

**MANITOBA CONTINUOUS SUBMISSION FOR SCIENCE  
GRADE 8**

**CURRICULUM CORRELATION FORM**

A grade level form is required to be completed for each grade to which the resource applies.

**Title:** \_\_\_\_\_

**Series Title** (if applicable): \_\_\_\_\_

**Format:** \_\_\_\_\_ **Copyright Date:** \_\_\_\_\_ **ISBN:** \_\_\_\_\_

**Student Resource**  **Teacher Resource**

Indicate in the boxes (✓) below Cluster (s) to which the resource applies.

**Cluster 0**  **Cluster 1**  **Cluster 2**  **Cluster 3**  **Cluster 4**

**Contains potentially sensitive content?**      **Yes**       **No**

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**Instructions: In the boxes (✓) the degree of curriculum fit and provide specific unit, chapter, or page references for each Cluster that applies using the following form. Note: Cluster 0 must also be completed for each resource.**

**Rating Scale for Degree of Curriculum Fit**

- **Extensive** – The learning resource details content, multiple learning activities, and differentiated teaching strategies that address the required General Learning Outcome(s) and Specified Learning Outcome(s) of the curriculum framework.
- **Moderate** – The learning resource details some content, some learning activities, and some teaching strategies that address the required General Learning Outcome(s) and Specified Learning Outcome(s) of the curriculum framework.
- **Slight** – The learning resource content, learning activities, and teaching strategies address less than the required General Learning Outcome(s) and Specified Learning Outcome(s) of the curriculum framework.
- **None** – The learning resource contains insufficient content, learning activities or teaching strategies to address the required General Learning Outcome(s) and Specified Learning Outcome(s) of the curriculum framework.

Prescribed Learning Outcomes	Degree of Curriculum Fit	Unit, Chapter or Page References
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## Thematic Cluster Outcomes

### Grade 8

#### Cluster 1 – Cells and Systems

##### Outcome 8-1-01

none    slight    moderate    extensive

Use appropriate vocabulary related to their investigations of cells and systems. Include: cell theory, osmosis, diffusion, selective permeability, unicellular, multicellular, specialized cells and tissues, organs, systems, arteries, veins, capillaries, terms related to cell structure, heart structure, components of blood, and primary and secondary defense systems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-1-02

none    slight    moderate    extensive

Identify characteristics of living things, and describe how different living things exhibit these characteristics. Include: composed of cells; reproduce; grow; repair themselves; require energy; respond to the environment; have a life span; produce wastes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-1-03

none    slight    moderate    extensive

Describe cell theory. Include: all living things are composed of one or more cells; cells are the basic unit of structure and function of any organism; all cells come from pre-existing cells; the activity of an organism as a whole depends on the total activity of all its cells.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-1-04

none    slight    moderate    extensive

Identify major events and technological innovations that have enabled scientists to increase our understanding of cell biology. <i>Examples: invention of the light and electron microscope, works of Robert Hooke, Anton van Leeuwenhoek, Matthias Schleiden and Theodor Schwann...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-1-05

none    slight    moderate    extensive

Identify and compare major structures in plants and animal cells, and explain their function. Include: cell membrane, cytoplasm, mitochondria, nucleus, vacuoles, cell wall, chloroplasts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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#### Comments


Prescribed Learning Outcomes	Degree of Curriculum Fit	Unit, Chapter or Page References
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## Thematic Cluster Outcomes

### Grade 8

#### Cluster 1 – Cells and Systems *(Continued)*

##### Outcome 8-1-06

none    slight    moderate    extensive

Demonstrate proper use and care of the microscope to observe the general structure of plant and animal cells. Include: preparing wet mounts beginning with the least powerful lens; focussing; drawing specimens; indicating magnification.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-1-07

none    slight    moderate    extensive

Describe the movement of nutrients and wastes across cell membranes and explain its importance. Include: osmosis, diffusion, selective permeability.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-1-08

none    slight    moderate    extensive

Differentiate between unicellular and multicellular organisms.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-1-09

none    slight    moderate    extensive

Describe why cells and tissues are specialized in multicellular organisms, and observe examples. Include: specialization is needed because all cells in a complex organism do not have access to the external environment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-1-10

none    slight    moderate    extensive

Describe structural and functional relationship among cells, tissues, organs, and systems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-1-11

none    slight    moderate    extensive

Describe the structure and function of the heart and the path of blood to and from the heart through its four chambers. Include: atria, ventricles, septum, valves, aorta, pulmonary artery, pulmonary veins, superior vena cava, inferior vena cava.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-1-12

none    slight    moderate    extensive

Compare and contrast the structure and function of arteries, veins, and capillaries.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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#### Comments


Prescribed Learning Outcomes	Degree of Curriculum Fit	Unit, Chapter or Page References
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## Thematic Cluster Outcomes

### Grade 8

#### Cluster 1 – Cells and Systems (Continued)

##### Outcome 8-1-13

none    slight    moderate    extensive

Identify components of blood and describe the function of each. Include: red blood cells carry oxygen; white blood cells fight infection; platelets clot blood; plasma is the liquid part of blood that transports blood cells, dissolved material, nutrients, and waste products.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-1-14

none    slight    moderate    extensive

Describe, using examples, how individual systems in the human body function interdependently.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-1-15

none    slight    moderate    extensive

Compare heart rate and respiratory rate before, during, and after various physical activities; explain the observed variations; and discuss implications for overall health.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-1-16

none    slight    moderate    extensive

Identify components of the primary and secondary defense systems of the body and describe their roles. Include: primary defense system - skin, tears, ear wax, saliva, gastric juices, cilia hairs; secondary defense system - white blood cells, antibodies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-1-17

none    slight    moderate    extensive

Identify medical advances that enhance the human body's defence mechanisms and describe their effects on society. <i>Examples: vaccines, antibiotics...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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### Comments


Prescribed Learning Outcomes	Degree of Curriculum Fit	Unit, Chapter or Page References
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## Thematic Cluster Outcomes

### Grade 8

#### Cluster 1 – Cells and Systems (Continued)

##### Outcome 8-1-18

none    slight    moderate    extensive

Research and describe disorders/diseases that affect body systems, and identify possible preventative measures. <i>Examples: liver disease, diabetes, multiple sclerosis, heart attack, stroke, high/low blood pressure, leukemia, anemia, high cholesterol...</i>	□	□	□	□	
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##### Outcome 8-1-19

none    slight    moderate    extensive

Describe functional similarities and differences of comparable structures and systems in different groups of living things. <i>Examples: movement, food intake, and digestion of a unicellular organism, an invertebrate, and a vertebrate; gas exchange in plants versus animals...</i>	□	□	□	□	
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##### Cluster Rating

none    slight    moderate    extensive

	□	□	□	□	
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##### Comments


#### Cluster 2 – Optics

##### Outcome 8-2-01

none    slight    moderate    extensive

Use appropriate vocabulary related to their investigations of optics. Include: spectrum; additive theory; subtractive theory; frequency; wavelength; refraction; concave and convex mirrors and lenses; terms related to types of light sources, types of electromagnetic radiation, and the law of reflection.	□	□	□	□	
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##### Outcome 8-2-02

none    slight    moderate    extensive

Differentiate between incandescent and luminescent sources of light. Include: fluorescent, phosphorescent, chemiluminescent, bioluminescent.	□	□	□	□	
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Prescribed Learning Outcomes	Degree of Curriculum Fit	Unit, Chapter or Page References
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## Thematic Cluster Outcomes

### Grade 8

#### Cluster 2 – Optics (*Continued*)

<i>Outcome 8-2-03</i>	none	slight	moderate	extensive	
Demonstrate that light is a form of energy, that light travels in a straight line, and can be separated into the visible light spectrum.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>Outcome 8-2-04</i>	none	slight	moderate	extensive	
Explain, using the additive theory, how colours are produced, and identify applications of this theory in daily life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>Outcome 8-2-05</i>	none	slight	moderate	extensive	
Explain how the human eye detects colour, and how the ability to perceive colour may vary from person to person.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>Outcome 8-2-06</i>	none	slight	moderate	extensive	
Demonstrate, using the subtractive theory, how colours are produced, and identify applications of this theory in daily life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>Outcome 8-2-07</i>	none	slight	moderate	extensive	
Compare and contrast various types of electromagnetic radiation, with respect to relative energy, frequency, wavelength, and human perception. Include: radio waves, microwaves, infrared radiation, visible light, ultra-violet radiation, x-rays, gamma rays.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>Outcome 8-2-08</i>	none	slight	moderate	extensive	
Provide examples of technologies that use electromagnetic radiation, and describe potential positive and negative impacts of their uses. <i>Examples: satellite dish, x-ray machine, light telescopes, motion sensors, microwave ovens...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>Outcome 8-2-09</i>	none	slight	moderate	extensive	
Conduct experiments to determine the law of reflection, and provide examples of the use of reflection in daily life. Include: the angle of reflection is the same as the angle of incidence; the incident beam, the normal and the reflected beam are all on the same plane.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

### Comments


Prescribed Learning Outcomes	Degree of Curriculum Fit	Unit, Chapter or Page References
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## Thematic Cluster Outcomes

### Grade 8

#### Cluster 2 – Optics (*Continued*)

##### Outcome 8-2-10

none    slight    moderate    extensive

Conduct experiments to compare the refraction of light through substances of different densities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-2-11

none    slight    moderate    extensive

Explain how reflection and refraction produce natural phenomena. <i>Examples: sun dogs, rainbows, blue sky...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-2-12

none    slight    moderate    extensive

Investigate to determine how light interacts with concave and convex mirrors and lenses, and provide examples of their use in various optical instruments and systems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-2-13

none    slight    moderate    extensive

Demonstrate the formation of images using a double convex lens, and predict the effects of changes in lens position on the size and location of the image. <i>Examples: magnify or reduce an image by altering the placement of one or more lenses...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-2-14

none    slight    moderate    extensive

Compare the functional operation of the human eye to that of a camera in focusing an image.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Cluster Rating

none    slight    moderate    extensive

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Comments


Prescribed Learning Outcomes	Degree of Curriculum Fit	Unit, Chapter or Page References
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## Thematic Cluster Outcomes

### Grade 8

#### Cluster 3 – Fluids

##### Outcome 8-3-01

none    slight    moderate    extensive

Use appropriate vocabulary related to their investigations of fluids. Include: fluid, viscosity, flow, density, particle theory of matter, buoyant force, pressure, compressibility, hydraulic, pneumatic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-3-02

none    slight    moderate    extensive

Distinguish between fluids and non-fluids.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-3-03

none    slight    moderate    extensive

Explore and compare the viscosity of various liquids. <i>Examples: time the fall of a steel ball through various liquids; time the flow rate of different liquids on an incline...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-3-04

none    slight    moderate    extensive

Identify products in which viscosity is an important property, and evaluate different brands of the same product, using the design process. <i>Examples: sauces, lubricating oil, paint, hand lotion...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-3-05

none    slight    moderate    extensive

Plan and conduct experiments to determine factors that affect flow within a given system. <i>Examples: temperature, pressure, tube diameter...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-3-06

none    slight    moderate    extensive

Measure, calculate, and compare densities of solids, and liquids, and gases. Include: different amounts of the same substance, regularly and irregularly shaped objects.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-3-07

none    slight    moderate    extensive

Illustrate, using the particle theory of matter, the effects of temperature change on the density of solids, liquids, and gases.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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#### Comments


Prescribed Learning Outcomes	Degree of Curriculum Fit	Unit, Chapter or Page References
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## Thematic Cluster Outcomes

### Grade 8

#### Cluster 3 – Fluids (Continued)

##### Outcome 8-3-08

none    slight    moderate    extensive

Compare fluids of different densities to determine how they alter the buoyant force on an object.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-3-09

none    slight    moderate    extensive

Recognize that pressure is the relationship between force and area, and describe situations in which pressure can be increased or decreased by altering surface area. <i>Examples: wearing snowshoes instead of boots to decrease pressure, increase surface area, and stay on top of snow...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-3-10

none    slight    moderate    extensive

Explain, using the particle theory of matter, the relationships among pressure, volume, and temperature of liquid and gaseous fluids.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-3-11

none    slight    moderate    extensive

Compare the relative compressibility of water and air, and relate this property to their ability to transmit force in hydraulic and pneumatic devices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-3-12

none    slight    moderate    extensive

Identify a variety of natural and constructed hydraulic and pneumatic systems and describe how they function. <i>Examples: heart, lungs, eyedropper, misting bottle, fuel pump, hydraulic lift...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-3-13

none    slight    moderate    extensive

Compare hydraulic and pneumatic systems, and identify advantages and disadvantages of each.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-3-14

none    slight    moderate    extensive

Use the design process to construct a prototype that uses a pneumatic or hydraulic system to perform a given task. <i>Examples: a prototype that can lift a load a specified distance...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Cluster Rating

none    slight    moderate    extensive

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Comments


Prescribed Learning Outcomes	Degree of Curriculum Fit	Unit, Chapter or Page References
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## Thematic Cluster Outcomes

### Grade 8

#### Cluster 4 – Water Systems

##### Outcome 8-4-01

none    slight    moderate    extensive

Use appropriate vocabulary related to their investigations of water systems. Include: heat capacity, fresh water, salt water, convection, Coriolis effect, global water cycle, drainage system, watershed, continental divide, erosion, deposition, flow rate, tides, terms related to water treatment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-4-02

none    slight    moderate    extensive

Demonstrate that water, as compared to other substances, has a high heat capacity and is able to dissolve a wide variety of solutes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-4-03

none    slight    moderate    extensive

Compare and contrast characteristics and properties of fresh water and salt water. <i>Examples: freezing point, density, dissolved materials, global distribution, relative amounts, biologically diverse components of each...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-4-04

none    slight    moderate    extensive

Identify factors that can work individually or in combination to affect ocean currents. Include: convection, Coriolis effect, prevailing winds, position of continents.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-4-05

none    slight    moderate    extensive

Describe how the heat capacity of large bodies of water and the movement of ocean currents influence regional climates. <i>Examples: Gulf Stream effects, El Nino, lake affect...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-4-06

none    slight    moderate    extensive

Describe the components of the global water cycle and explain how it works.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-4-07

none    slight    moderate    extensive

Describe features of the North American drainage system. Include: local and regional watersheds, direction of water flow, continental divide.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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### Comments


Prescribed Learning Outcomes	Degree of Curriculum Fit	Unit, Chapter or Page References
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## Thematic Cluster Outcomes

### Grade 8

#### Cluster 4 – Water Systems (Continued)

##### Outcome 8-4-08

none    slight    moderate    extensive

Describe how erosion and deposition are influenced by the flow rate of a stream or river, and contrast the related characteristics of young and mature streams. <i>Examples: meanders, oxbows, alluvial deposits, sandbars, flood plains, deltas...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-4-09

none    slight    moderate    extensive

Describe how wave action and ice movement in large bodies of water cause erosion and deposition.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-4-10

none    slight    moderate    extensive

Explain how tides are caused and describe their effects on shorelines.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-4-11

none    slight    moderate    extensive

Describe examples of human interventions to prevent riverbank or coastal erosion. <i>Examples: vegetation, reinforcement (concrete, boulders), piers, breakwaters...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-4-12

none    slight    moderate    extensive

Identify factors that can cause flooding either individually or in combination. <i>Examples: heavy snow pack, quick thaw, rain in spring, lack of vegetation to remove water through transpiration, frozen ground preventing absorption, agricultural drainage systems, dams, diversions...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-4-13

none    slight    moderate    extensive

Provide examples of the way in which technology is used to contain or prevent damage due to flooding, and discuss related positive and negative impacts. <i>Examples: floodway, diversion, dike, levee...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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### Comments


Prescribed Learning Outcomes	Degree of Curriculum Fit	Unit, Chapter or Page References
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## Thematic Cluster Outcomes

### Grade 8

#### Cluster 4 – Water Systems (Continued)

##### Outcome 8-4-14

none    slight    moderate    extensive

Identify sources of drinking water and describe methods for obtaining water in areas where supply is limited. <i>Examples: desalination, melting of ice, condensation...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-4-15

none    slight    moderate    extensive

Explain how and why water may need to be treated for use by humans. Include: filtration, settling, chlorination, fluoridation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-4-16

none    slight    moderate    extensive

Compare the waste-water disposal system within their communities to one used elsewhere. Include: process involved, environmental impact cost.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-4-17

none    slight    moderate    extensive

Identify substances that may pollute water, related environmental and societal impacts of pollution, and ways to reduce or eliminate effects of pollution.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-4-18

none    slight    moderate    extensive

Identify environmental, social, and economic factors that should be considered in the management of water resources. <i>Examples: ecosystem preservation, employment, recreation, industrial growth, water quality...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Outcome 8-4-19

none    slight    moderate    extensive

Use the design process to develop a system to solve a water-related problem.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Cluster Rating

none    slight    moderate    extensive

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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##### Comments


Prescribed Learning Outcomes	Degree of Curriculum Fit	Unit, Chapter or Page References
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## Skills and Attitudes Outcomes

### Grade 8

### Cluster 0

Outcome 8-0-1a	none	slight	moderate	extensive	
Formulate specific questions that lead to investigations. <i>Include: rephrase questions to a testable form, focus research questions.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Outcome 8-0-1b	none	slight	moderate	extensive	
Select and justify a method to be used in finding the answer to a specific question.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Outcome 8-0-1c	none	slight	moderate	extensive	
Identify practical problems to solve. <i>Examples: How can I make water flow uphill? Which type of bottled water should I buy?...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Outcome 8-0-1d	none	slight	moderate	extensive	
Select and justify a method to be used in finding a solution to a practical problem.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Outcome 8-0-2a	none	slight	moderate	extensive	
Access information using a variety of sources. <i>Examples: libraries, magazines, community resource people, outdoor experiences, videos, CD-ROMS, Internet...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Outcome 8-0-2b	none	slight	moderate	extensive	
Develop and use criteria for evaluating information. <i>Include: Distinguish between fact and opinion.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Outcome 8-0-2c	none	slight	moderate	extensive	
Make notes in point form, summarizing major ideas and supporting details and reference sources.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Outcome 8-0-3a	none	slight	moderate	extensive	
Formulate a prediction/hypothesis that identifies a cause and effect relationship between the dependent and independent variables.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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## Skills and Attitudes Outcomes

### Grade 8

#### Cluster 0 (Continued)

<i>Outcome 8-0-3b</i>	none	slight	moderate	extensive	
Identify the independent and dependent variables in an experiment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>Outcome 8-0-3c</i>	none	slight	moderate	extensive	
Create a written plan to answer a specific question. Include: apparatus, materials, safety considerations, steps to follow, and variables to control.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>Outcome 8-0-3d</i>	none	slight	moderate	extensive	
Develop criteria to evaluate a prototype or consumer product. Include: function, aesthetics, environmental considerations, cost, efficiency.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>Outcome 8-0-3e</i>	none	slight	moderate	extensive	
Create a written plan to solve a problem. Include: materials, safety considerations, three-dimensional sketches, steps to follow.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>Outcome 8-0-4a</i>	none	slight	moderate	extensive	
Carry out procedures that comprise a fair test. Include: controlling variables, repeating experiments to increase accuracy and reliability of results.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>Outcome 8-0-4b</i>	none	slight	moderate	extensive	
Construct a prototype.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>Outcome 8-0-4c</i>	none	slight	moderate	extensive	
Work cooperatively with group members to carry out a plan, and troubleshoot problems as they arise.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>Outcome 8-0-4d</i>	none	slight	moderate	extensive	
Identify and assume various roles to achieve group goals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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## Skills and Attitudes Outcomes

### Grade 8

#### Cluster 0 (Continued)

##### Outcome 8-0-4e

none    slight    moderate    extensive

Demonstrate work habits that ensure personal safety and the safety of others and consideration for the environment. Include: keeping an uncluttered workspace, putting equipment away after its use, handling glassware with care, wearing goggles when required, disposing of materials in a safe and responsible manner.	□	□	□	□	
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##### Outcome 8-0-4f

none    slight    moderate    extensive

Identify WHMIS hazard symbols that provide information on the safety of substances.	□	□	□	□	
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##### Outcome 8-0-5a

none    slight    moderate    extensive

Make observations that are relevant to a specific question.	□	□	□	□	
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##### Outcome 8-0-5b

none    slight    moderate    extensive

Test a prototype or consumer product with respect to pre-determined criteria.	□	□	□	□	
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##### Outcome 8-0-5c

none    slight    moderate    extensive

Select and use tools to observe, measure, and construct. <i>Examples: microscope, concave and convex mirrors and lenses, chemical indicators...</i>	□	□	□	□	
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##### Outcome 8-0-5d

none    slight    moderate    extensive

Use conversions among commonly used SI units.	□	□	□	□	
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##### Outcome 8-0-5e

none    slight    moderate    extensive

Estimate and measure accurately using SI and other standard units. Include: determining volume by displacement of water.	□	□	□	□	
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##### Outcome 8-0-5f

none    slight    moderate    extensive

Record, compile and display observations and data using an appropriate format.	□	□	□	□	
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## Skills and Attitudes Outcomes

### Grade 8

#### Cluster 0 (Continued)

<i>Outcome 8-0-6a</i>	none	slight	moderate	extensive	
Construct graphs to display data, and interpret and evaluate these and other graphs. <i>Examples: circle graphs...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Outcome 8-0-6b</i>	none	slight	moderate	extensive	
Interpret patterns and trends in data, and infer and explain relationships.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Outcome 8-0-6c</i>	none	slight	moderate	extensive	
Identify strengths and weaknesses of different methods of collecting and displaying data and potential sources of error.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Outcome 8-0-6d</i>	none	slight	moderate	extensive	
Identify and make improvements to a prototype and explain the rationale for the changes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Outcome 8-0-6e</i>	none	slight	moderate	extensive	
Evaluate the strengths and weaknesses of a consumer product based on pre-determined criteria.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Outcome 8-0-6f</i>	none	slight	moderate	extensive	
Identify how the original plan evolved and justify the changes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Outcome 8-0-7a</i>	none	slight	moderate	extensive	
Draw a conclusion that explains investigation results . Include: explaining the cause and effect relationship between the dependent and independent variables; identifying alternative explanations for observations; supporting or rejecting a prediction/hypothesis.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Outcome 8-0-7b</i>	none	slight	moderate	extensive	
Critically evaluate conclusions, basing arguments on fact rather than opinion.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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## Skills and Attitudes Outcomes

### Grade 8

#### Cluster 0 (Continued)

<i>Outcome 8-0-7c</i>	none	slight	moderate	extensive	
Identify a new prediction/hypothesis based on results of investigations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>Outcome 8-0-7d</i>	none	slight	moderate	extensive	
Propose and justify a solution to the initial problem.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>Outcome 8-0-7e</i>	none	slight	moderate	extensive	
Identify new practical problems to solve.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>Outcome 8-0-7f</i>	none	slight	moderate	extensive	
Reflect on prior knowledge and experiences to construct new understanding and apply this new knowledge in other contexts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>Outcome 8-0-7g</i>	none	slight	moderate	extensive	
Communicate methods, results, conclusions, and new knowledge in a variety of ways. <i>Examples: oral, written, multi-media presentations...</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>Outcome 8-0-7h</i>	none	slight	moderate	extensive	
Identify and evaluate potential applications of investigation results.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>Outcome 8-0-8a</i>	none	slight	moderate	extensive	
Distinguish between science and technology. Include: purpose, procedures, products.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>Outcome 8-0-8b</i>	none	slight	moderate	extensive	
Describe examples of how scientific knowledge has evolved in light of new evidence, and the role of technology in this evolution.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>Outcome 8-0-8d</i>	none	slight	moderate	extensive	
Describe examples of how technologies have evolved over time in response to changing needs and scientific advances.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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## Skills and Attitudes Outcomes

### Grade 8

#### Cluster 0 (Continued)

<i>Outcome 8-0-8e</i>	none	slight	moderate	extensive	
Provide examples of Canadian institutions that have contributed to science and technology and describe their contributions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Outcome 8-0-8f</i>	none	slight	moderate	extensive	
Relate personal activities to specific science disciplines.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Outcome 8-0-8g</i>	none	slight	moderate	extensive	
Discuss societal, environmental, and economic impacts of scientific and technological endeavours. Include: local and global impacts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Outcome 8-0-9a</i>	none	slight	moderate	extensive	
Appreciate and respect that science has evolved from different views held by women and men from a variety of societies and cultural backgrounds.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Outcome 8-0-9b</i>	none	slight	moderate	extensive	
Express interest in a broad scope of science and technology-related fields and issues.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Outcome 8-0-9c</i>	none	slight	moderate	extensive	
Demonstrate confidence in their ability to carry out investigations in science and technology.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Outcome 8-0-9d</i>	none	slight	moderate	extensive	
Value skepticism, accuracy, precision, and open-mindedness as scientific and technological habits of mind.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Outcome 8-0-9e</i>	none	slight	moderate	extensive	
Be sensitive and responsible in maintaining a balance between the needs of humans and a sustainable environment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Outcome 8-0-9f</i>	none	slight	moderate	extensive	
Consider both immediate and long-term effects of their actions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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**Skills and Attitudes Outcomes**

**Grade 8**

**Cluster 0 (Continued)**

**Cluster Rating**

none      slight      moderate      extensive

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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**Comments**
