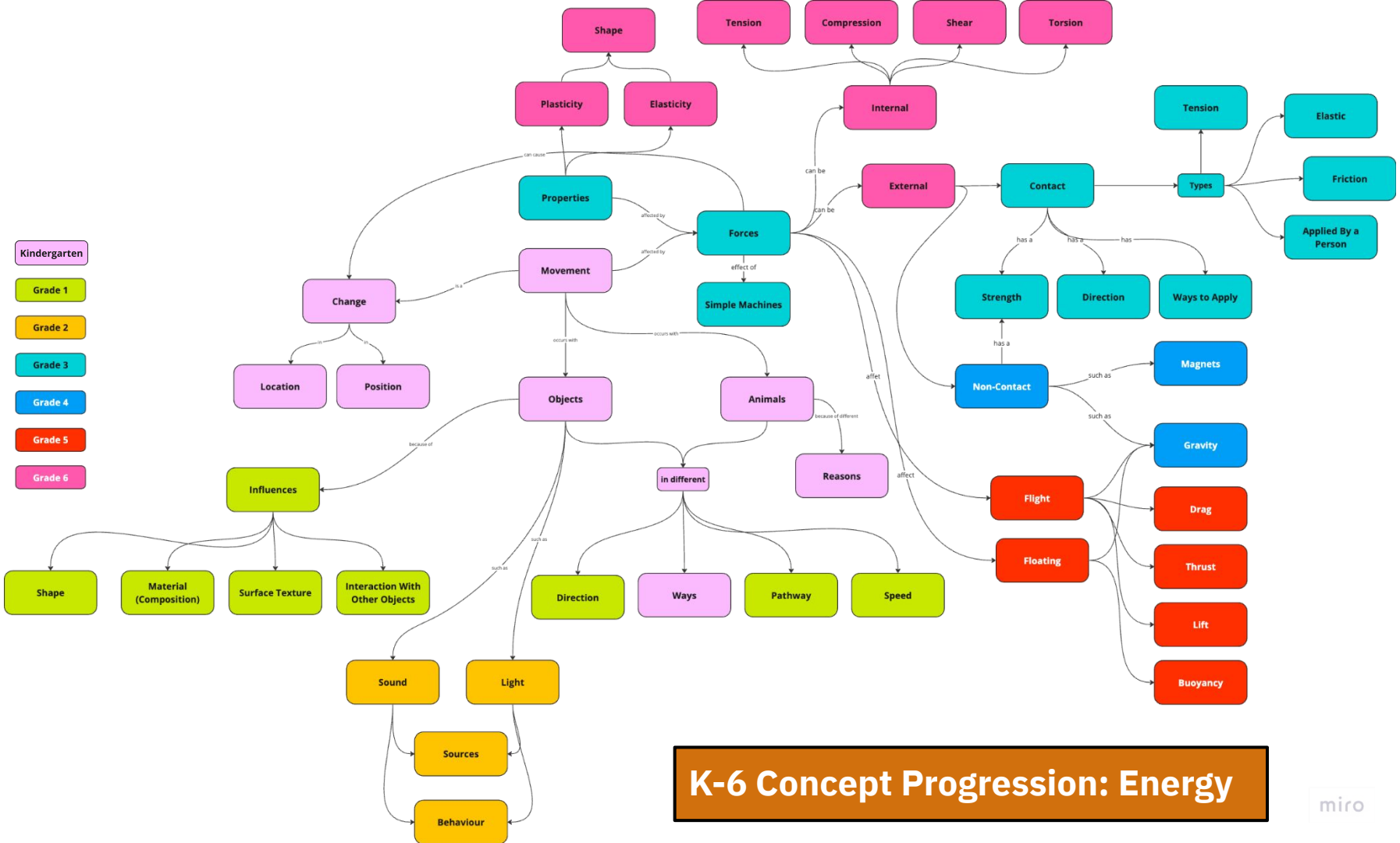
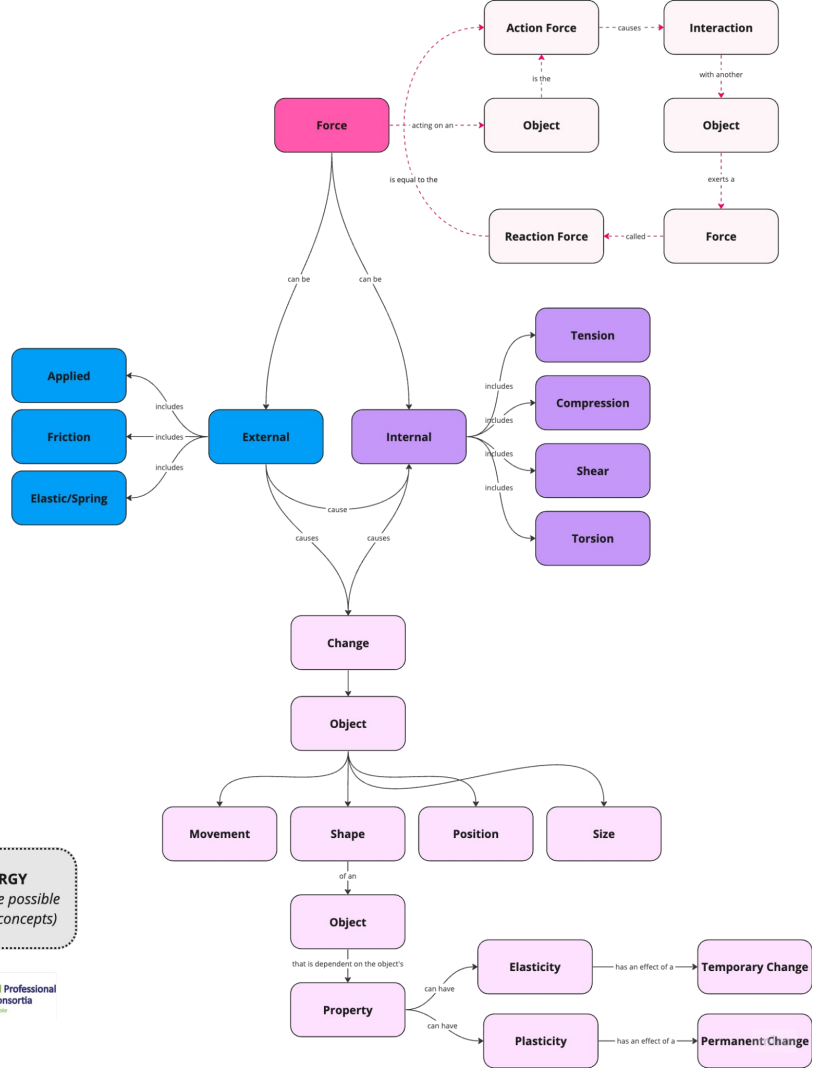

Kindergarten
Grade 1
Grade 2
Grade 3
Grade 4
Grade 5
Grade 6
Shape
Tension
Compression
Shear
Torsion
Plasticity
Elasticity
Internal
Tension
Elastic
Friction
Applied By a Person
Types
Properties
Forces
External
Contact
can cause
affected by
affected by
can be
can be
has a
has a
has
Change
Movement
effect of
Simple Machines
Strength
Direction
Ways to Apply
is a
has a
Location
Position
occurs with
occurs with
Non-Contact
such as
Magnets
such as
Objects
Animals
affet
because of different
because of
Gravity
Influences
in different
Reasons
affect
Flight
Drag
Floating
Thrust
Lift
Buoyancy
Shape
Material (Composition)
Surface Texture
Interaction With Other Objects
such as
Direction
Ways
Pathway
Speed
Sound
Light
Sources
Behaviour
K-6 Concept Progression: Energy
miro

Grade 6.1 Energy
Concept Map



Grade 6.1 ENERGY
(Note: This is only one possible way to organize the concepts)

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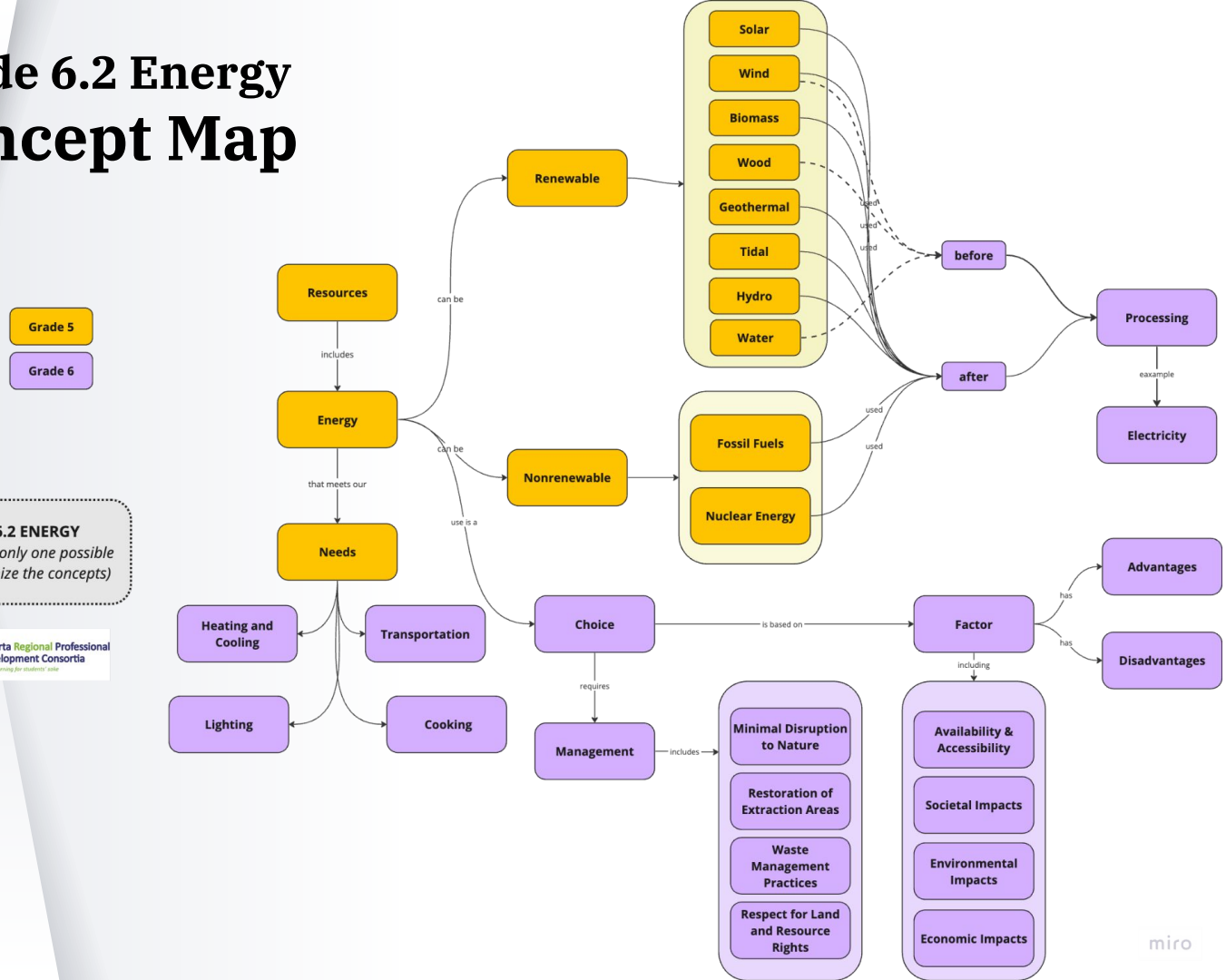
Grade 6.2 Energy
Concept Map



ENERGY (01)

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
Guiding Question: *How can humans, animals, and objects move?*	**Guiding Question:** *How can movement of objects be understood?*	**Guiding Question:** *Where do light and sound come from, and how do they move?*	**Guiding Question:** *How can forces relate to changes in movement?*	**Guiding Question:** *How can forces affect objects from a distance?*	**Guiding Question 01:** *How are forces similar and different in water and air?*	**Guiding Question 01:** *In what ways can interactions lead to physical change?*
Learning Outcome: *Children explore movement of objects, humans, and other animals.*	**Learning Outcome:** *Students investigate the direction, pathway, and speed of moving objects and animals.*	**Learning Outcome:** *Students investigate the behaviours of light and sound.*	**Learning Outcome:** *Students investigate and explain how forces affect the movement of objects.*	**Learning Outcome:** *Students investigate how forces can act on objects without contact.*	**Learning Outcome 01:** *Students investigate and compare how forces affect living things and objects in water and air.*	**Learning Outcome 01:** *Students analyze forces and relate them to interactions between objects.*
KEY CONCEPTS					**KEY CONCEPTS**	
Change	Animal	Characteristics (Materials that Affect Sound)	Change: Movement	Attraction	Buoyancy	Change
Location	Direction	Light Behaviour	Effort	Distance	Effect on Flight (speed, altitude, horizontal and vertical, straight and level)	Elasticity
Movement	Factor	Pathway: Sound	Force: Applied (stretching, pulling squeezing pushing)	Force: Non-Contact (gravity, magnetic)	Flight	Force: Action
Movement: Ways	Influence	Pathway: Light	Force: Contact (applied, friction, elastic/spring)	Gravity	Flight Characteristics	Force: External (applied, friction, elastic/spring)
Position	Movement	Sound	Force: Direction	Interaction	Fluid	Force: Internal (tension, compression, shear, torsion)
Animals	Object	Light Source	Force: Strength	Magnetic Material	Force: Opposing (thrust, drag, weight, lift)	Force: Reaction
Object	Pathway	Sound Behaviour	Interaction	Magnetism		Interaction
Human & Animal	Speed	Vibration	Movement	Poles		Object
		Sound Source	Property	Properties		Physical Change
		Sound Characteristics	Simple Machines	Repulsion		Plasticity
			FNMI: Simple Machines	Strength		Property

ENERGY (02)

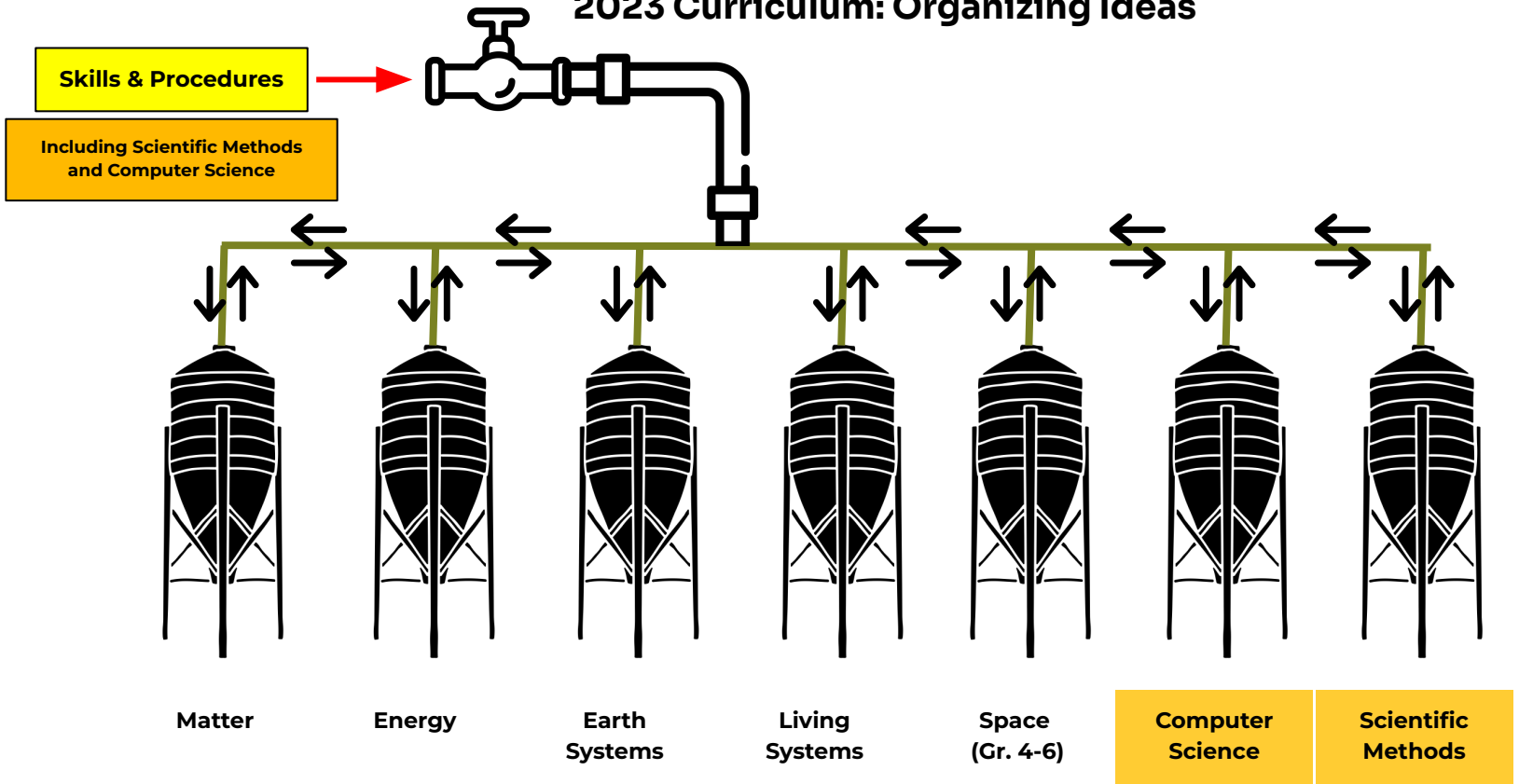
Grade 5	Grade 6
Guiding Question 02: *What are energy resources?*	**Guiding Question 02:** *How are energy resources used?*
Learning Outcome 02: *Students investigate and analyze various energy resources.*	**Learning Outcome 02:** *Students evaluate the use of energy resources and explain factors that influence choice.*
Energy	Advantage
Energy Needs	Daily Living
Energy Resource	Disadvantage
Resource: Renewable & Non-Renewable	Electricity
	Energy Use Management
	Energy Choice Factors
	Processed Energy & Non-Processed Energy

Link: Concept Progressions (ARPDC)

2023 Curriculum: Organizing Ideas

Skills & Procedures

Including Scientific Methods and Computer Science



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Learner Outcome Verbs

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

Grade 6E1 Learner Outcome

*Students **analyze** forces and **relate** them to interactions between objects.*

6E1.1 Understanding: *External and internal forces can change the shape, size, or position of objects that interact*

6E1.1 Skills and Procedures

- **Conduct investigations** to answer questions about the effects of external and internal forces on objects during an interaction.
- **Identify forces** that act on an object during an interaction.
- **Use materials, tools, and equipment safely** while experimenting with forces in interactions.

6E1.2 Understanding: *Changes in an object's shape depend on its properties.*

6E1.2 Skills and Procedures

- **Differentiate** between temporary and permanent changes.
- **Test** the plasticity and elasticity of objects.

6E1.3 Understanding: *For every action force, there is an equal and opposite reaction force. (Newton's Third Law)*

6E1.3 Skills and Procedures

- **Demonstrate and represent** an action force and its reaction force in various interactions.

Teaching for Transfer

Phases of Learning

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

Surface

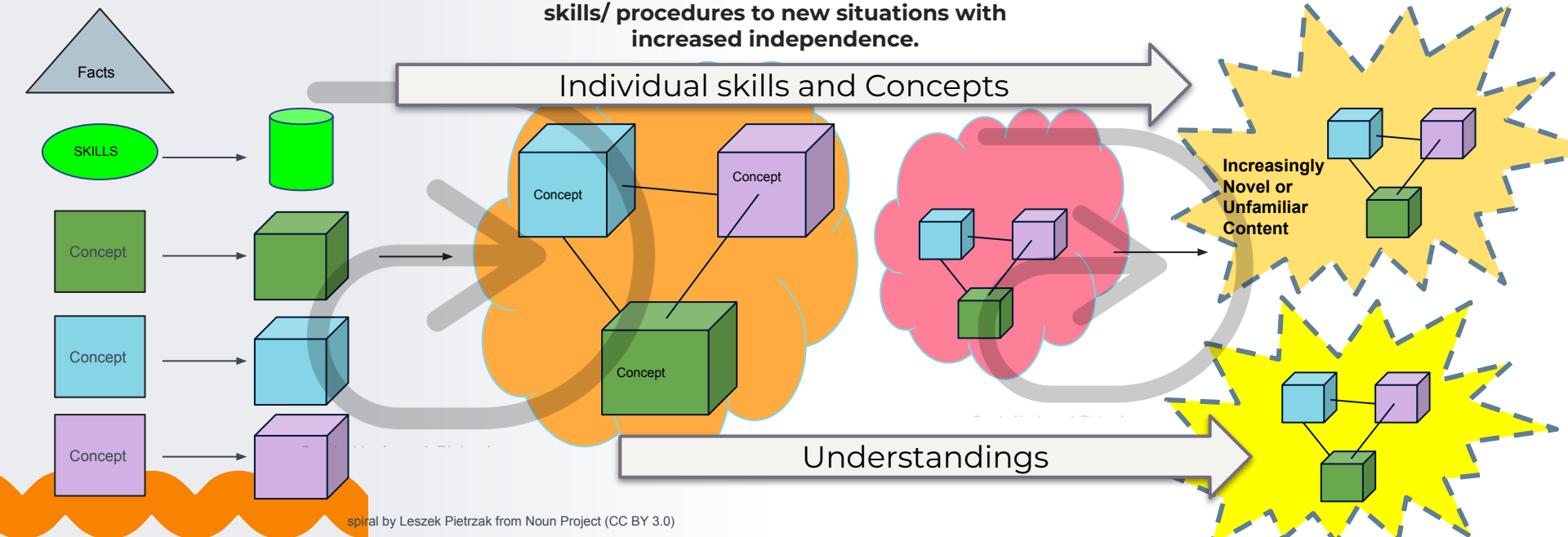
Students are first exposed to individual skills, concepts and their related knowledge.

Deep

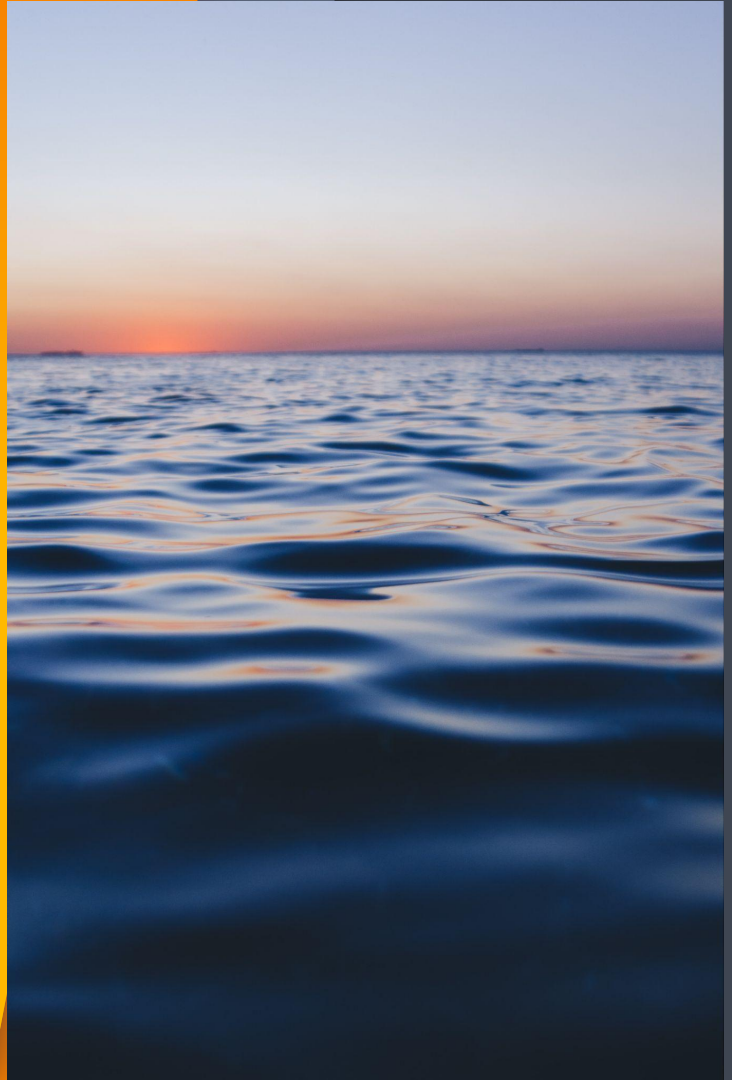
Students make connections between concepts to create deeper understanding and appropriately apply skills/ procedures to new situations with increased independence.

Transfer

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



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

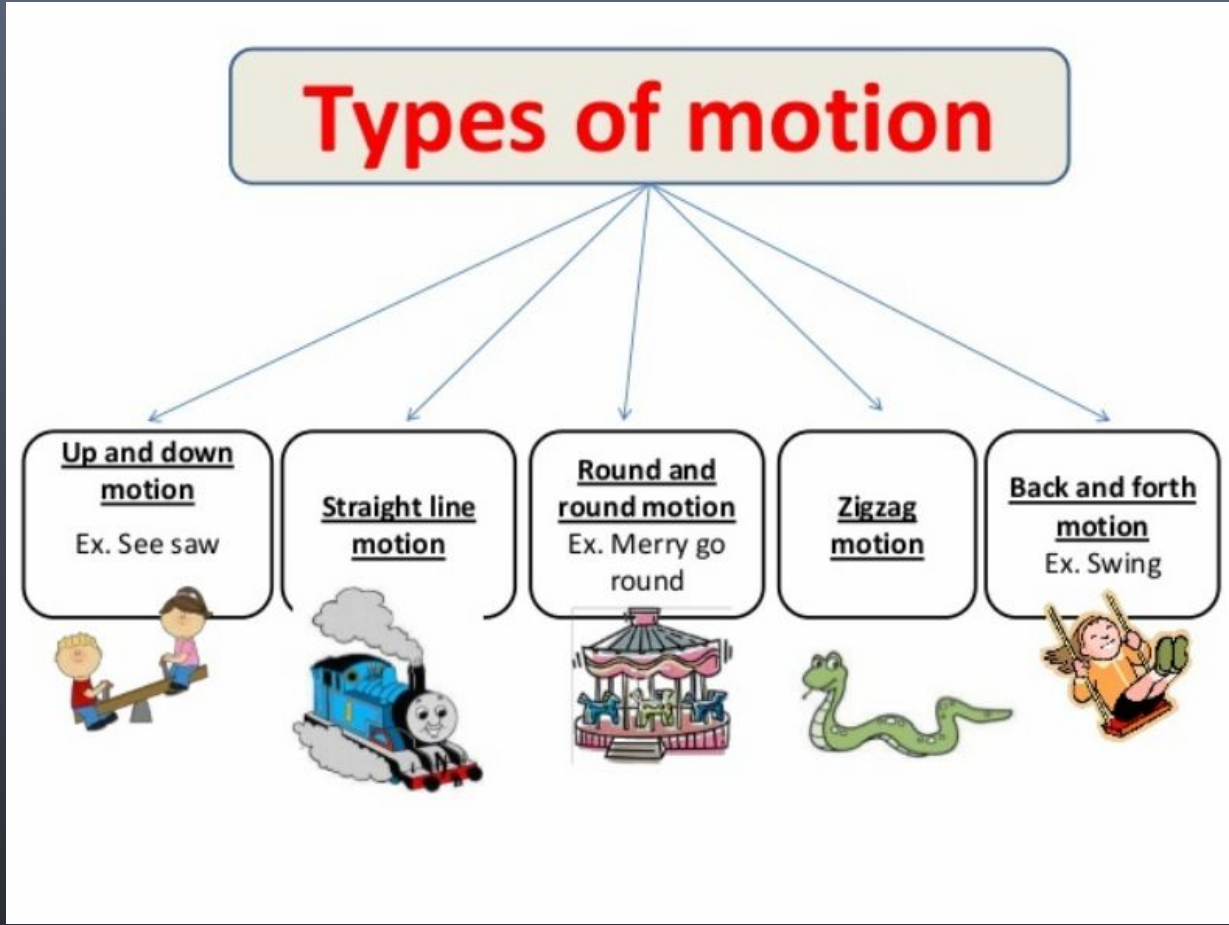


From Kindergarten

Objects | Properties

PE or Outdoor Education Time!

Sidewalk Chalk would be a great tool!



Quizizz Library. Science: Types of Motion

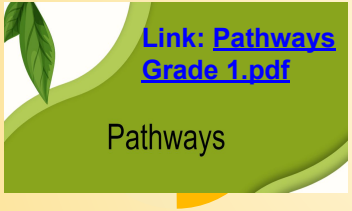
From Grade 1

Aspects of Movement: Direction, Pathway and Speed

Direction

Describing “Up, down, forward,backward, sideways, towards, away from”

Pathway



Movement pathways can be straight, curved, spiral, side-to-side

Speed

Speed - fast, slow, stay the same, change

What influences the way an object can move?

How does shape influence movement?

Let's explore!

How does the material influence movement?

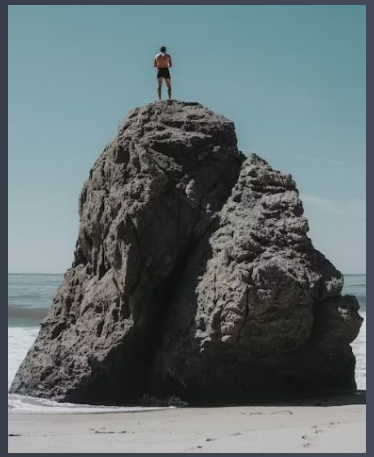


Photo by Andrew Charney on Unsplash

How does the surface texture influence movement?

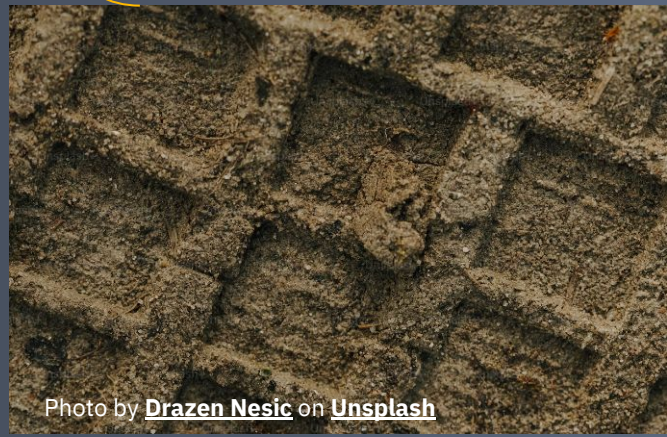


Photo by **Drazen Nesic** on **Unsplash**

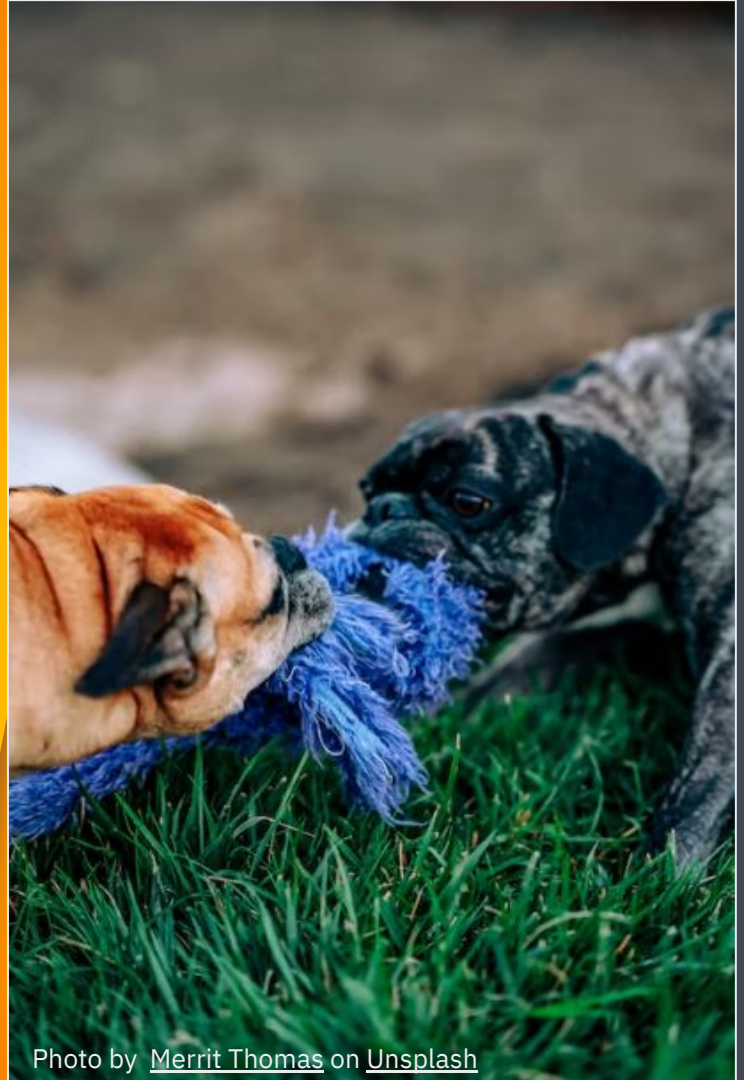
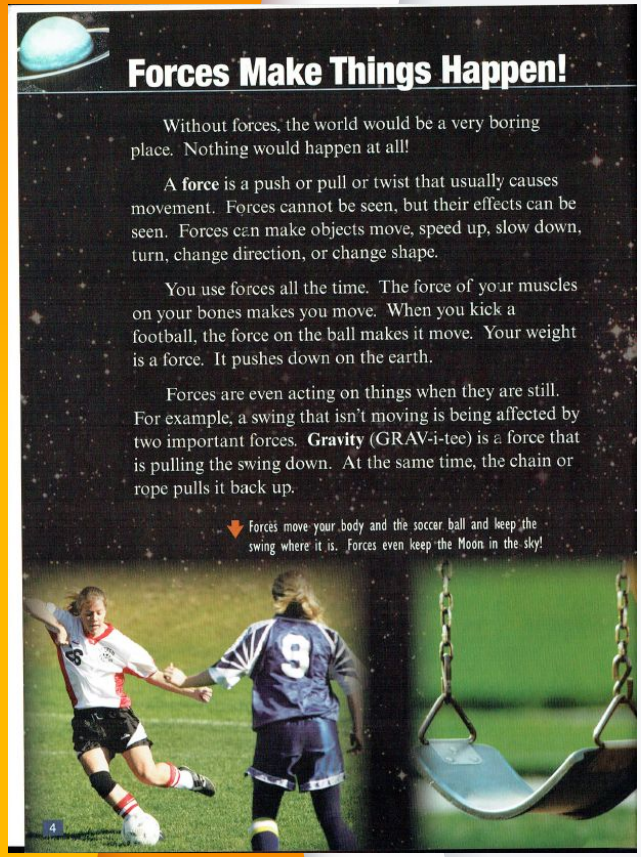


Photo by Merrit Thomas on Unsplash

Unpacking Grade 3

So what is Force?



Forces Make Things Happen!

Without forces, the world would be a very boring place. Nothing would happen at all!

A **force** is a push or pull or twist that usually causes movement. Forces cannot be seen, but their effects can be seen. Forces can make objects move, speed up, slow down, turn, change direction, or change shape.

You use forces all the time. The force of your muscles on your bones makes you move. When you kick a football, the force on the ball makes it move. Your weight is a force. It pushes down on the earth.

Forces are even acting on things when they are still. For example, a swing that isn't moving is being affected by two important forces. **Gravity** (GRAV-i-tee) is a force that is pulling the swing down. At the same time, the chain or rope pulls it back up.

Forces move your body and the soccer ball and keep the swing where it is. Forces even keep the Moon in the sky!

4

Can you identify other examples where forces are used in the time you get up in the morning to getting to your classroom?

Role of forces in our daily lives

Link

Weir, Jane. Forces and motion. Teacher Created Material. 2007. p.4

Contact Forces - Perform or Describe

Applied

Pushing and Pulling

Friction

Pushing and Pulling

Fast or Slow: Friction

Tension

Contact and Non-Contact Forces
@ Tutaway
Guitar string
Wire for a trajectory

Elastic or Spring

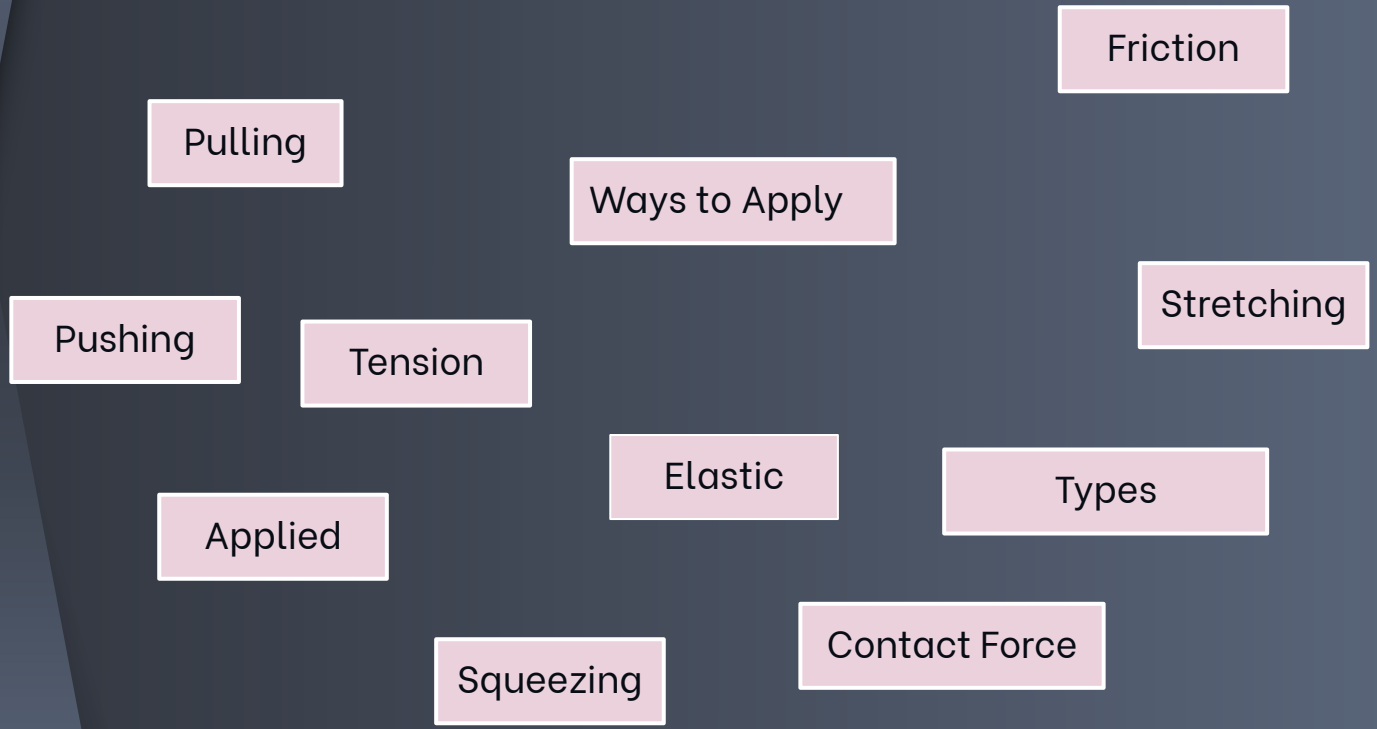
10 Models/Examples of Elastic Forces
Source: Studiousguy.com
Shooting Elastics
Slingshot
Bow and Arrow

What could help us make applying force easier?

What is a Concept Map?

- Relationships
- Concept Map

Relate the organizing ideas concepts into a concept map.



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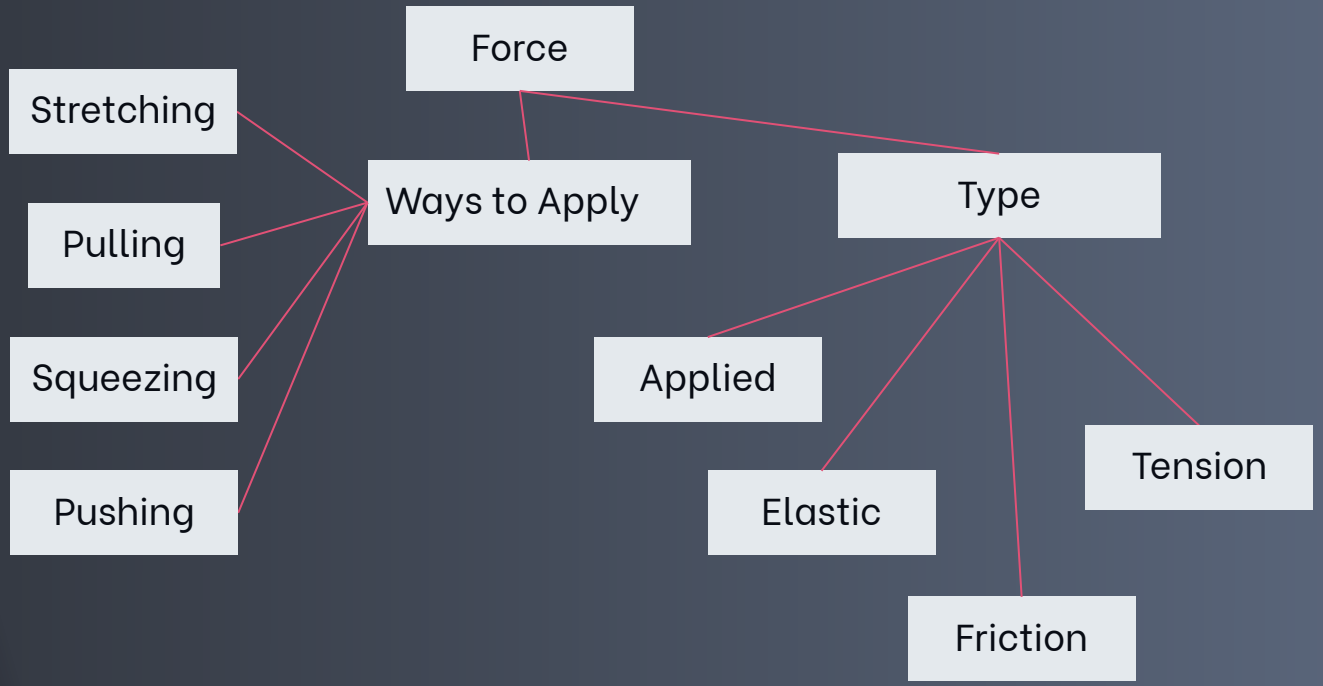
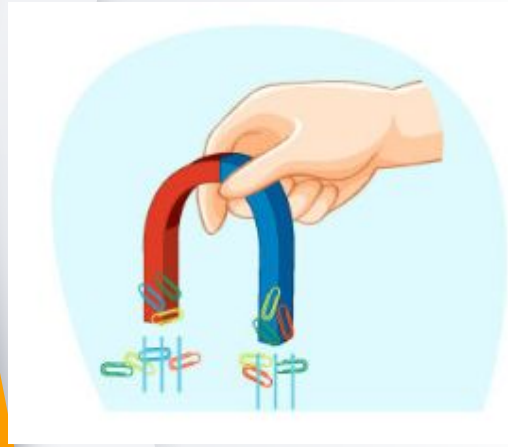


Photo by Aaron Burden on Unsplash

Unpacking Grade 4

Types of Non-Contact Forces



Magnetic Force

Gravitational Force

Electrostatic Force

Image source: *Contact and Non-Contact Forces*. GeeksforGeeks.org

Contact Forces

When an object like your school bag is kept on the table, it remains at rest. The bag is in contact with the table on which applies some force on it due to its weight and gravity. Such contact force is called Applied Force.

You can't see gravity yet it's doing its job! It is a **non-contact** force

So What IS Gravity?

Gravity is a non-contact force. It is not in direct contact with the bag.

Watch the video “Defining Gravity”

Describe how gravity is an non-contact force that can affect objects, materials and substances. Give two examples different from those in the video.

Conduct an Investigation to demonstrate magnetic forces on objects.

Investigation: testing to see what properties of objects react to magnets.

Earth is a magnet. How can we use its magnetic forces to navigate? Explain.

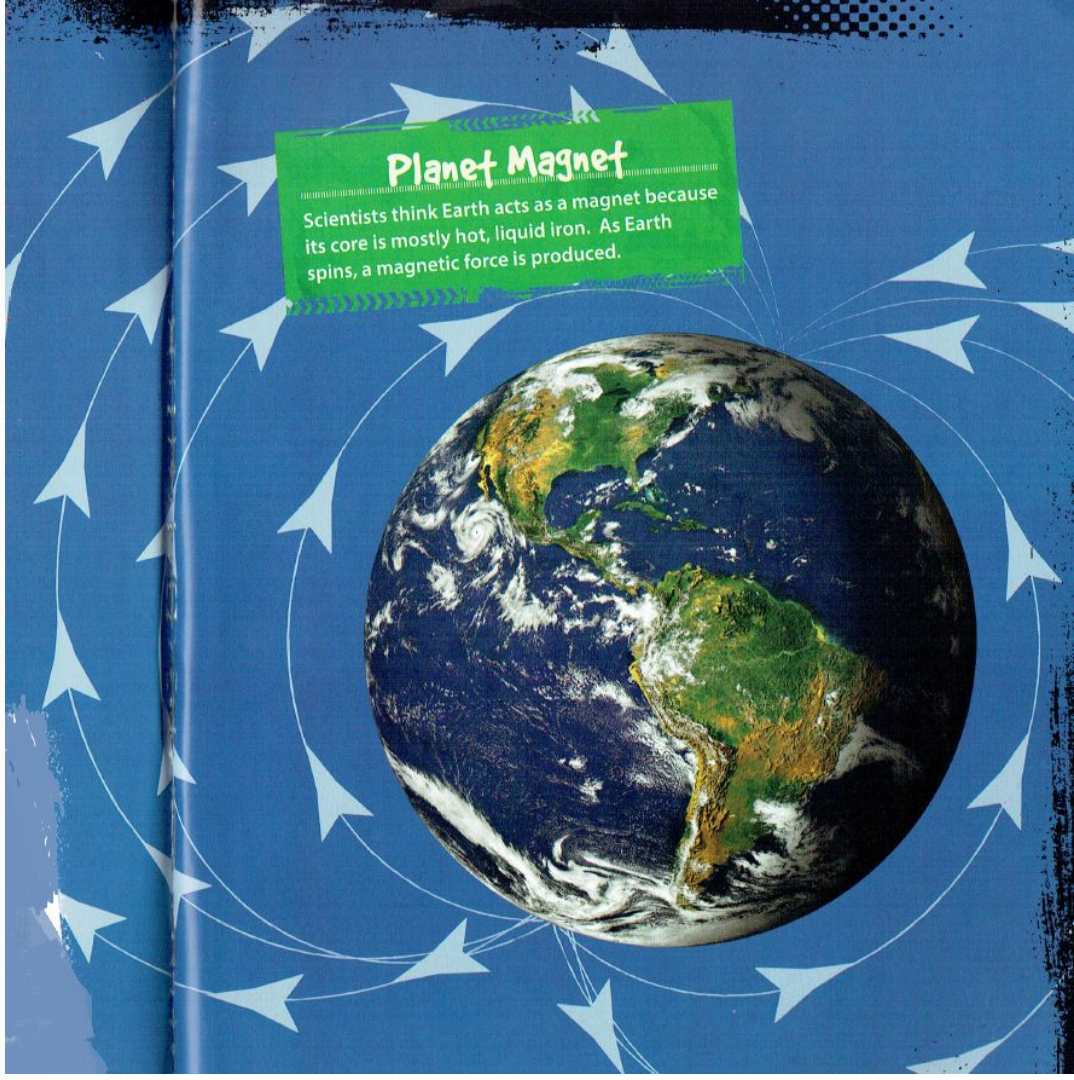
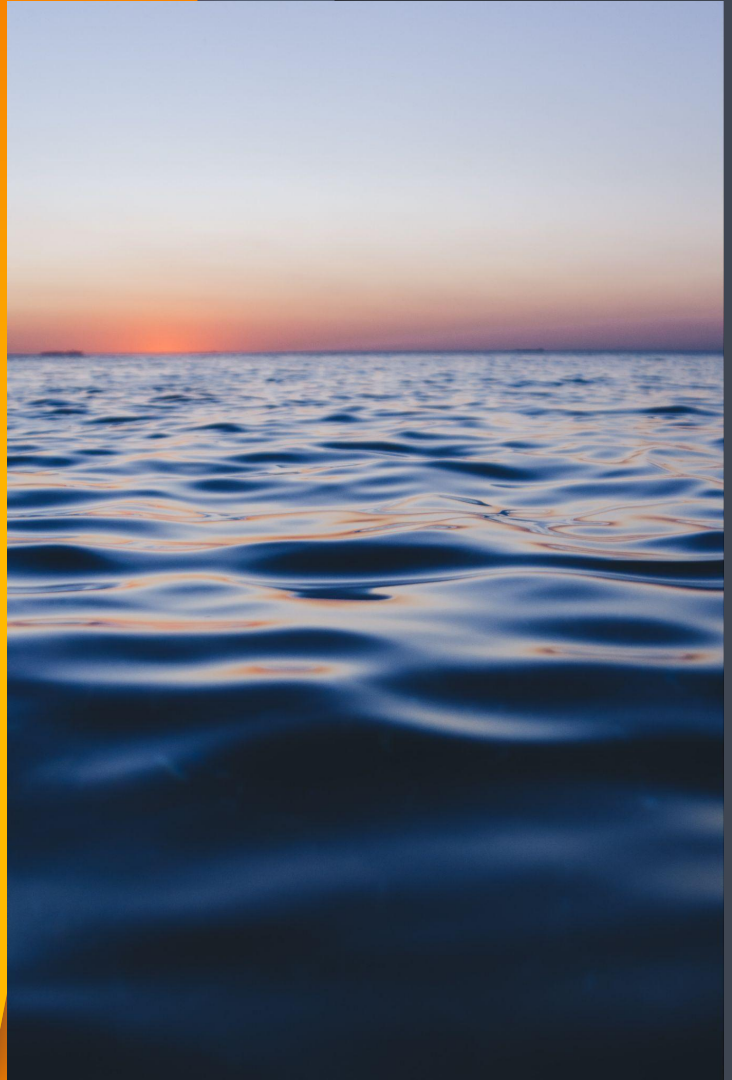


Photo by Aaron Burden on Unsplash

Reviewing Grade 5



Surface Level 5.1

WHAT FORCES AFFECT FLIGHT?

Four forces act on any object that has achieved flight. The forces that push and pull an object up or down and forwards or back counteract each other during flight.

These forces affect how a flyer achieves flight. They determine how far, fast, and high a flyer can fly.

Drag is the force that slows down the movement of an object. Friction and air resistance cause drag. Drag is related to the speed of an object. The faster an object moves, the greater the drag.

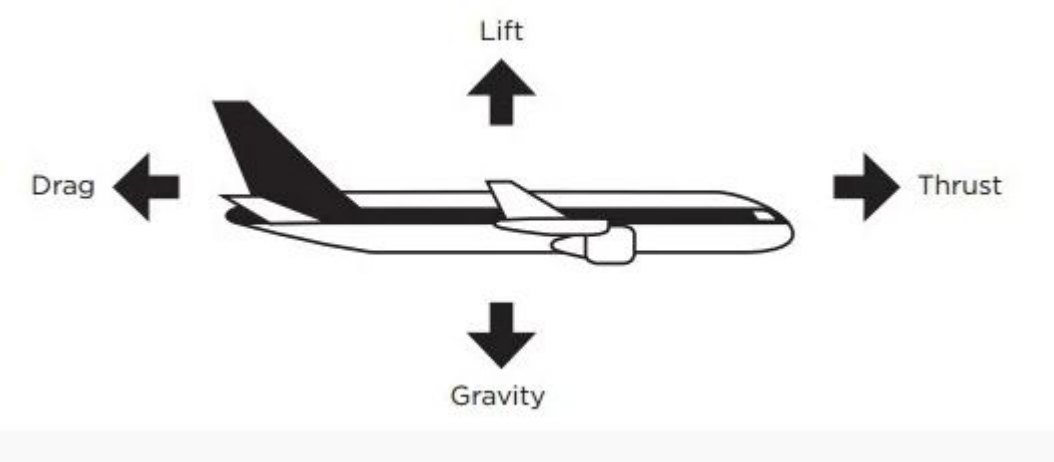
The force of **gravity** pulls an object downward toward the centre of Earth. The **weight** of an object is caused by the force of gravity acting on it.

Thrust is the force that pushes or pulls an object forwards. Thrust must be greater than drag for a flyer to move forwards.

Lift is the force that achieves flight. It occurs at a right angle to the airflow. The movement of air around an object causes lift. Lift acts against the pull of gravity. Flight occurs when lift is greater than an object's weight. As weight increases, lift must also increase to achieve flight.

Chapman,D., Pitts, D., Nixon, H. Science 6 Unit 2 Flight. Newfoundland and Labrador Science Resources. Nelson Publishing. p.8-9

Lift and Gravity & Thrust and Drag are considered pairs of Opposite Forces. Explain why this is true.



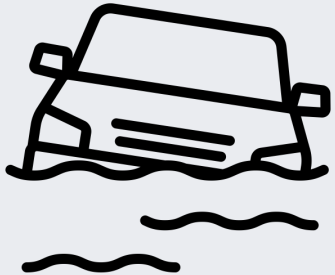
Source: Forces of Flight: Science World

Plane Wing Simulator: Science World

BUOYANCY

Why do some things float in water ...

... while other things sink?



Floating Bottle by Laymik from Noun Project (CC BY 3.0)

sinking car by Llisole from Noun Project (CC BY 3.0)

A plane flies and a canoe floats - how are they same or different? Are the forces for flight the same for things that float on water?

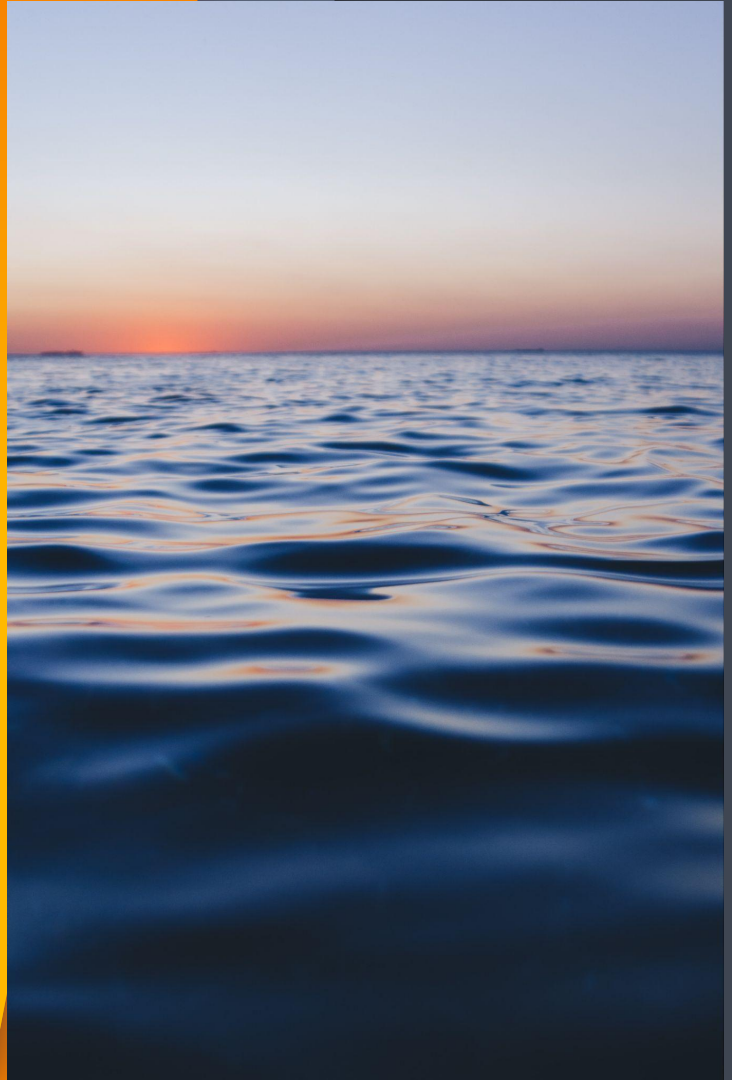
After watching this video, explain what a buoyant force is in your own words. Why does something as large as a canoe float on a lake but a small dime sinks? Explain your thinking.

Buoyant force is an upward force exerted by a fluid that opposes the weight of anything placed in the fluid.

BUOYANCY

When the buoyant force is **greater than the weight of an object**, the object will **float.**

When the buoyant force is **less than the weight of an object**, the object will **sink.**



Surface Level

Concept Attainment: What are Resources?

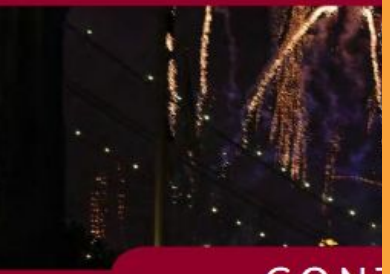
Dreamstime ID #105234118

We use energy everyday!

Can you name some resources? Do you know what we use them for?

Ene

Written by

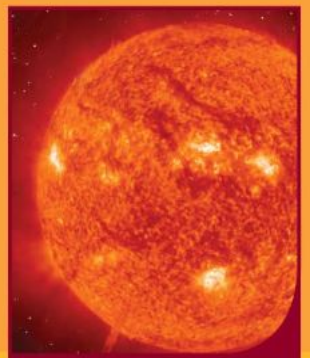


CONT

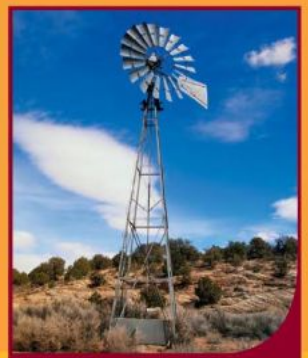
Renewable Energy

Some forms of energy are available in an almost unlimited supply. This is called renewable energy.

We can get renewable energy from:

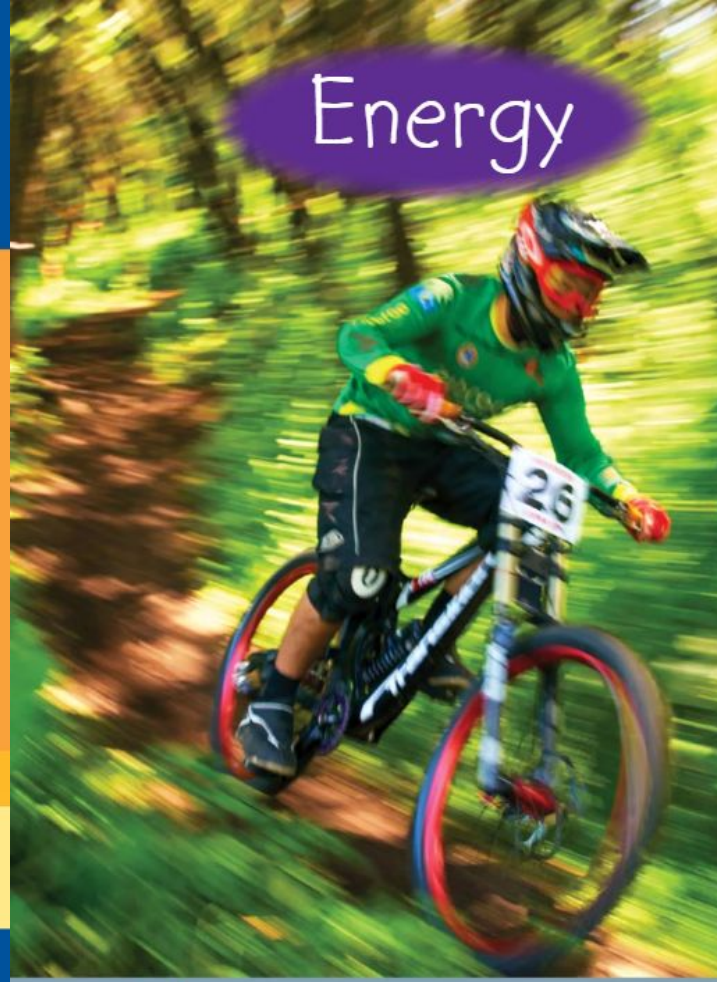


The SUN



The WIND

The WATER



Sails

Canada's Energy - Research!

Consider a Case Study approach - students are assigned or select 2 or 3 different energy sources to research, compare and explain their relationships. Reading the book *Energy* by Jo Windsor will provide students sufficient introduction to possible sources renewable energy sources to decide which one(s) interest them most.

OR

Select one source of energy close to your community or that students are familiar with and unpack it as a class modeling the process of research, and explaining the characteristics of the chosen energy form.

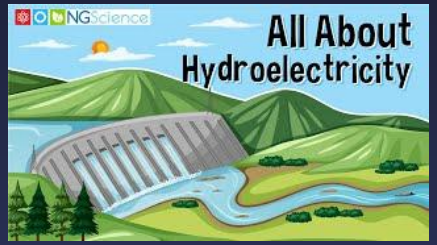
Stock photo by Pixabay

Learning about some sources of energy.

How is wind energy produced?

Hydropower 101

Explaining Hydroelectric power.



What is Solar Energy

This video touches on renewable and nonrenewable sources as well.

Resources

Using Natural Resources for Energy

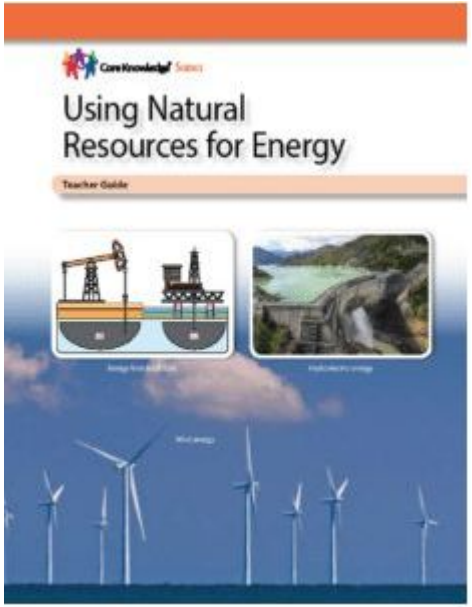
Focus: This is a Problem-Based Learning unit in which students build to a capstone lesson and a presentation to the public.

In this unit, students focus on renewable and nonrenewable resources. They study how people use resources for energy. In addition, they examine the engineering design behind new technologies that protect the environment.

The energy we use is derived ultimately from Earth's natural resources, which can be classified as either nonrenewable or renewable.

Renewable energy sources include:Wind, Hydroelectric, Solar, Geothermal, Tidal

Nonrenewable energy sources include: Fossil fuels, Nuclear



Student Resource
Teacher Resource

*** This resource will help students to understand the different forms of energy

Grade 6

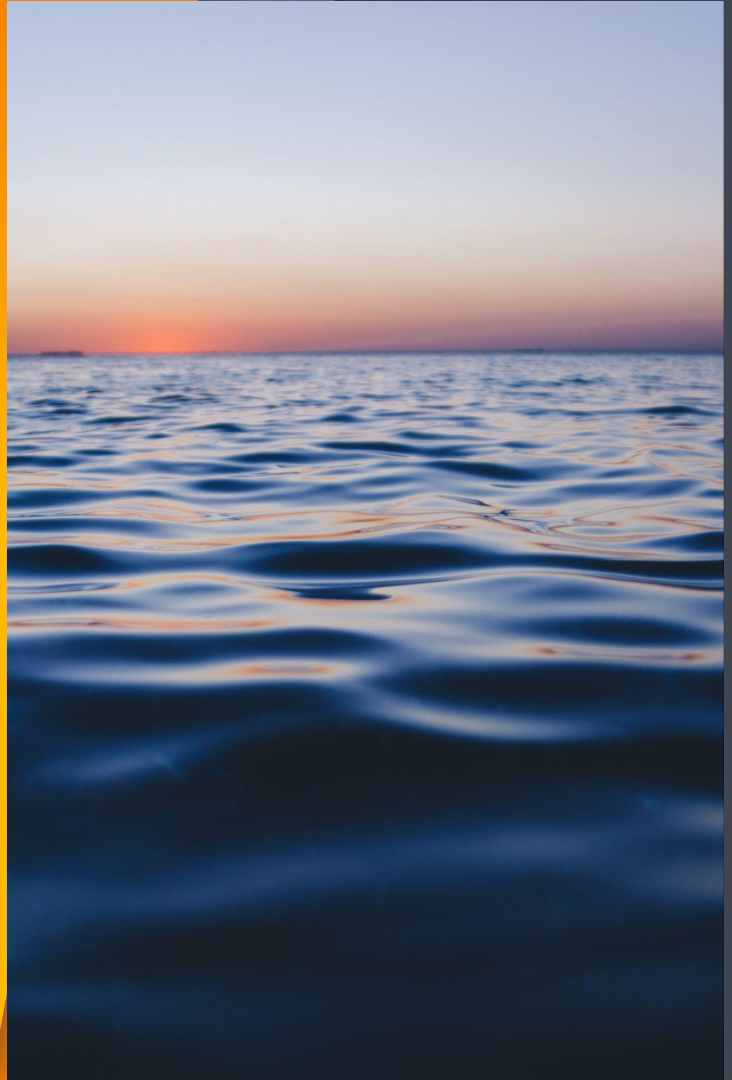
Planning

Begin With the End In Mind

Stephen R. Covey, 1989

Backward by Design

Grant Wiggins & Jay McTighe, 1998



Surface Level 6E1

Learning Outcome
6E1: Students analyze forces and relate them to interactions between objects.
Understandings
6E1.1: External and internal forces can change the shape, size, or position of objects that interact.
6E1.2: Changes in an object's shape depend on its properties.
6E1.3: For every action force, there is an equal and opposite reaction force. (Newton's Third Law)

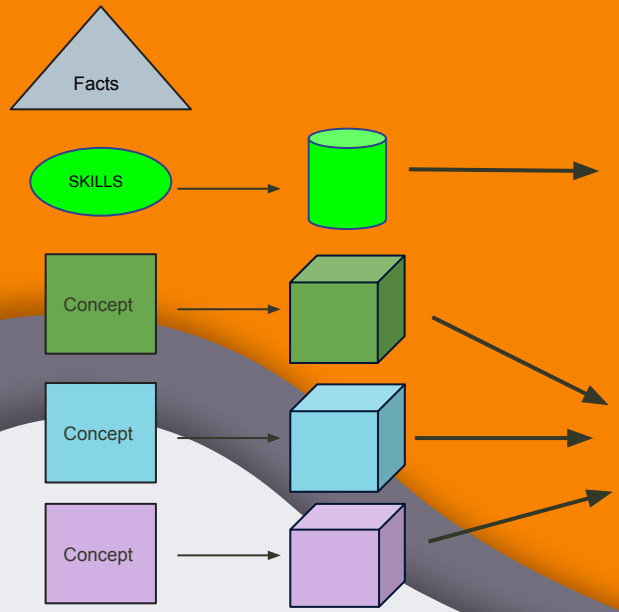
What will students need to know and/or understand in order to be successful?

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

Phases of Learning

Surface

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



Learning Outcome
6E1: Students analyze forces and relate them to interactions between objects.

- Skills such as analyze & relate.

Pre Assessment for Prior Learning

- 6E1.1: Concepts such as forces (internal and external) & interaction.

freeimages.com/tug-of-war

Let's Review!

Forces and Motion Activities

Times Educational Supplement. Tes.com

C

Contact Forces - Perform or Describe

Applied

Pushing and Pulling

Friction

Pushing and Pulling

Fast or Slow: Friction

Tension

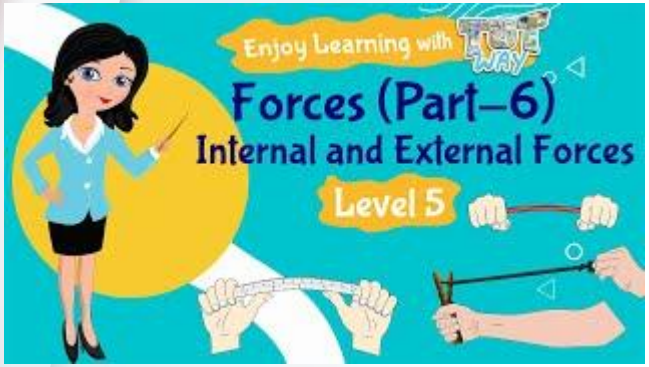
Contact and Non-Contact Forces
@ Tutaway
Guitar string
Wire for a trajectory

Elastic or Spring

10 Models/Examples of Elastic Forces
Source: Studiousguy.com
Shooting Elastics
Slingshot
Bow and Arrow

What could help us make applying force easier?

Internal and External Forces (TutWay Science) - Grade 6

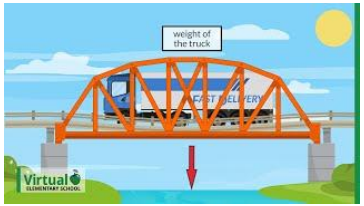


This video reviews most of the External and Internal Force terminology. You may wish to stop the video after each example is provided to further elaborate, model or demo additional examples of the same force.

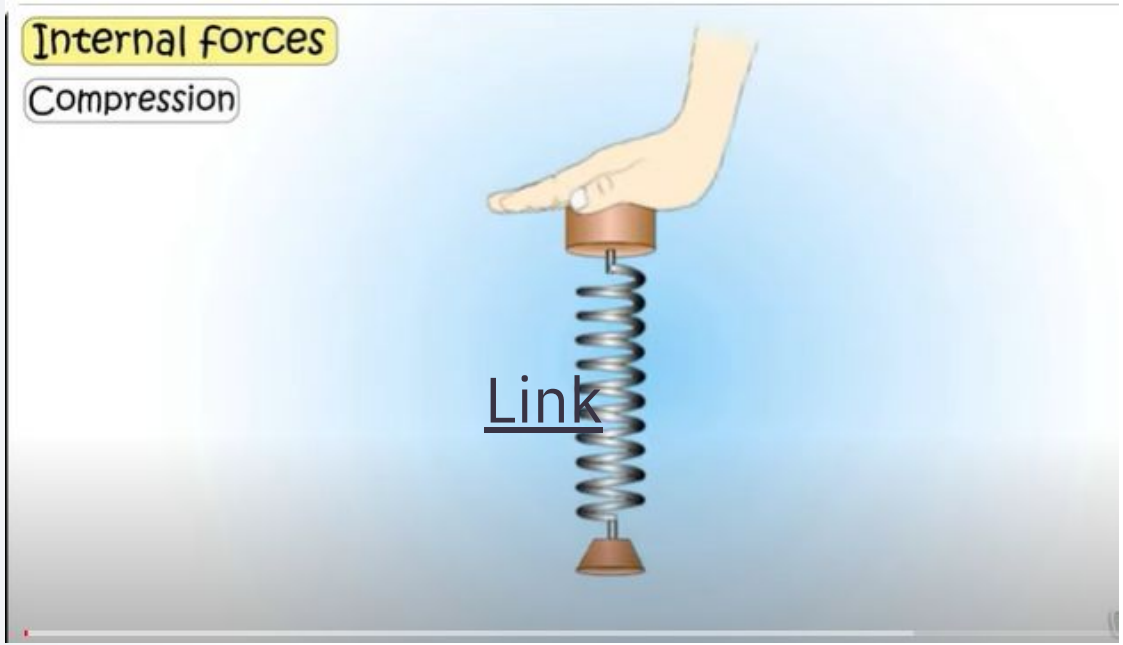
Look around your surroundings. Can you find examples or create an example of each of:

- Applied force
- Friction
- Tension
- Elastic
- Compression
- Shear
- Torsion

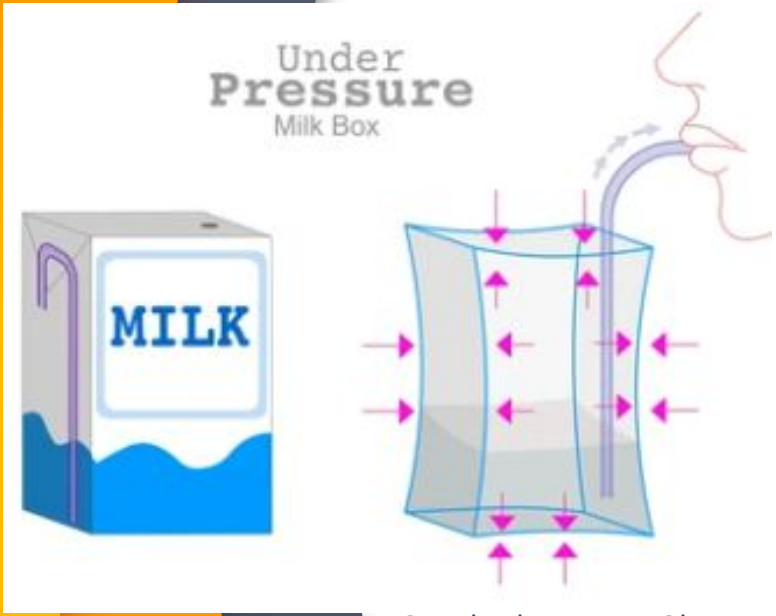
Identifying External Forces Acting on Structures



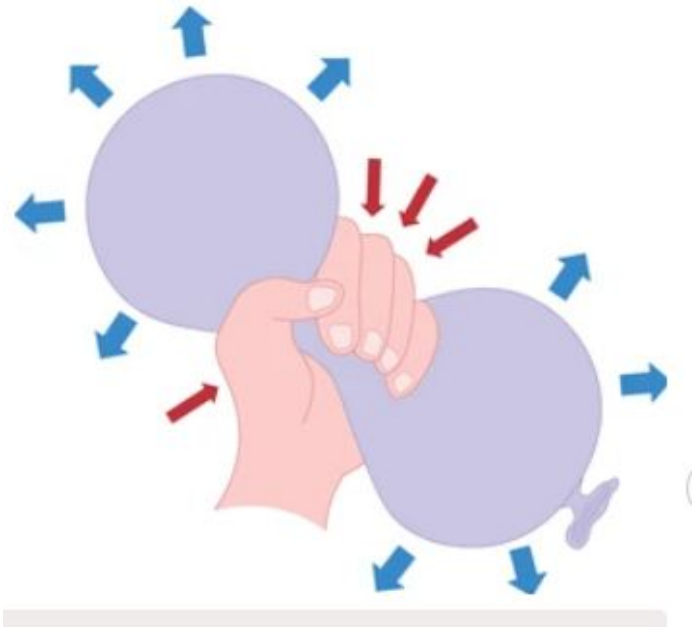
Unpacking Internal Forces: Compression, Tension, Bending Torsion



Describe the Forces in the illustrations below:

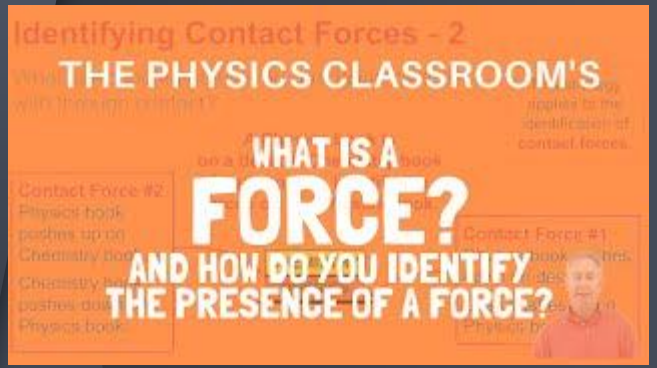


Stock photos on Shutterstock:
Stock Vector ID: 2232848471



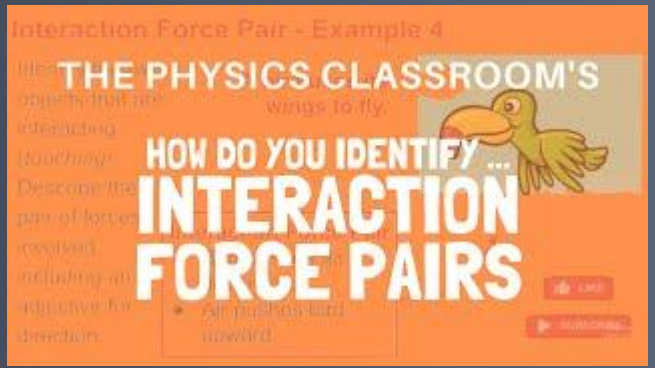
Hand squeezed balloon. When pressure is applied to a liquid in a closed system, the same pressure applies throughout the system. Shutterstock ID #2125828601

Reviewing all our forces!



Source: The Physics Classroom - this site provides a great deal of information on Forces both for the teacher and the students. Contained are explanations, slide decks and videos. Each page provides one small section of the information. Check this link

Identify and describe two examples of two - force pairs different from those shown in the video.



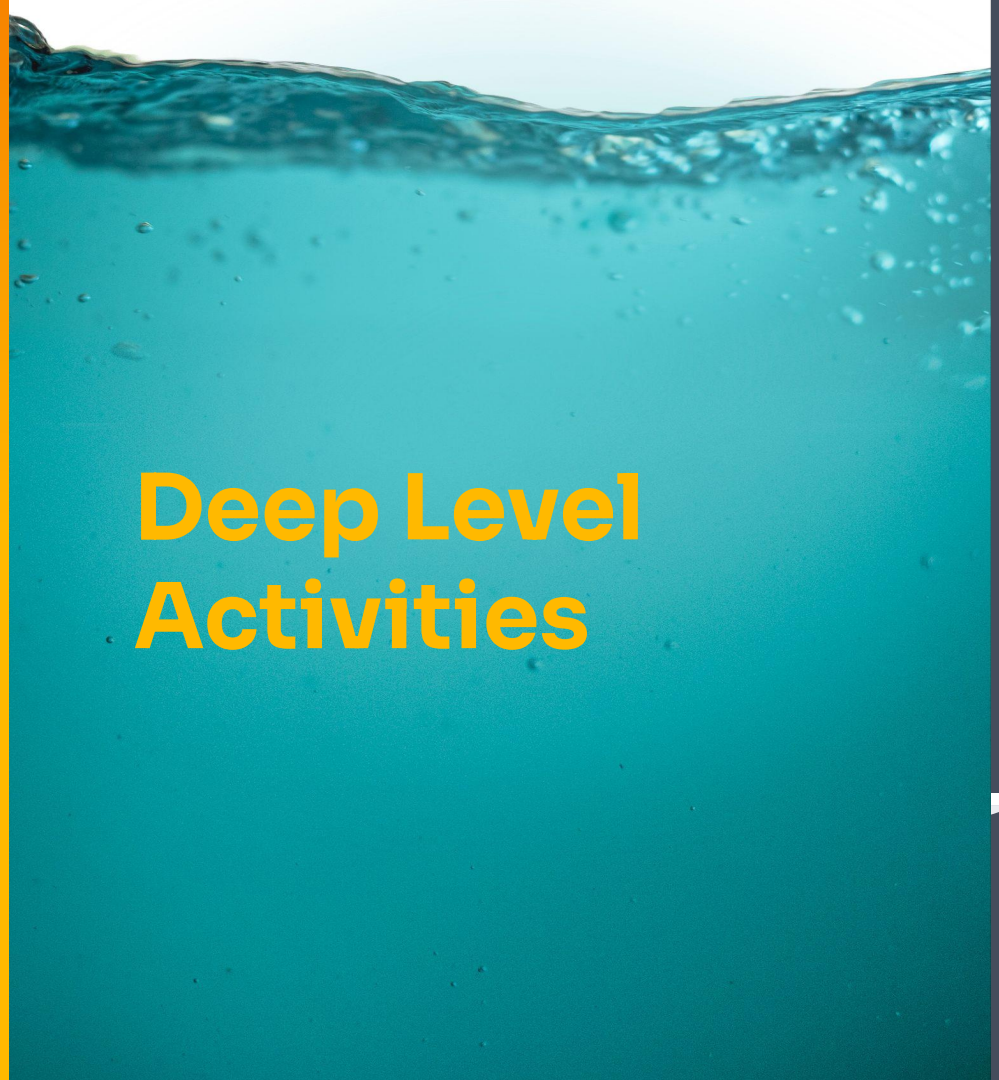
Interactive Force Pairs - Newton's Third Law

Elasticity - material body to return to its original shape and size when the forces causing the deformation are removed. example

Photo by Andre Lisak
Unsplash

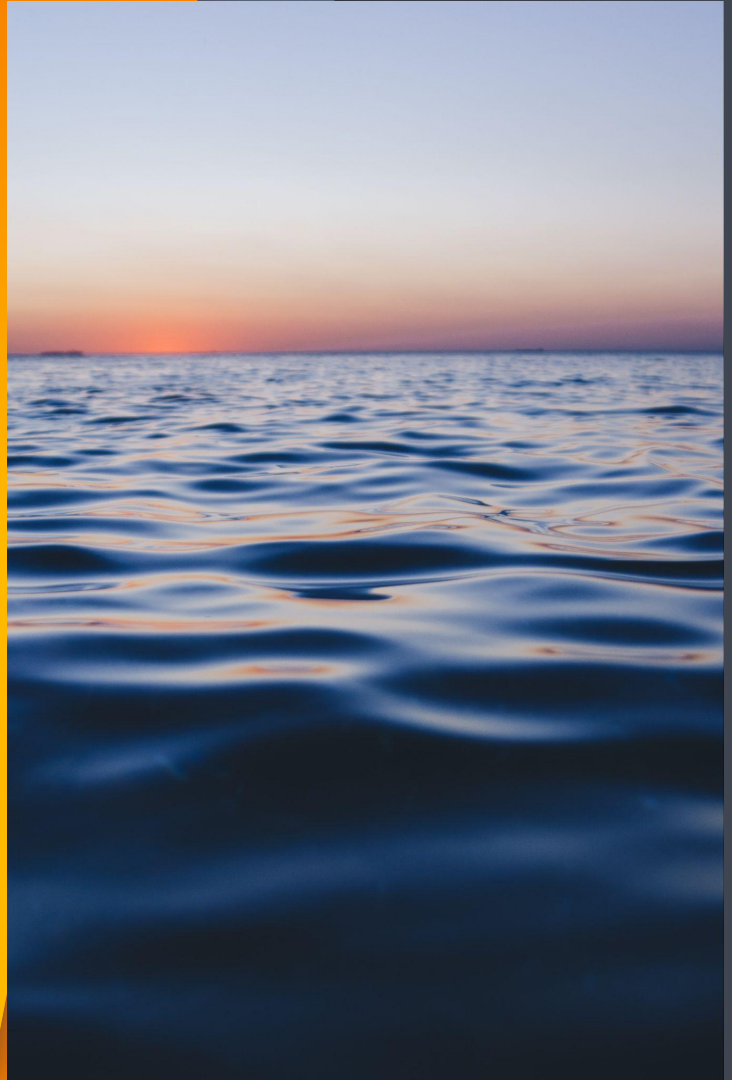
Elasticity - A Science Experiment

Plasticity - **materials can change their shape when a force is applied to them, but they do not return** to their original shape when the force is removed
example



Deep Level Activities

6E1



Surface Level 6E2

Learning Outcome
6E2: Students investigate energy resources and explain factors that influence their use.
Understandings
6E2.1: The advantages and disadvantages of several factors influence selection of energy resources.
6E2.2: Energy resources can be managed for use in daily living.

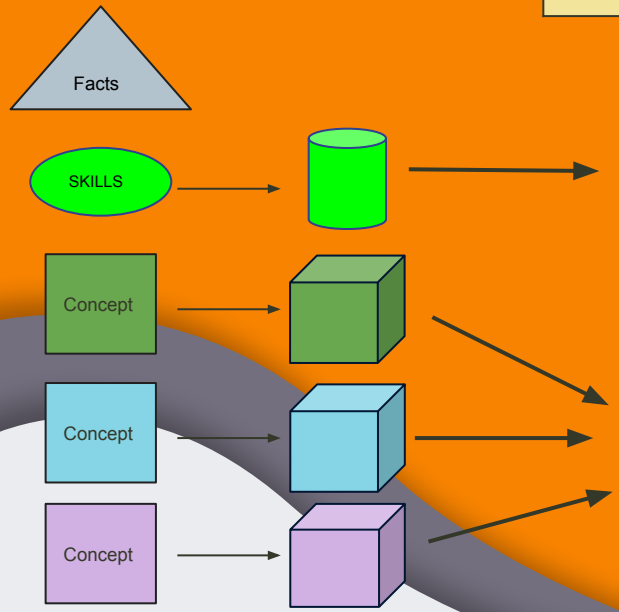
What will students need to know and/or understand in order to be successful?

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

Phases of Learning

Surface

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



Learning Outcome
6E2: Students investigate energy resources and explain factors that influence their use.

- Steps in an investigation; Research Skills; Explanation

K-6 Investigation Progression | Critical Thinking & Problem Solving

Pre Assessment for Prior Learning

- 6E2.1 Resources, Energy Renewable Energy Resources; Nonrenewable Energy Resources, Factors

Reviewing Energy Sources

Photo by Hrant Khachatryan on Unsplash

Source:Teach Engineering:Ignite STEM learning K-12 (Worksheets and Attachments)

Investigating Energy Resources

What do we mean by an *unprocessed* or "before processing" resource?

What do we mean by an *processed* resource?

What are some examples of *Unprocessed* resources?

What are some examples of *Processed* esources?

Do any resources fit into both Processed and Unprocessed groups?

An Introduction to

- Resources
- Renewable & Nonrenewable Resources
- Processed & Unprocessed Resources
- Energy
- Energy Resources

What do I know about the types of energy resources?

Biomass

Solar

Geothermal

Nuclear

Fossil Fuels

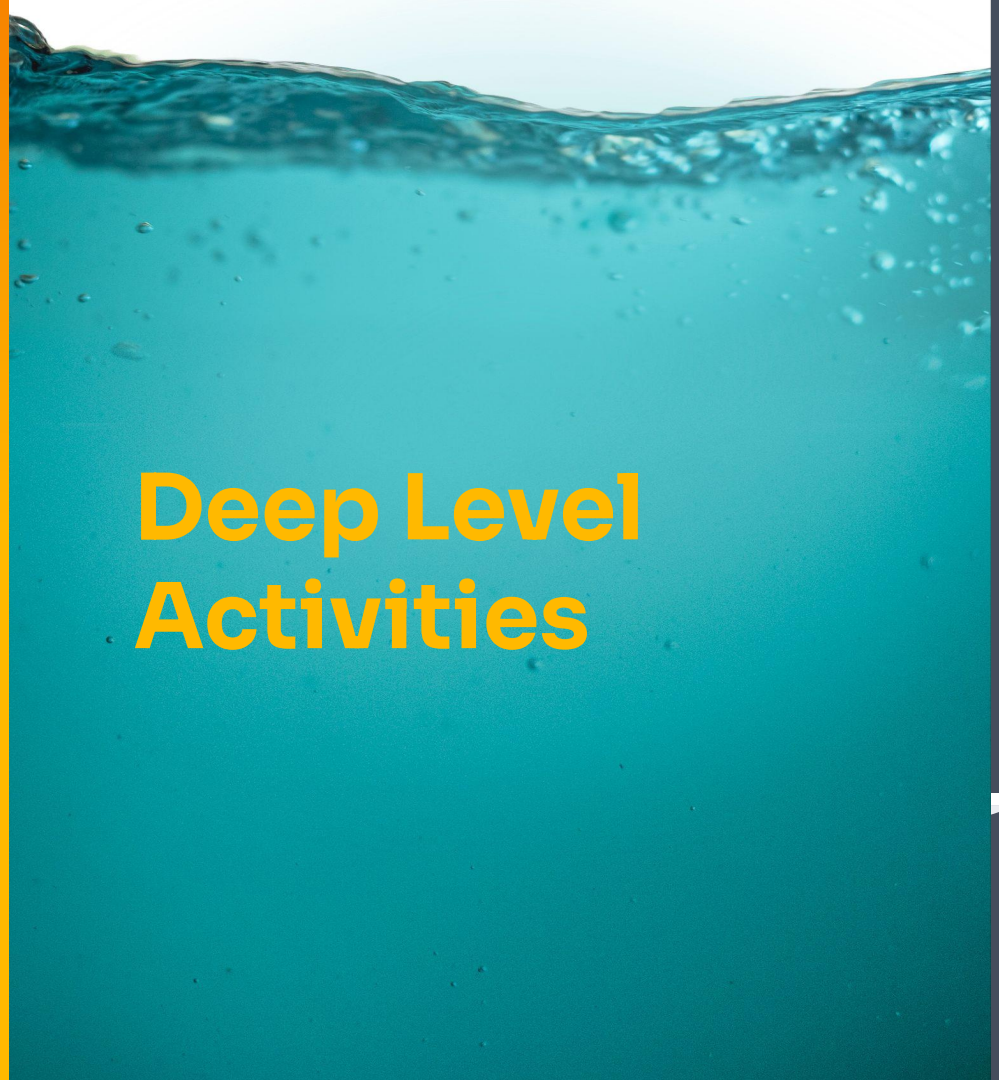
Hydroelectric

Tidal

Provincial and Territorial Energy Profiles

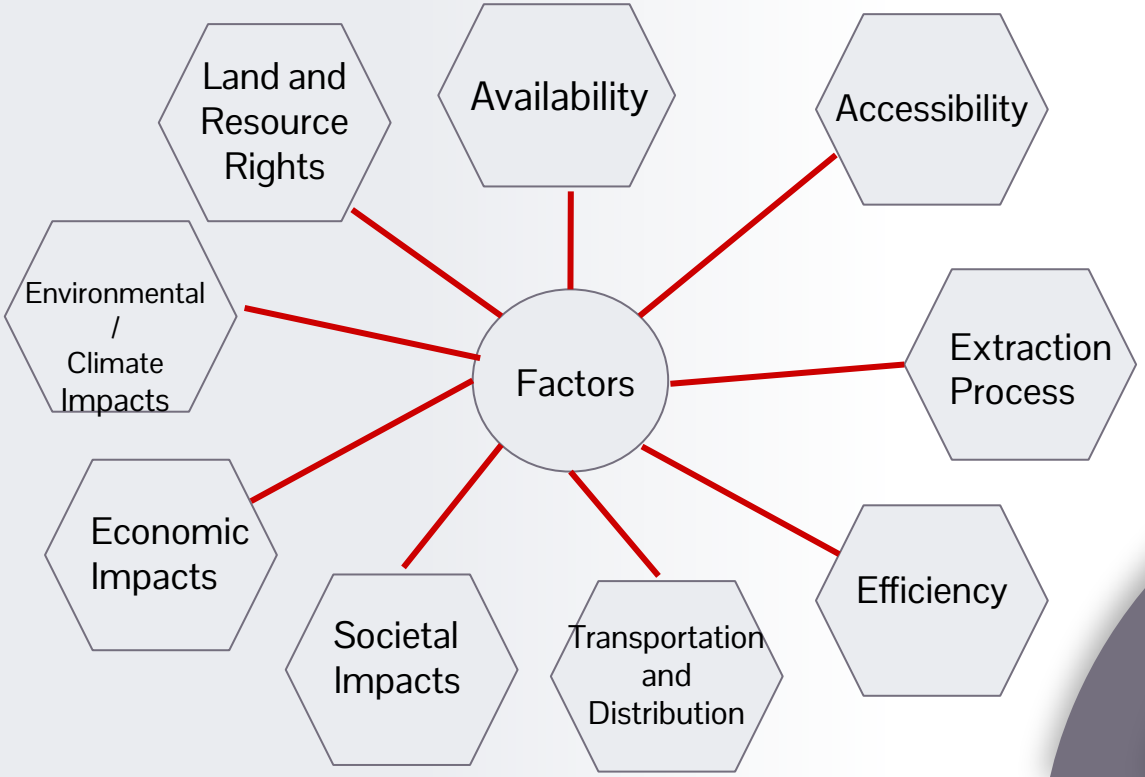
Renewable Energy - Government of Canada

Source: Solar Reviews by Catherine Lane, Content Manager for Solar Reviews:



Deep Level Activities

What **factors** do we consider when choosing which energy resources to ***use*** and how do we ***access*** them - Case Studies and Competencies - design an "infographic"



Accessibility - Direct or After Processing

Needs and ***Wants*** for Energy

Checking for understanding: Card sort or Concept Web connecting key terms with each factor and show connections.

What are factors that influence selection of energy resources

Economic Impact

- How many jobs are created?
- How much will it cost to produce?
- Are there enough workers?
- How much wealth will it produce?
- How affordable will it be?
- How will it affect the local economies and businesses?

Availability and Accessibility

- Availability is the existence or presence of a large or consistent quantity of the resource.
- Accessibility refers to the ease with which a resource can be reached or used.

Social Impact

- Will it have an effect on the way people live?
- Will it have an effect on the way people use the land?
- Will it have an effect on people's health?
- Does it make a society more or less dependent on other societies?

Environmental Impact

- Will it have an effect on the quality of water?
- Will it have an effect on the quality of air?
- Will it have an effect on plants?
- Will it have an effect on animals?
- Will it have an effect on habitats?
- Will it have an effect on the amount and qualitybof land and soil.

These are some things to consider

So Is there a *BEST* Energy Source?

What factors influence the selection of energy resources?

- *Availability and accessibility*
- *Societal impacts*
- *Economic impacts*
- *Environmental impacts*

a) Based on your research of the different types of energy resources available, their pros and cons and other related information, which energy source do you feel is best for your town/city? Explain.

b) Assume the energy source you recommended in part a) is in use in your town/city, provide three examples of where this energy is used in your daily living. Explain your thinking.

Describe what “responsible management of energy resources” means and includes. Relate your answers to your choice of energy source.

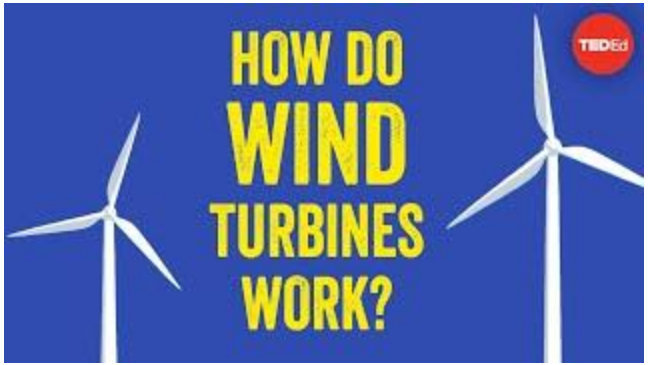
Understanding: Energy resources can be managed for use in daily living.

Sources for Information

Teach Engineering (TE) :
Ignite STEM Learning K-12
CG Engineering
University of Colorado
A teacher resource site organized by Major Topics aligned with NGSS (Next Generation Science Standards) which can be easily connected and aligned to our Organizing Ideas. Subscription for Newsletters and Updates is available.
Suggest trying the Enough Energy? Renew-a-Bead Game - a quantitative activity showing how non-renewable resources are depicted overtime.

Just Energy
Why Alternative Energy Sources Are the Future?
What is the difference between Renewable and Alternative Energies? What are the 'best', 'most affordable' , 'efficient', etc. This site offers students a look at different factors. Related Posts are found at the bottom of the page.

Project Learning Tree (scroll down)
The Pros and Cons of Primary Energy Sources - reviewing important factors



Solar Decathlon Educator Resources

Based on the NEED Project, resources were developed to assist in understanding Energy

Renewable Energy | Safety Smart Science : Renewable Energy

Bill Nye the Science Guy explores the science of renewable energy and demonstrates how we can use science and technology to engineer a brighter tomorrow. Using his trademark blend of hands-on demonstrations and humor, Bill explains Newton's First Law. Then, he's off to the Renewable Energy Lab at Underwriters Laboratories to compare renewable and non-renewable energy sources such as fossil fuels, solar, wind, and hydroelectricity.

Transfer Possibilities

Done Any Baking Lately?

Describe ‘kneading bread dough’ using the vocabulary associated with forces.

Crunch!

How can car compactors or garbage compactors be considered cost savers? How do they work?

What ideas do you have?

What would your energy efficient city look like?

After students have researched the factors that influence energy selection ....

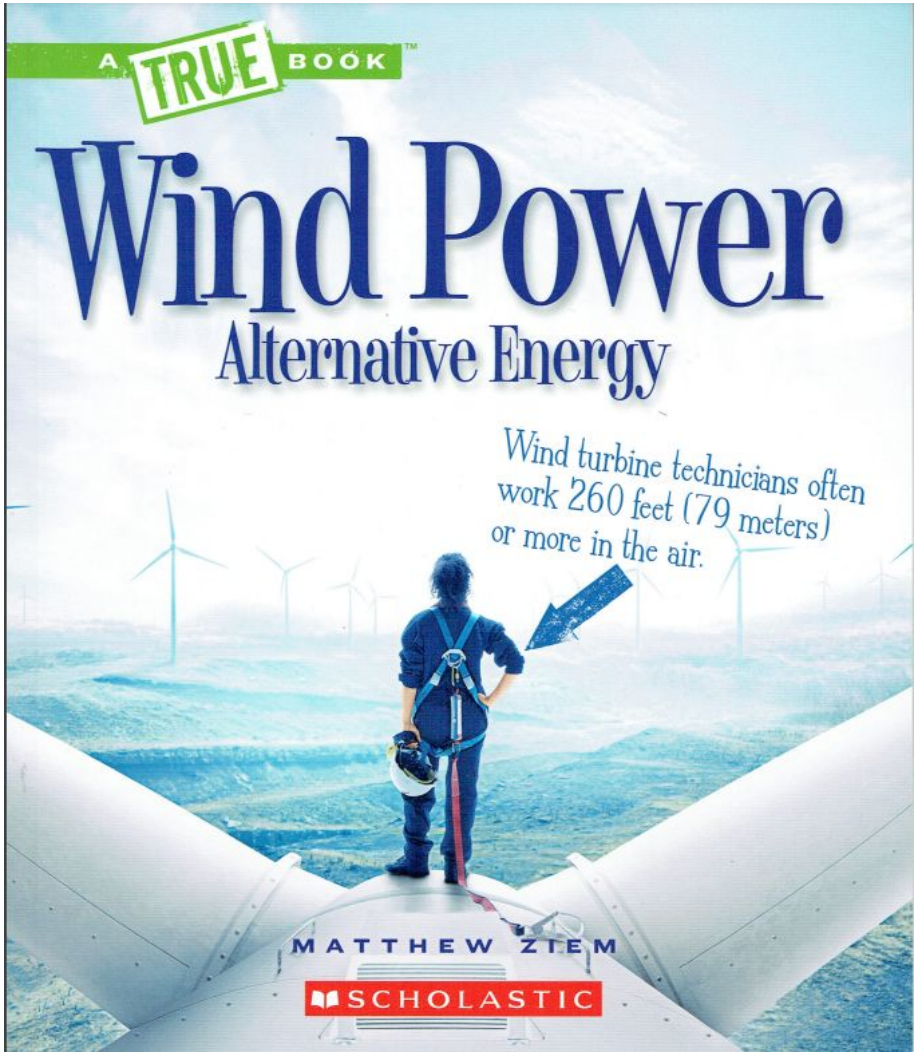
The Great Debate

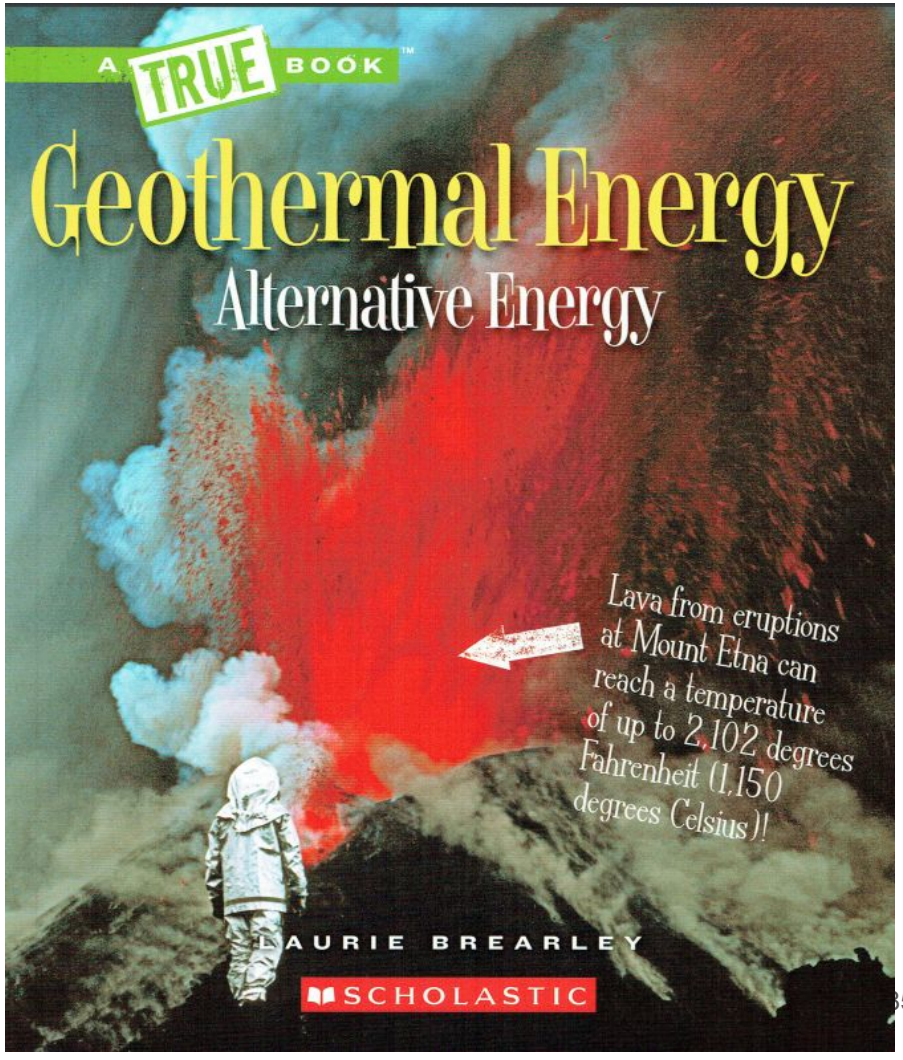
Students debate their energy selection
t the completion of their research.

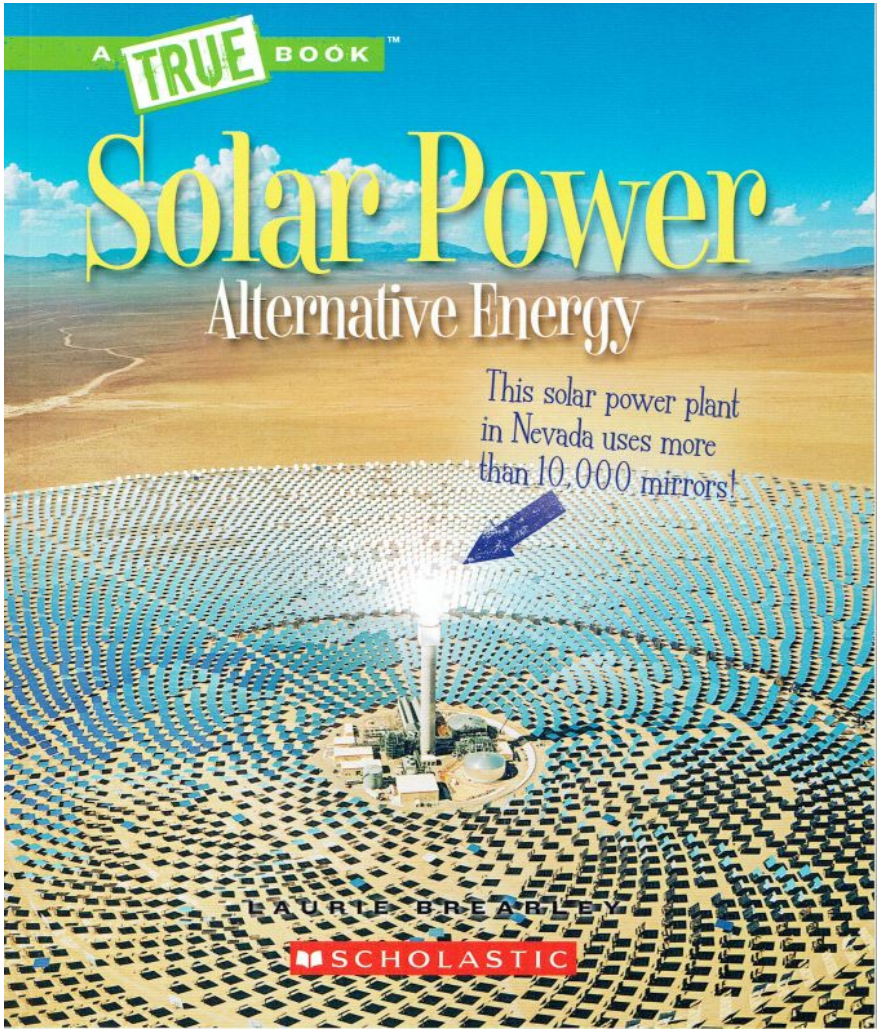
OR

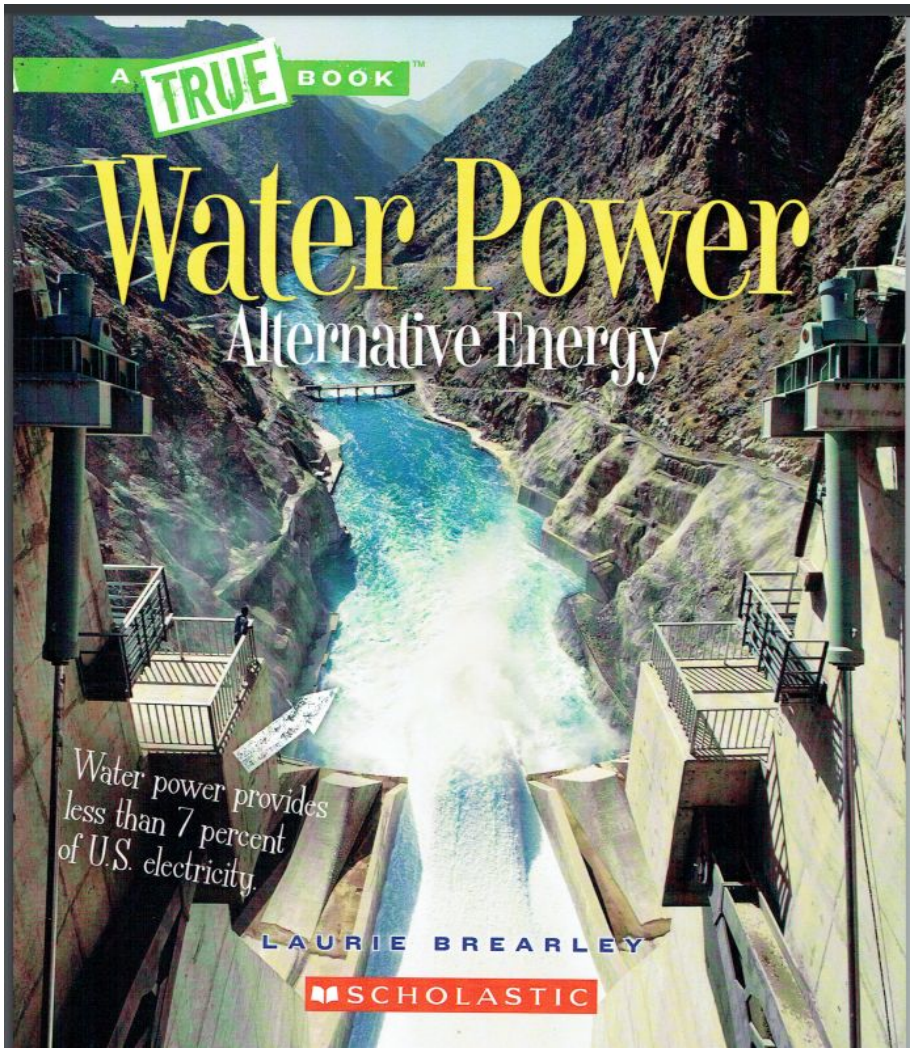
Representation

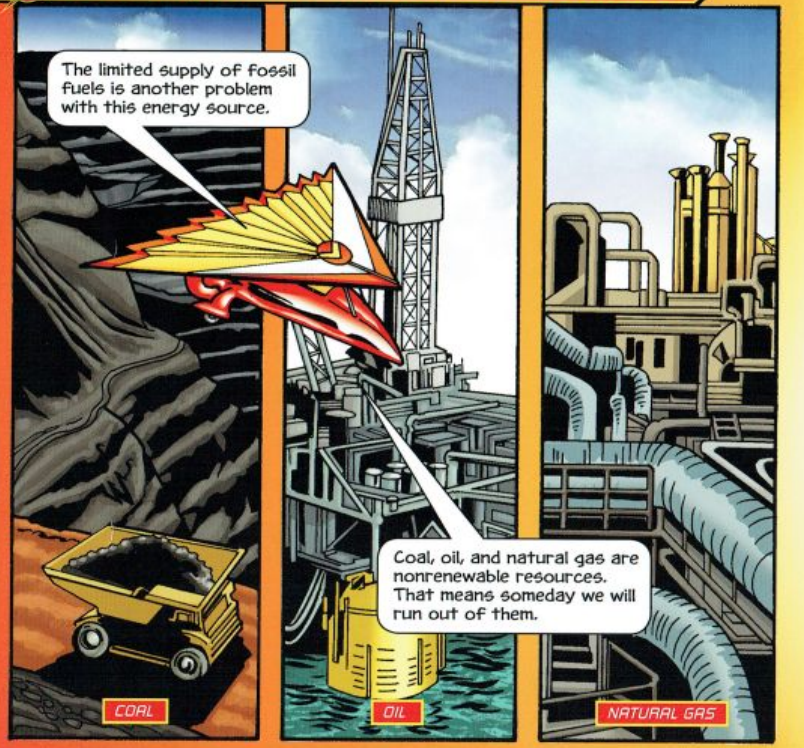
- Essay
- Slide Show
- Infographic
- A Campaign
- Etc.


A TRUE BOOK
Wind Power
Alternative Energy
Wind turbine technicians often work 260 feet (79 meters) or more in the air.
MATTHEW ZIEM
SCHOLASTIC


A TRUE BOOK
Geothermal Energy
Alternative Energy
Lava from eruptions at Mount Etna can reach a temperature of up to 2,102 degrees Fahrenheit (1,150 degrees Celsius)!
LAURIE BREARLEY
SCHOLASTIC


A TRUE BOOK
Solar Power
Alternative Energy
This solar power plant in Nevada uses more than 10,000 mirrors!
LAURIE BREARLEY
SCHOLASTIC

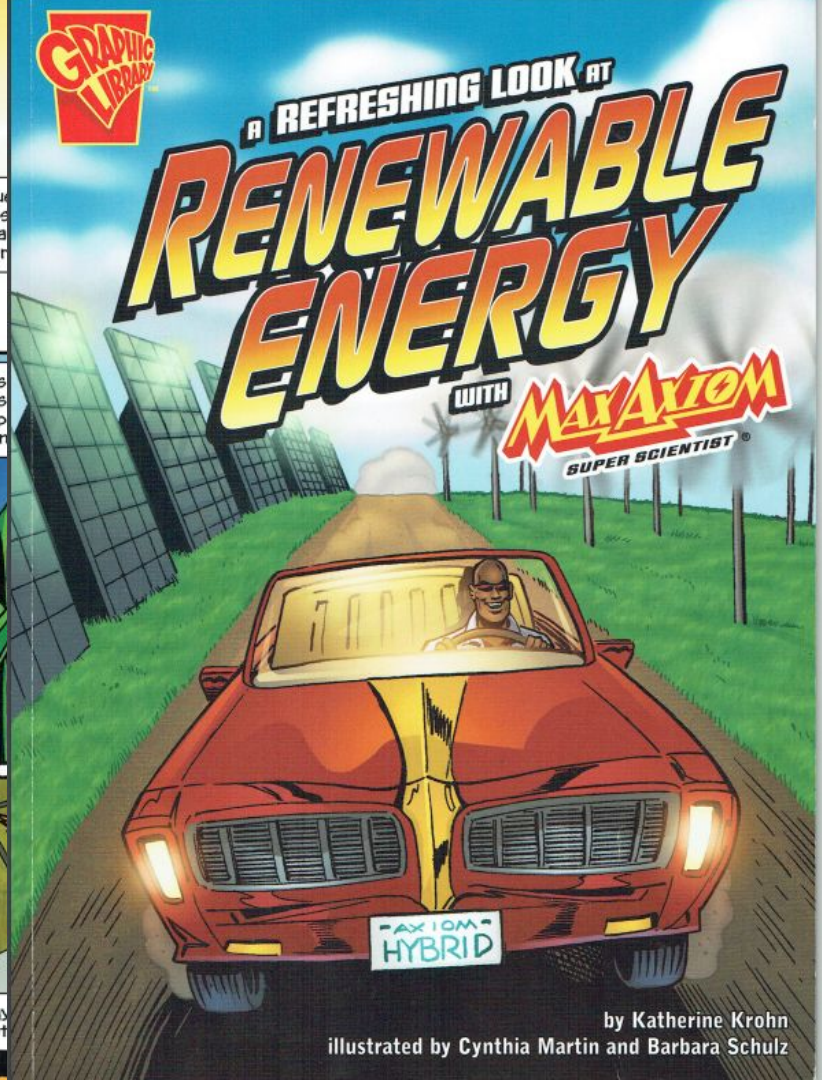

A TRUE BOOK
Water Power
Alternative Energy
Water power provides less than 7 percent of U.S. electricity.
LAURIE BREARLEY
SCHOLASTIC



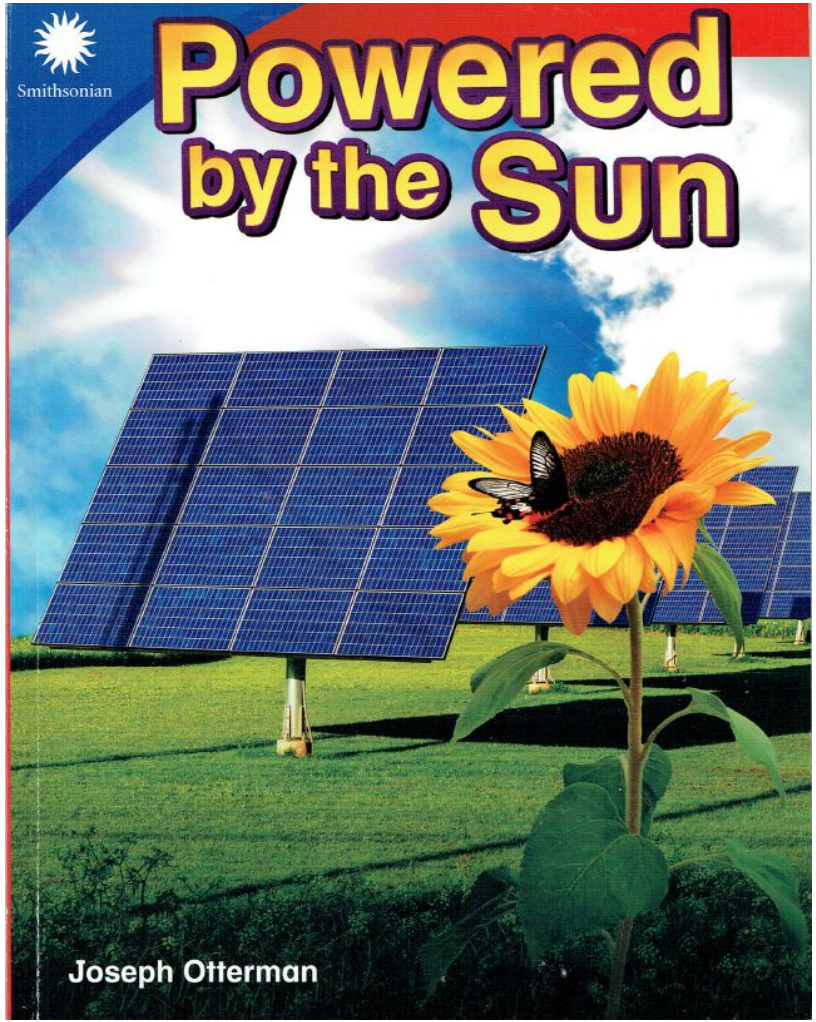
CLEAN COAL?

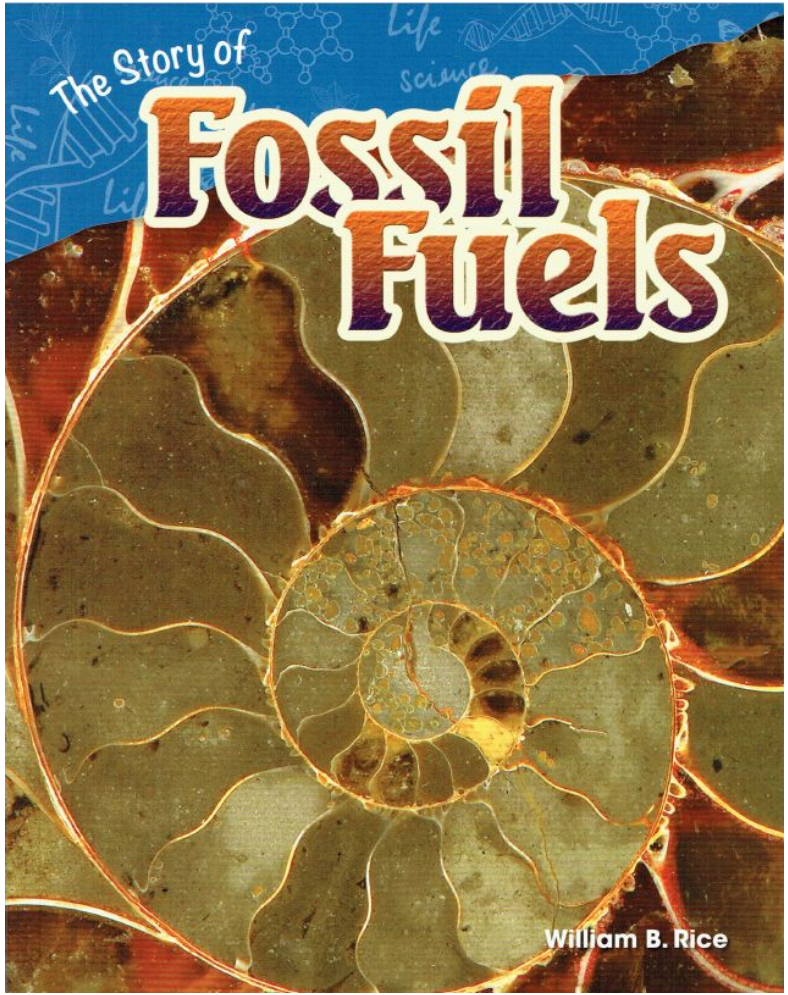
ACCESS GRANTED: MAX AXIOM

Researchers have developed ways to clean coal by removing pollutants before it is burned. But pollutants like carbon dioxide must be captured and stored to prevent them from being released into the air. Carbon storage technology is still experimental and expensive.



by Katherine Krohn
illustrated by Cynthia Martin and Barbara Schulz


Smithsonian
Powered by the Sun
Joseph Otterman


The Story of
Fossil Fuels
William B. Rice

Computing Science and Energy in Grade 6

Video with Angela Dearing

Slide Deck:

- Gr 6 Energy Connections to Computer Science.pdf

Thanks!

Ted Zarowny ted.zarowny@arpdc.ab.ca

Chris Zarski chris.zarski@arpdc.ab.ca

Photo by Lee Jeffs on Unsplash

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