

## How the World Works

An inquiry into the natural world and its laws; the interaction between the natural world (physical and biological) and human societies; how humans use their understanding of scientific principles; the impact of scientific and technological advances on society and on the environment.



### Central Idea

Sudden geological changes or extreme weather conditions can affect Earth's surface

### Lines of Inquiry

- Physical structures that make up Earth
- Causes of extreme weather and geological changes
- Changes to the Earth's surface over time

### Teacher Questions

- What are the defining features of Earth's landforms? (FORM)
- What happens before and after there is extreme weather? (CAUSATION)
- What happens before and after a geological event? (CAUSATION)
- How is the surface of the earth changing? (CHANGE)

### Success Criteria

- Use subject specific vocabulary accurately in context
- **Identify** physical structures that make up Earth
- **Describe** the natural environment and landforms of different places
- **Investigate** the causes of extreme weather and geological changes
- **Describe** immediate and long-term changes to Earth's surface
- **Explain** connections between geological changes and extreme weather on the Earth's surface.

Attitudes	Attributes
<b>Curiosity:</b> Ask questions about why and how Earth's surface have changed	<b>Communicator:</b> Work collaboratively on various projects and experiments
<b>Appreciation:</b> Appreciate the wonder and beauty of Earth, including the causes and effects of natural disasters, extreme weather and geological change	<b>Inquirer:</b> Investigate landforms and how they are formed. (rivers, mountains, valleys, volcanoes, islands etc)

## Transdisciplinary Skills

### Communication

- Writing - Students will record information and observations during experiments and research

### Thinking

- Acquisition of knowledge - Students will acquire knowledge through simple experiments showing gravity, tides, movement of tectonic plates, magnetism and repulsion, erosion, tornado, volcano, etc
- Analysis - Students will analyze an area for what it could have looked like before a natural disaster (major geological event) and identify the 'change' that occurred.
- Comprehension - Students will use Cause & Effect templates to show understanding of how Earth's landforms change

## Key Concepts

<b>Form</b>	What are Earth's landforms and where do they exist? What are the different bodies of water found on Earth's surface? How are they different?
<b>Causation</b>	What causes extreme weather? What causes geological events?
<b>Change</b>	How has the surface of the earth changed? What happens during these changes? How do we know there have been changes? What can be the effects of weather and/or natural disasters?

## Related Concepts

<b>Geology</b>	How does geology help us understand the natural world?
<b>Transformation</b>	What does it mean to 'transform'? How do we know something has undergone a transformation?
<b>Weather</b>	What are the different forms of weather? How do you determine whether weather is extreme or not? How can weather affect what Earth is like?

## Unit Vocabulary

<i>natural disasters</i>	<i>landforms</i>	<i>impact</i>	<i>cause/effect</i>	<i>transform</i>
<i>geological time</i>	<i>weather</i>	<i>geography</i>	<i>geology</i>	<i>implications</i>

## **Math Focus**

### **Data Handling**

#### ***Overall Expectations:***

- Collect and organize discrete primary data and display the data using charts and graphs, including stem-and-leaf plots and double bar graphs
- Read, describe, and interpret primary data and secondary data presented in charts and graph, including stem-and-leaf plots and double bar graphs

#### ***Specific Expectations:***

- Collect data by conducting a survey or an experiment to do with themselves, their environment, issues in their school or the community, or content from another subject, and record observations or measurements
- Collect and organize discrete primary data and display the data in charts, tables, and graphs that have appropriate titles, labels, and scales that suit the range and distribution of the data, using a variety of tools
- Read, interpret, and draw conclusions from primary data and from secondary data, presented in charts, tables, and graphs
- Demonstrate, through investigation, an understanding of median and determine the median of a set of data
- Describe the shape of a set of data across its range of values, using charts, tables, and graphs
- Compare similarities and differences between two related sets of data, using a variety of strategies

### **Measurement**

#### ***Overall Expectations:***

- Estimate, measure, and record length, perimeter, area, mass, capacity, volume, and elapsed time, using a variety of strategies
- Determine the relationships among units and measurable attributes, including the area and perimeter of rectangles

#### ***Specific Expectations:***

- Estimate, measure, and represent time intervals to the nearest minute
- Estimate and determine elapsed time, with and without using a time line, given the durations of events expressed in five-minute intervals, hours, days, weeks, months, or years
- Estimate, measure, and record the mass of objects, using the standard units of the kilogram and the gram
- Estimate, measure, and record the capacity of containers, using the standard units of the litre and the millilitre
- Estimate, measure using concrete materials, and record volume, and relate volume to the space taken up by an object
- Describe, through investigation, the relationship between various units of length
- Compare and order a collection of objects, using standard units of mass and/or capacity
- Determine, through investigation, the relationship between grams and kilograms
- Determine, through investigation, the relationship between millilitres and litres
- Select and justify the most appropriate standard unit to measure mass and the most appropriate standard unit to measure the capacity of a container

- Solve problems involving the relationship between years and decades, and between decades and centuries

## **Number Operations - Number Sense and Numeration**

### ***Overall Expectations:***

- Read, represent, compare, and order whole numbers to 10000, decimal numbers to tenths, and simple fractions, and represent money amounts to \$100

### ***Specific Expectations:***

- Read and represent money amounts to \$100
- Add and subtract money amounts by making simulated purchases and providing change for amounts up to \$100, using a variety of tools

## **Literacy Focus**

### **Reading (non-fiction)**

#### ***Conceptual Understandings:***

- Checking, rereading and correcting our own reading as we go enable us to read new and more complex texts.
- Knowing what we aim to achieve helps us to select useful reference material to conduct research.

#### ***Learning Outcomes:***

- Know how to skim and scan texts to decide whether they will be useful, before attempting to read in detail
- As part of the inquiry process, work cooperatively with others to access, read, interpret, and evaluate a range of source materials
- Identify relevant, reliable and useful information and decide on appropriate ways to use it
- Access information from a variety of texts both in print and online, for example, newspapers, magazines, journals, comics, graphic books, e-books, blogs, wikis
- Know when and how to use the internet and multimedia resources for research

### **Writing (narrative)**

#### ***Conceptual Understandings:***

- Writing and thinking work together to enable us to express ideas and convey meaning.
- Asking questions of ourselves and others helps to make our writing more focused and purposeful.
- The way we structure and organize our writing helps others to understand and appreciate it.
- Rereading and editing our own writing enables us to express what we want to say more clearly.

#### ***Learning Outcomes:***

- Write independently and with confidence, demonstrating a personal voice as a writer.
- Write for a range of purposes, both creative and informative, using different types of structures and styles according to the purpose of the writing
- Select vocabulary and supporting details to achieve desired effects

- Organize ideas in a logical sequence
- Reread, edit and revise to improve their own writing, for example, content, language, organization
- Use appropriate punctuation to support meaning
- Use knowledge of written code patterns to accurately spell high-frequency and familiar words
- Check punctuation, variety of sentence starters, spelling, presentation
- Work cooperatively with a partner to discuss and improve each other's work, taking the roles of authors and editors
- Work independently, to produce written work that is legible and well-presented, written either by hand or in digital format.

## **Viewing and Presenting**

### ***Conceptual Understandings:***

- Visual texts have the power to influence thinking and behaviour.
- Interpreting visual texts involves making an informed judgment about the intention of the message.
- To enhance learning we need to be efficient and constructive users of the internet.

### ***Learning Outcomes:***

- View, respond to and describe visual information, communicating understanding in oral, written and visual form.
- Design posters and charts, using shapes, colours, symbols, layout and fonts, to achieve particular effects; explain how the desired effect is achieved.
- Prepare, individually or in collaboration, visual presentations using a range of media, including computer and web-based applications.

