

Physical Patterns in a Changing World

— Grade 7 —

Written by Bill Gowsell

BRIEF OVERVIEW: This is written with the intent of exposing students to the challenges and opportunities presented by the physical environment in the world. Students will have a chance to investigate the impact of natural events and how human activities can transform and change our physical world.

MEETING YOUR STUDENT'S NEEDS: Depending on the needs of the students in your class, the teacher may want to scan any Reading Notes into Kurzweil on the computer. By doing this, no matter the reading abilities of your students, they will be able to access the information of the text. Teachers are also encouraged to allow their students to collaborate on as many activities possible, in order to allow all students to be successful without modifying the text significantly.



BILL GOWSELL is a teacher for the Catholic District School Board of Eastern Ontario. He currently teaches grade 3/4 in Gananoque. Bill has been fortunate to work on multiple school committees that develop long range goals for his students and his school in Language and Math goals. He loves to create resources that are fun and informative, but allow all of his students to succeed.

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Learning Intentions	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6	Extras
Knowledge and Understanding Content							
Identify the location and describe the physical characteristics of various landforms.	●						
Describe patterns and physical characteristics of some major water bodies.			●				
Describe some key human activities that create and change water bodies.			●				
Thinking Skills							
Investigating the impact of natural events and human activities.		●					
Interpret information and data related to the effect of invasive species on the environment.				●			
Communication							
Communicate the results of the inquiries using appropriate vocabulary.	●	●	●	●	●	●	●
Application							
Assess the physical environment in various locations around the world.	●						
Describe various ways in which people have responded to challenges by the physical environment.		●					
Analyze data and construct maps related to human and natural events that change the physical environment.					●	●	

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Teacher Assessment Rubric

Student's Name: _____

Date: _____

Success Criteria	Level 1	Level 2	Level 3	Level 4
Knowledge and Understanding Content				
Demonstrates an understanding of the concepts, ideas, terminology definitions used	Demonstrates limited knowledge and understanding of content	Demonstrates some knowledge and understanding of content	Demonstrates considerable knowledge and understanding of content	Demonstrates thorough knowledge and understanding of content
Thinking Skills				
Gather and organize information on major challenges facing different groups and communities	Uses critical thinking skills with limited effectiveness	Uses critical thinking skills with some effectiveness	Uses critical thinking skills with considerable effectiveness	Uses critical thinking skills with a high degree of effectiveness
Analyse and construct print and digital media maps	Constructs and analyses maps with limited effectiveness	Constructs and analyses maps with some effectiveness	Constructs and analyses maps with considerable effectiveness	Constructs and analyses maps with a high degree of effectiveness
Communication				
Organize and communicate ideas and information in oral, visual, and/or written forms	Organizes and communicates ideas and information with limited effectiveness	Organizes and communicates ideas and information with some effectiveness	Organizes and communicates ideas and information with considerable effectiveness	Organizes and communicates ideas and information with a high degree of effectiveness
Application of Knowledge and Skills				
Apply knowledge and skills to makes connections between the past and present day situations	Makes connections with limited effectiveness	Makes connections with some effectiveness	Makes connections with considerable effectiveness	Makes connections with a high degree of effectiveness

Student Self-Assessment Rubric

Name: _____ Date: _____

Put a check mark ✓ in the box that best described you.

Expectations	Always	Almost Always	Sometimes	I Need Improvement
I am an active listener during class discussions and group activities.				
I always followed directions with minimal supervision.				
I always stayed on task and used my resources to help explain my thinking.				
My writing was neat and comprehensive with multiple details explaining my thinking.				

1. I liked _____

2. I learned _____

3. I want to learn more about _____

Introduction

The activities in this book have two intentions: to teach concepts that relate to the physical environment and help the student connect to the features of the world that make up our planet.

This book is intended to provide a snapshot of multiple physical features, but also how we have changed, influenced or shaped the world we live in.

The activities that accompany this book are meant to complement the lessons that are given.

The book starts off with the first lesson *The Physical Environment*. Here the students get a chance to learn about the different physical elements that make up our planet.

The second lesson *How We Change the Environment* offers students the chance to look at a couple of examples of how humans can manipulate and physically change the world that we live in by building dams and canals.

The third lesson *The Major Waterways*, looks at the St. Lawrence River and the Great Lakes, and their importance to Canada and the world.

The fourth lesson *Invasive Species* looks at two examples of invasive species, the lionfish and Asian carp, and their impact on the environment when they are brought out of their natural habitat.

In the fifth lesson *Mapping our Environment* has the students creating and mapping the locations of the physical features and the waterways that play a major role in the world today.

The sixth lesson *Eco Tourism* looks at Costa Rica and how the country has used its natural environment as a way to promote the country and create a thriving tourism business.

The *Extras* has the Unit Test and the Answer Key to the Unit Test.

ASSESSMENT AND DIFFERENTIATION

Teachers may choose to start the unit with a student duo tang which the students can keep all of their work in. Depending on the needs of your students, the teacher can easily scan the Student Worksheets and Reading Notes into the Kurzweil reading program on a student laptop, if your school has it. If not, the reading portions of the tasks provided could be completed in group settings, or led as a teacher directed lesson. This should accommodate any student profile needs.

Lesson 1: The Physical Environment

LEARNING INTENTION:

Students will learn about some of the physical features of the world like, mountains, volcano's, forests, oceans, jungles, and deserts.

SUCCESS CRITERIA:

Students will be able to identify the natural feature of the physical environment and be able to provide four details that explain the feature and how it contributes to the Earth.

MATERIALS NEEDED:

- Reading Notes #1
- Student Worksheet #1, #2,
- Chart paper labelled Canada/World
- 2 sticky notes per student
- 1 laptop computer or iPad per student.

PROCEDURE:

(This lesson should be completed in one day lasting 40-45 minutes long)

The teacher will start the class off by introducing the unit, **Physical Patterns in the Changing World**.

The teacher can begin the class by asking the students to turn and talk about some of the physical elements that they know of in Canada and the world.

The students will then write down their responses on the sticky notes and place them on the appropriate chart papers.

The students will be asked to read through the chart papers and try to draw some conclusions based on the information on them.

The teacher will then ask for a couple of examples, and hopefully the students will be able to hit on the idea that Canada, and the world is composed of unique physical landscapes. If not, then the teacher can gear the conversation that way.

The students will then be given Reading Notes #1 and allowed to read through them.

The teacher will then introduce Student Worksheet #1 and explain to the students that for each Reading Notes the students will make study notes that they can use for preparing for the unit test.

The remainder of the lesson will be given to the students to read Reading Notes #1 and complete Student Worksheet #1. The teacher is encouraged to use this time to circle around the room making sure the students stay on track and are copying point form notes of information that seem to be important.

(Depending on the needs of your students, you may wish to scan the Student Worksheets and Reading Notes into the computer and have some students complete their work via school issued laptop through the use of Microsoft Word or through Kurzweil.)

EXTENSION:

The teacher may wish to provide Student Worksheet #2. The students will use this time to map out where in Canada the physical features they read about in Reading Notes #1 can be found in Canada.

What is a Mountain?

Mountains are the wrinkles of age and pimples of youth on Earth's crusty outer skin. They rise up as the crust collides, cracks, crumbles, folds, and spews. By definition, they dominate their surroundings with towering height.

The mighty chunks rise all over the world, including the oceans. They usually have steep, sloping sides and sharp or rounded ridges. The highest point is called the **peak** or **summit**. Most geologists classify a mountain as a landform that rises at least 1,000 feet (300 metres) or more above its surrounding area. A **mountain range** is a series or chain of mountains that are close together.

The world's tallest mountain ranges form when pieces of Earth's crust—called plates—smash against each other, in a process called plate tectonics, and buckle up like the hood of a car in a head-on collision. The Himalaya in Asia formed from one such massive wreck that started about 55 million years ago. Thirty of the world's highest mountains are in the Himalaya. The summit of Mount Everest, at 29,035 feet (8,850 metres), is the highest point on Earth.

The tallest mountain measured from top to bottom is Mauna Kea, an inactive volcano on the island of Hawaii in the Pacific Ocean. Measured



(Source: <http://science.nationalgeographic.com/science/earth/surface-of-the-earth/mountains-article/>)

from the base, Mauna Kea stands 33,474 feet (10,203 metres) tall, though it only rises 13,796 feet (4,205 metres) above the sea.

Types of Mountains

Volcanic mountains form when molten rock from deep inside the Earth erupts through the crust and piles up on itself. The island chain of Hawaii is actually the tops of volcanoes. Well-known volcanoes on land include Mount St. Helens in Washington State in the United States and Mount Fuji in Japan. Sometimes volcanic eruptions break down mountains instead of building them up, like the 1980 eruption that blew the top off Mount St. Helens.

When magma pushes the crust up but hardens before erupting onto the surface, it forms so-called **dome mountains**. Wind and rain pummel the domes, sculpting peaks and valleys.

Examples include the Black Hills of South Dakota and the Adirondack Mountains of New York. **Plateau mountains** are similar to dome mountains, but form as colliding tectonic plates push up the land without folding or faulting. They are then shaped by weathering and erosion.

Other types of mountains form when stresses within and between the tectonic plates lead to cracking and faulting of the Earth's surface, which forces blocks of rock up and down. Examples of **fault-block mountains** include the Sierra Nevada in California and Nevada, the Tetons in Wyoming, and the Harz Mountains in Germany.

