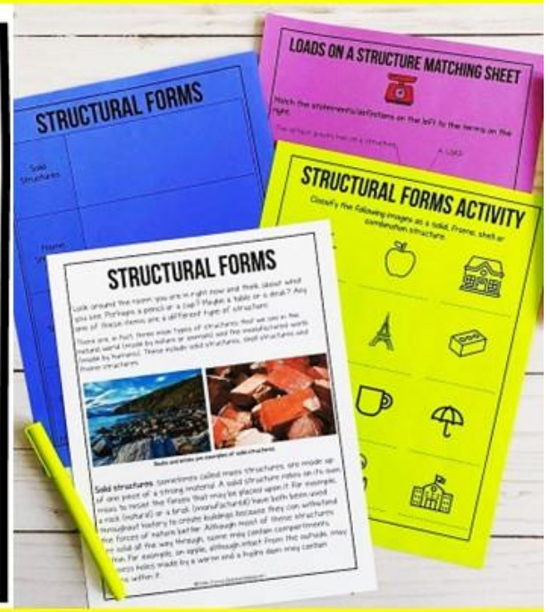
GRADE 7 SCIENCE BUNDLE

PDF & DIGITAL FORMATS

Bundle

- 4 Units
- 64 Lessons
- MP3 Audio Files
- Hands-On Labs
- Inquiry Activities
- Print & Digital



2022 ONTARIO CURRICULUM

2 Peas and a Dog

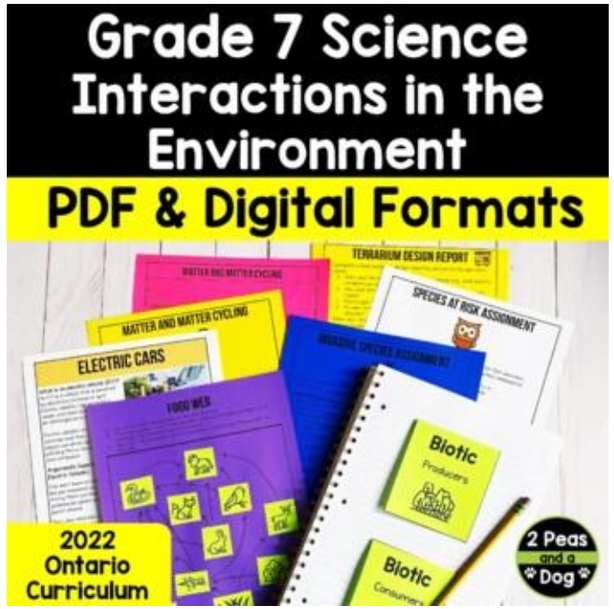
2 Peas and a Dog

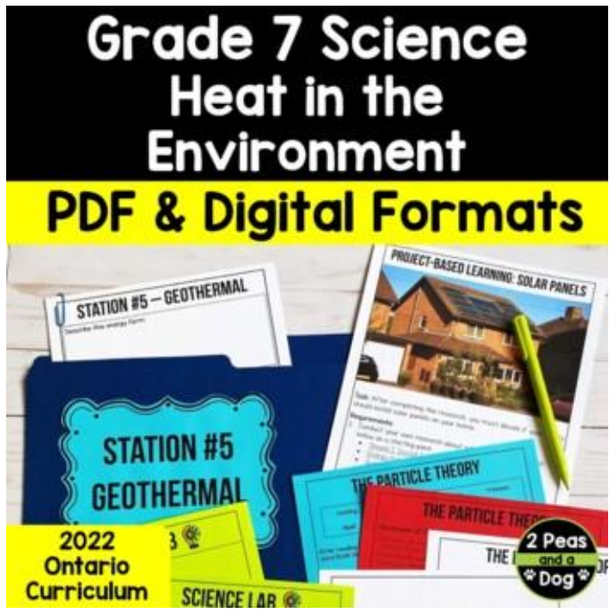
Middle School Teaching Resources

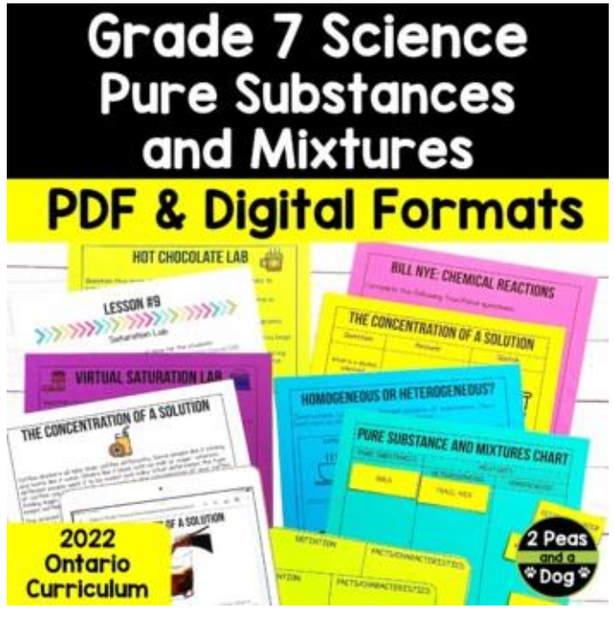
RESOURCE INCLUDES

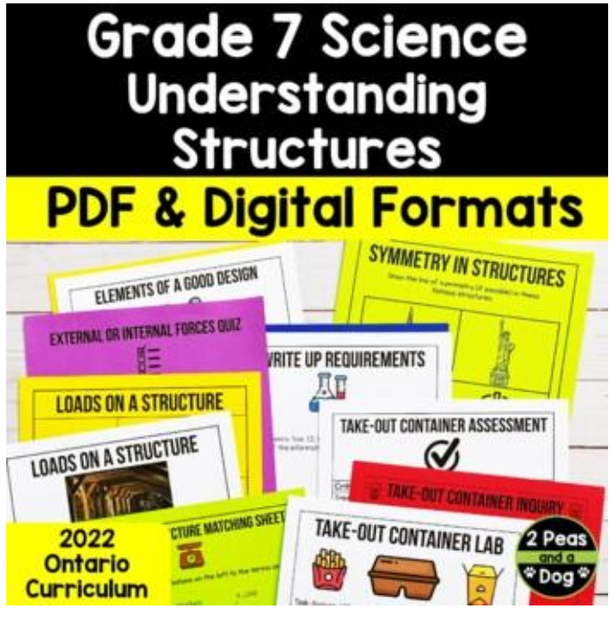
1. Aligned to the 2022 Ontario Science Curriculum
2. 64 Differentiated Lessons
3. 4 Units
4. MP3 Audio Files
5. Detailed Unit Plans
6. Answer Keys & Assessment Rubrics
7. Quizzes & Unit Tests
8. Hands On Science Labs
9. Inquiry Activities
10. 4 Digital Escape Rooms
11. Sub Plans
12. Print & Digital Formats

4 FULL SCIENCE UNITS









- ✓ Detailed Lesson Plans
- ✓ MP3 Audio Files
- ✓ Answer Keys & Assessment Rubrics
- ✓ Quizzes & Unit Tests
- ✓ Hands On Science Labs
- ✓ Inquiry Activities
- ✓ Digital Escape Rooms
- ✓ Sub Plans

TEACHER FEEDBACK

"Outstanding and super helpful resource. Has so many great worksheets, plans, lessons etc. So awesome, limited prep and fits great with other resources if you need."
– Natalie R.

"LOVE these units! They are so engaging and provide a wide variety of activities for students to complete. I also love how organized and easy to follow these are. Highly recommend! ." – Alyssa L.

WHAT'S INSIDE?

DETAILED LESSON PLANS

64 LESSONS

INTRODUCTION

Unit Vocabulary

Lesson Overview:
Students will work on reviewing vocabulary for this unit.

Materials Needed:
1. Photocopy a class set or use the provided Google Slides version:
   - Vocabulary sheets (QR Code or Non-QR Code option)
   - Vocabulary graphic organizer
   - Definitions (For IEP and ESL students)
   - Definitions Google Slides
   - Devices for scanning QR codes (phones or tablets)

Teacher Instructions:
1. Post the vocabulary words up around the classroom or the hallway using the QR code or the non-QR code format.
2. Divide the class up into groups of 4.
3. Have students walk around the classroom or out in the hallway and find the vocabulary sheets. Students need to scan the QR code with their devices to uncover the mystery word. Once they have uncovered the mystery word, have them write it on the vocabulary graphic organizer.
4. This activity can be done digitally by making a copy of the Google Slides version for each group.
5. Once students have completed this activity, take up the definitions as a class using the provided slideshow or definitions sheets.

LESSON #7

Ecological Succession

Lesson Overview:
Students will learn about what matter is and how it is cycled through an ecosystem.

Materials Needed:
- ❑ Reliable technology (internet, computer and projector)
- ❑ Photocopy a class set of each reading and note-taking sheet:
  - Ecological Succession Cycling readings
  - Ecological Succession graphic organizer notes
  - Ecological Succession t-chart activity
  - Video: Ecological Succession-Primary and Secondary
- ❑ Teachers can also use the provided digital version of this lesson to reduce photocopying. The digital version is provided in the original folder downloaded from Teachers Pay Teachers named Google Access.

Teacher Instructions:
1. As a class, watch this video: Ecological Succession-Primary and Secondary.
2. Then, read out loud the three Ecological Succession readings. Pause after each page to model note-taking skills on the provided graphic organizers.
3. After reading, have students complete the Ecological Succession t-chart activity.
4. As a class, discuss the answers for the t-chart activity.
5. An optional assessment has been provided.

LESSON #3

Pure Substances and Mixtures Activity

Lesson Overview:
Students will learn about Pure Substances and Mixtures through a sorting activity.

Materials Needed:
- ❑ Photocopy a class set or use the provided Google Slides version of the:
  - Pure Substance and Mixtures Examples
  - Pure Substance and Mixtures Chart
  - Scissors
  - Glue

Teacher Instructions:
1. Hand out the Pure Substance and Mixtures examples and chart, as well as a pair of scissors per student.
2. Have students cut out each example.
3. Then have students sort each example into the correct category.
4. Remind the students to refer to their Frayer models if they forgot the definitions for Pure Substance, Heterogeneous and Homogeneous mixtures.
5. At the end, take-up the answers using the provided answer sheet to make sure students have grasped the concepts correctly.
6. Provide students with glue once the answers have been taken up.
7. An optional quiz has been provided for this lesson.

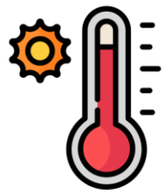
WHAT'S INSIDE?

READINGS

STUDENT READINGS COME WITH MP3 AUDIO FILES

64 LESSONS

HEAT VS. TEMPERATURE



Heat

Heat is thermal energy transferred from one obje
Heat is measured in Joules.

Temperature

Temperature measures the amount of heat of ar
This is measured in Celsius (°C) in Canada, but so
the United States use Fahrenheit (°F). Scientists u
measurement system. It is measured by mercur
thermometers.

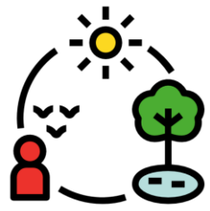
Did you know?

- When you add heat to an object, the parti
- When you lose heat from an object, the p
  slower.

Important Temperatures:

- Room Temperature: 18°C – 22°C
- Water Freezing Point: 0°C
- Water Boiling Point: 100°C
- Average Body Temperature: 37.5°C

ENERGY TRANSFER IN AN ECOSYSTEM



Energy is an essential part of an ecosystem. Biotic (living) things require energy to survive, grow, breathe, and reproduce. Energy is passed from one member of the ecosystem to other members. This energy is usually in the form of food; this passing of energy is called energy transfer.

Energy transfer describes the changes and transfer of energy between organisms within an ecosystem. Sunlight is the foremost source of energy for the ecosystems on our planet. The sun's energy is transformed by plants using the process of photosynthesis. When animals eat plants this energy is stored in their tissue and fat, which later will be eaten by larger animals or predators.

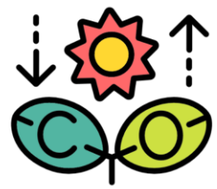
Laws of Thermodynamics

The Laws of Thermodynamics explain energy transfer within an ecosystem.

The **first law** of thermodynamics states that energy cannot be created or destroyed. Energy can only change from one form to another within the ecosystem.

The **second law** of thermodynamics explains that when energy is transformed, some energy is lost. For example, when animals eat plants they cannot use all of the energy from that plant, so it becomes waste and gets excited.

MATTER AND MATTER CYCLING



Carbon Cycle

Carbon is a fundamental element of living organisms.
The principal carbon cycle among living organisms is
respiration a
of **photosynt**
dioxide from
the sun and
into sugar ar
humans or a
carbon dioxi
plants, repea

Nitrogen Cycle

Nitrogen is an essential element used
important for liv
compounds in ora
nobacteria, turn
process called
ounds from their
heir nitrogen sup
cteria decompos
nitrification. Ther

own as phosphat
es, and nucleic aci
ents. Phosphate
and oceans. The
water. Fish and o
sea. Seafood, lik
animals and huma
osition of waste
k into the soil. Hu
wever, overuse w
Eutrophication w
fish to die. Reduc
food chain.

CRIME SCENE INVESTIGATION

You have probably watched TV shows and movies where people investigate crimes. The scene contains yellow police tape, sirens, lights blazing, police officers, paramedics, and news reporters, all busy doing their jobs. After securing the scene, they are all waiting for a team of investigative specialists.

The crime scene investigation (CSI) team arrives with their bags, cameras, and other special equipment. They take photos, collect fingerprints, preserve evidence, and look for clues at the crime scene.

If you think these scenes are a work of fiction, then you might be surprised that they are based on real scientific methods. There is a science behind all these steps. Procedures are based on forensic science.

What is Forensic Science?

Forensics is a branch of science that deals with crime investigation and analysis. Forensic science uses scientific methods to solve crimes. They use different techniques from biology, chemistry, and physics to collect evidence.

The evidence is then sent to a laboratory and processed. Using specialized equipment, a forensic scientist will physically, electronically,

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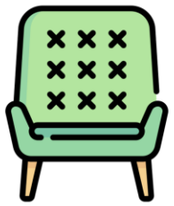
MANUFACTURING FACTORS



Imagine two chairs, one made of tissue paper and one made of bricks. A tissue paper chair would be too weak and would not be able to be used for its purpose, thus not being very functional.

A chair made of bricks would be uncomfortable, and too heavy to move around. This is why it is important to choose the right materials when designing and building consumer structures.

When selecting materials for the design of consumer structures there are a number of key things to consider, including but not limited to:

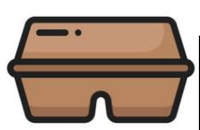
1. Cost
2. Availability
3. Ability to manufacture
4. Strength and durability
5. Sustainability
6. Climate
7. Aesthetics
8. Life of the material
9. Handling and storage
10. Skills required

WHAT'S INSIDE?

ASSIGNMENTS, LABS & GRAPHIC ORGANIZERS

64 LESSONS

TAKE-OUT CONTAINER LAB

Task: Analyze a variety of take-out (fast food
the most environmentally-friendly packaging.

Procedure:

1. Choose a link from the "Take-out Container
(supplied by your teacher) and analyze at l
take-out containers using the provided inq
2. When the inquiry sheets are completed fr
choose which container you think is the mo
friendly and justify it using your inquiry que
ideas in a short paragraph and submit it, al
sheets, for assessment.
3. Review the rubric to make sure all your wo
correctly.

FACTORS IN DESIGNING & BUILDING STRUCTURES

Take point form notes on the important information from the article.

How Form Fits Function	
Determining Consumer Need	
Economy and the Environment	

PROJECT-BASED LEARNING: SOLAR PANELS

Task: After completing the research, you
should install solar panels on your home.

Requirements:

1. Conduct your own research about solar
below as a starting point.
   - Should I Install Solar Panels on m
   - Energy Hub - Ontario
   - Guelph Solar
   - Is it worth it installing solar panels
2. Write down key information on the sola
3. Use the information from your researc
4. In your written response, use specific
websites to help inform you with your

DESIGN AN ECOSYSTEM ASSIGNMENT

Procedure:

1. Draw 10 biotic elements tha
producers in an ecosystem
oceans, forest, jungle, moun
2. On a separate sheet, classif
chart similar to the one bel
your chart's categories will
chosen.

Class
Producers
Herbivores
Omnivores
Carnivores
Scavengers
Decomposers

3. On the same sheet as yo
least 3 biotic elements th
4. Colour your ecosystem
5. Hand this sheet in with y
chart and food chain.

HOT CHOCOLATE LAB

Task: After you've completed your Hot Chocolate lab, you are asked to write a brief report.

Lab Report Requirements

- ❑ Science Lab graphic orga
- ❑ A conclusion write up:
  1. How many teaspo
  saturated?
  2. How did you know
  3. Was your hypothe
- ❑ Questions:
  1. Did you enjoy this
  2. What problems di
  3. Were there any su
  4. Would you recomm

Criteria	Level 1	
Hot Chocolate Lab	Student was unprepared during lab. Student did not participate in the lab.	

VIRTUAL SCIENCE LAB

	Salt	Sugar
Hypothesis What do you think will happen in your lab?		
Materials List all materials used to complete this lab. This list needs to be approved by your teacher.		

LESSONS INCLUDE

★ Articles & MP3s
★ Graphic Organizers
★ Student Choice

WHAT'S INSIDE?

SAMPLE ANSWERS

PURE SUBSTANCES	MIXTURES	
	HETEROGENEOUS	HOMOGENEOUS
COPPER	CHOCOLATE CHIP COOKIE	COKE/SODA
SALT	SALAD	VINEGAR
SUGAR	TRAIL MIX	KOOL-AID JI
DISTILLED WATER	CHICKEN SOUP	PLAIN YOGU
GOLD	SOIL	SEA WATER
SILVER		COFFEE
ALUMINUM		

ECOLOGICAL SUCCESSION ACTIVITY SAMPLE ANSWERS

After reading the article on the two types of succession, sort the following statements into the correct type of succession:

- Is much faster and takes a shorter period of time to complete
- Takes longer to complete, from hundreds to thousands of years or more
- Has pioneer species that live and occupy the area first
- Usually occurs over barren and uninhabited lands
- Occurs after a disastrous event like a forest fire or flood
- A farmer grow
- A glacier retrea

PRIMARY	
•Takes much lo from hundreds years or more • Has pioneer s and occupy the • Usually occurs uninhabited lan • A glacier retr moraine is an e	

EXTERNAL AND INTERNAL

External Forces	An external force will act upon an outside of the object. Naturally oc this are the wind and gravity. Gravity is the natural force of att two objects. It is an always prese all structures and is constantly pu toward the centre of the Earth.
Internal Forces	An internal force is when one par acts on other parts of the same There are four types of internal f affect either the shape or size o the inside. These forces include co shear, and torsion. • Compression happens when a presses parts together within example of this would be a spr that are found in the mattres • Tension is the result of a forc pulling apart an object to either expand it, just like a rubber band being pulled. • A shear force is one that pushes objects in opposite directions from one another, for example, when using scissors to cut your hair. • Turning a key in a lock to open a door is an example of torsion force, which is the act of twisting on an object.

SPECIES AT RISK ASSIGNMENT

Research a species that is at risk and create poster that describ

1. The designation of the species (extinct, extirpated, endanger threatened, or special concern)
2. The ecosystem that it used to or currently lives in.
3. Why it is at risk, and explain how people can help.

Requirements:

- ❑ Picture (hand-drawn or photo) of your species
- ❑ Source list – remember to keep track of the websites books used.
- ❑ Poster is organized, eye

Criteria	1

LAB RUBRIC

Student Names:

Criteria	Level 1	Level 2	Level 3	Level 4
	Displays little understanding of the basic concepts	Displays some understanding of the basic	Displays a solid understanding of the basic concepts of building a structure when answering the questions. Most of the materials are listed and are environmentally-friendly.	Displays detailed understanding of the basic concepts of building a structure when answering the questions. All the materials are listed and are environmentally-friendly.
			Final design is complete, with a few details missing.	Final design is neat and fully complete.
			Structure is complete and follows all of the requirements.	Structure is complete and follows all of the requirements.

PROJECT-BASED LEARNING ASSESSMENT

Name: _____

ce Content riteria cy of ion y of Sources	Level 1	❑ Information is inaccurate or incomplete
	Level 2	❑ Information is basic and requires more details
	Level 3	❑ Information is relevant to the topic
	Level 4	❑ Information is detailed and demonstrates extensive research using a variety of sources
g Criteria of writing gth quality of opinion	Level 1	❑ Writing is not always coherent, nor does it flow. The response is less than a page. The student does not make an opinion or justify it.
	Level 2	❑ Writing is sometimes coherent. The response is one page. The student is starting to make an opinion with evidence from the websites.
	Level 3	❑ Writing is coherent. The response is one to two pages in length. Student makes an opinion and justifies it with a few pieces of evidence.
	Level 4	❑ All of the level 3 criteria are reached, plus student uses science-related vocabulary throughout their response, uses more than the provided sources, and offers a variety of examples to justify their opinion.

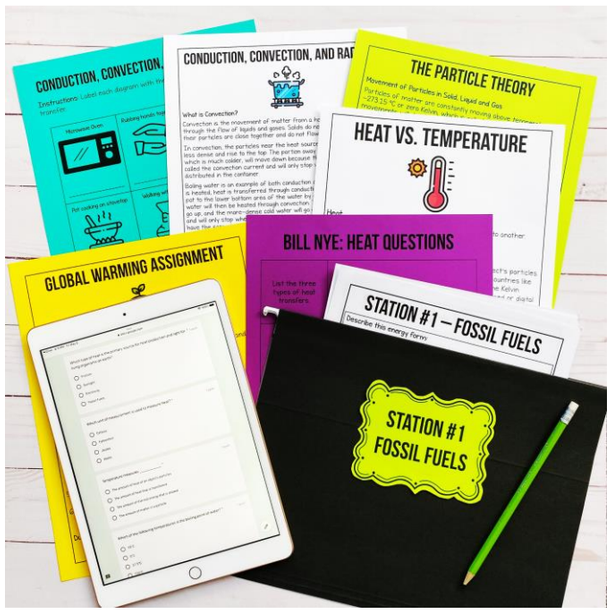
Feedback:

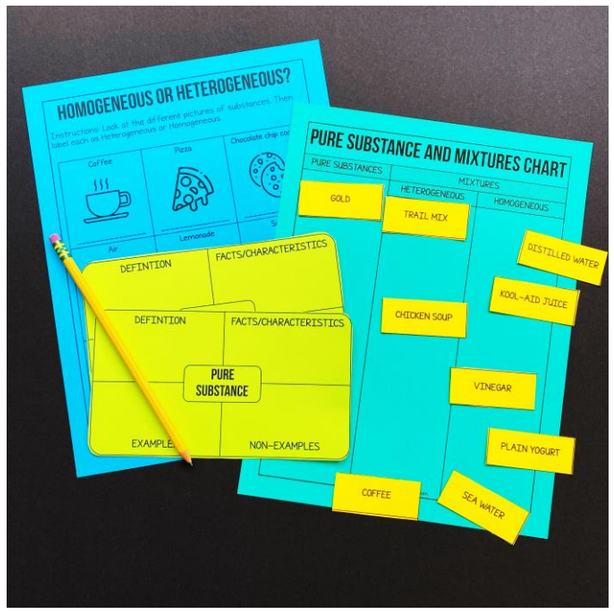
ANSWER KEYS & RUBRICS

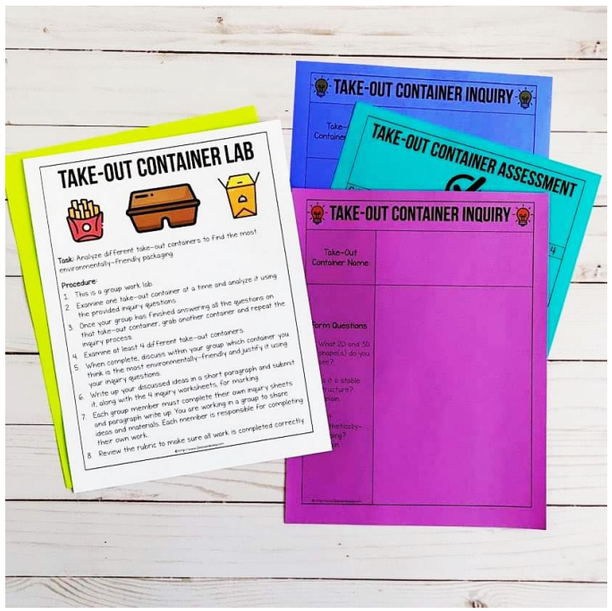
FREE UP YOUR WEEKENDS

THIS RESOURCE IS FOR GRADE 7 SCIENCE TEACHERS WHO

- ✓ Want their students to enjoy what they are learning
- ✓ Want their evenings and weekends free from lesson planning
- ✓ Want to ensure that they are covering the curriculum expectations in a meaningful yet engaging way







LESSON FORMATS

PDF

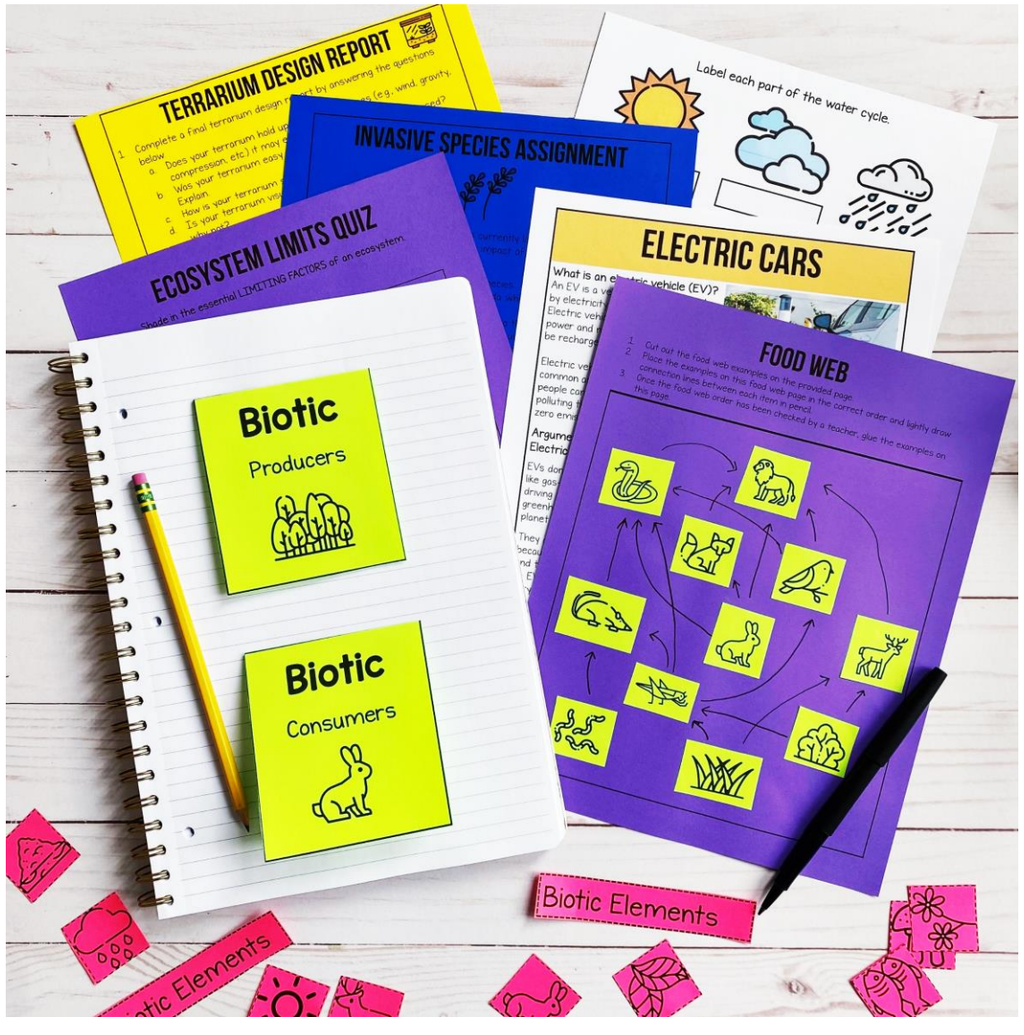
✓ Individual & Whole Unit

DIGITAL

✓ Google Slides

RESOURCE CAN BE USED IN-PERSON OR ONLINE

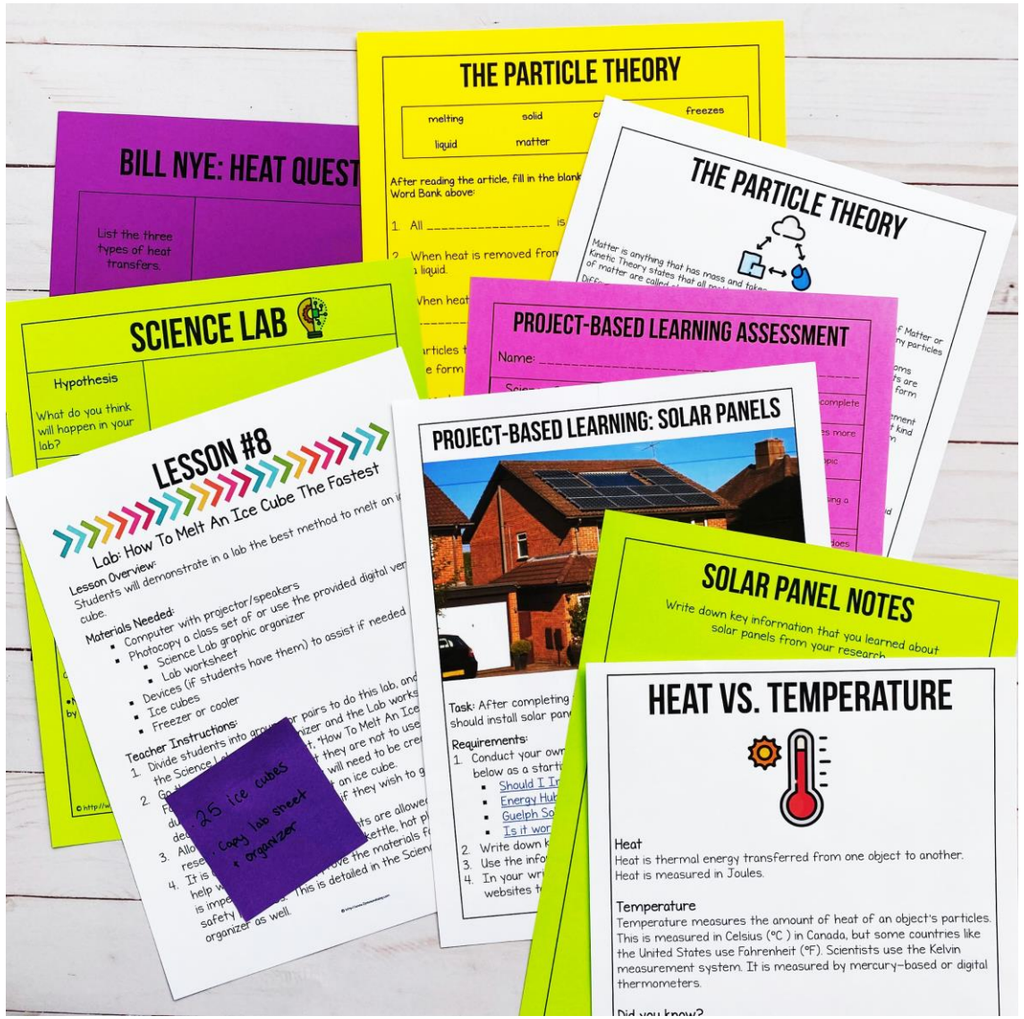
GRADE 7 - INTERACTIONS IN THE ENVIRONMENT



Included Lessons

1. Unit Vocabulary QR Code Matching Activity
2. Elements of Ecosystems
3. Ecosystems – Examples and Interactions
4. Energy Transfer and Food Chains
5. Biotic Elements Quiz
6. Matter Cycling
7. Ecological Succession
8. Ecosystem Limits
9. Species At Risk & Invasive Species Assignment
10. Human Interactions in the Environment
11. Indigenous Perspectives
12. Environmental Investigation Case Study: Electric Cars
13. Environmental Protection Stations
14. Ecosystem Summative Lab (3 options)
15. Ecosystems Unit Test
16. Sub Plans

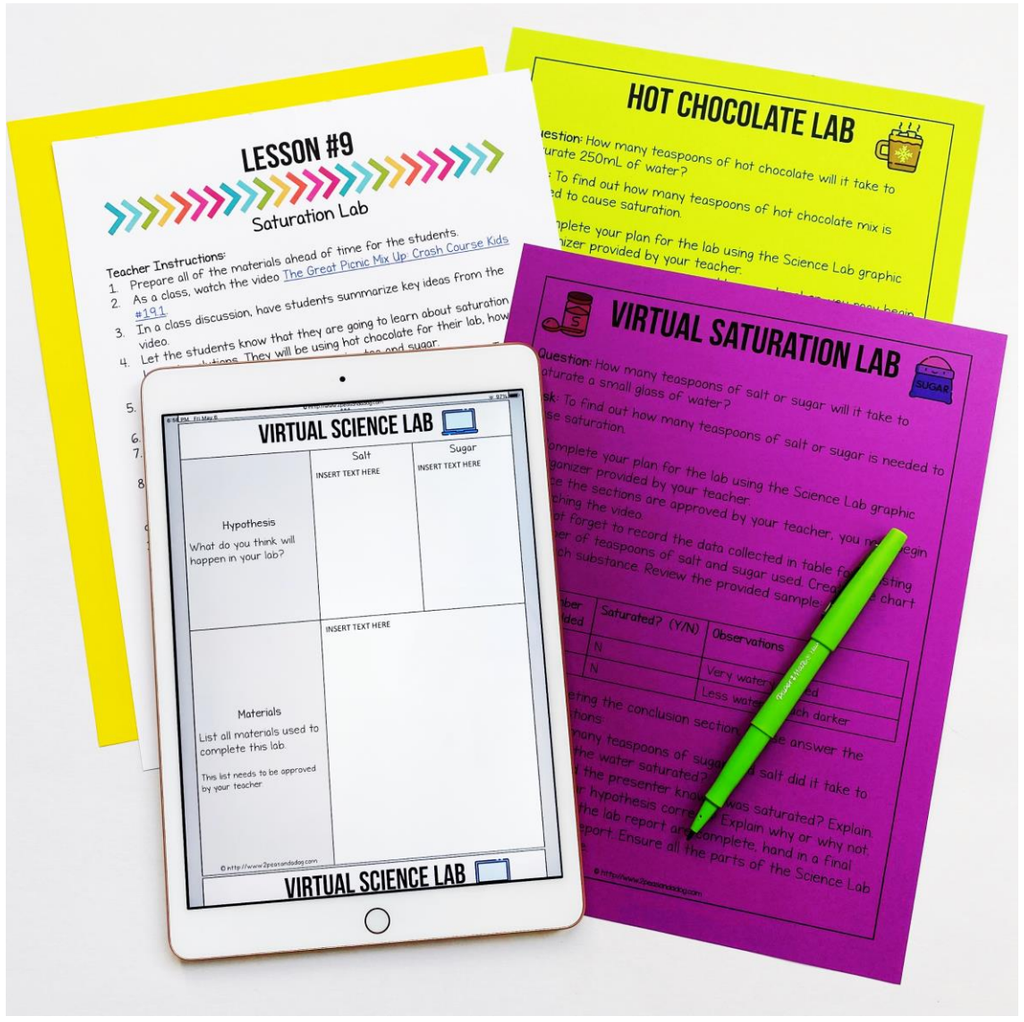
GRADE 7 - HEAT IN THE ENVIRONMENT



Included Lessons

1. Safety Lesson
2. Unit Vocabulary QR Code Scavenger Hunt
3. Introduction To Heat
4. Heat Production
5. Heat and Temperature
6. The Particle Theory
7. Heat and Volume
8. Conduction, Convection, and Radiation
9. Heat Video
10. Teacher Demonstration: Boiling Water in a Paper Cup
11. Student Lab: Melting Ice Cubes
12. Heating and Cooling of the Earth
13. Greenhouse Gases
14. Investigation: Benefits of Technology With Heat
15. Stations & Project-Based Learning
16. Unit Test

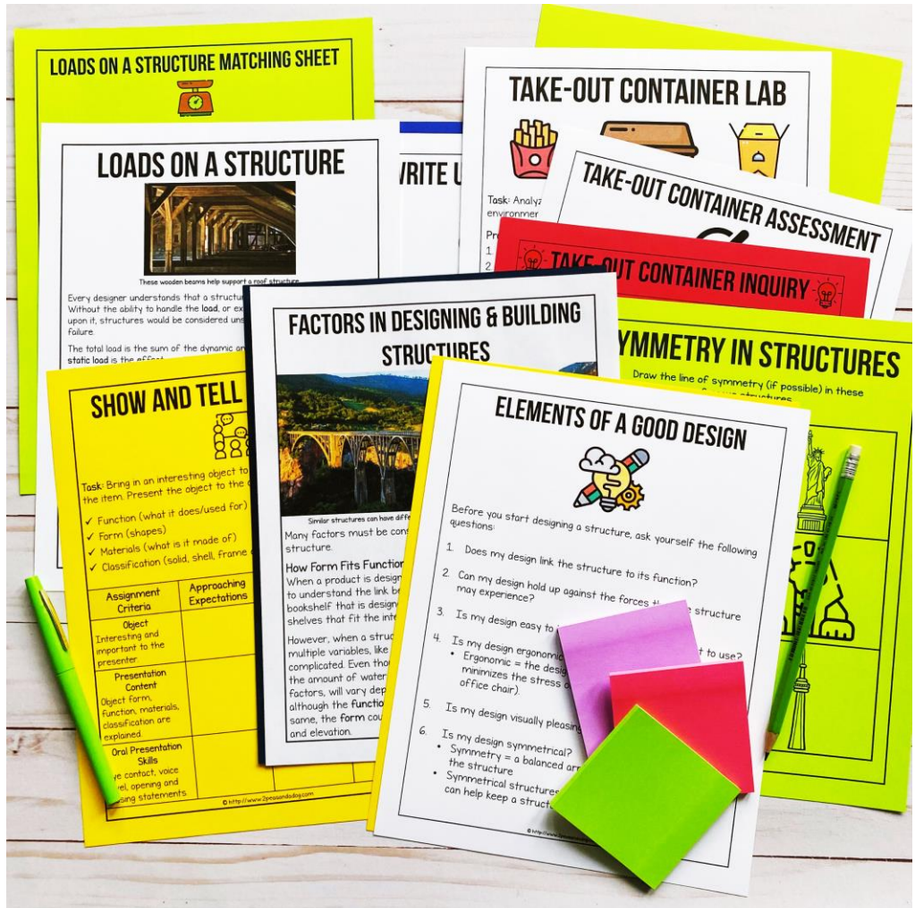
GRADE 7 - PURE SUBSTANCES AND MIXTURES



Included Lessons

1. Safety Rules & Unit Vocabulary
2. The Particle Theory
3. Pure Substances and Mixtures
4. Pure Substances and Mixtures Activity
5. Solutions and Mechanical Mixtures
6. Solutions
7. Solution Examples Activity
8. Concentration of Solutions
9. Saturated Solutions
10. Saturation Lab
11. Separating Mixtures
12. Separating Mixtures Lab
13. Positive and Negative Impacts on the Environment
14. Tar Sands Investigation
15. Unit Test
16. Sub Plans

GRADE 7 - UNDERSTANDING STRUCTURES AND MECHANISMS



Included Lessons

1. Safety Lesson, Unit Vocabulary, Unit Introduction
2. Classifying Structures
3. Structures Video
4. Centre of Gravity & Stability
5. Force
6. Show and Tell Assignment
7. Classifying Structures Quiz
8. Internal and External Forces
9. Card Pyramid Activity
10. Symmetry in Structures
11. Structure Failure
12. Manufacturing Factors
13. Loads
14. Structural Safety
15. Design Factors
16. Ergonomic Design
17. Take-Out Container Lab
18. Egg House Lab
19. Unit Review & Test