5.1-01 Use appropriate vocabulary related to their investigations of human health.

Include: nutrients; carbohydrates; proteins; fats; vitamins; minerals.

Canada’s Food Guide to Healthy Eating; food groups; serving size; terms related to the digestive system, skeletal, muscular, nervous, integumentary, respiratory, and circulatory systems. GLO: B3, C5, D1

5.1-02 Interpret nutritional information found on food labels.

Examples: ingredient proportions; identification of potential allergens; information related to energy content and nutrients... GLO: B3, C4, C5, C8

5.1-03 Describe the types of nutrients in food and their function in maintaining human health.

Include: carbohydrates, proteins, fats, vitamins, minerals. GLO: B5, D1

5.1-04 Evaluate a daily menu plan and suggest ways to make it align more closely with Canada’s Food Guide to Healthy Eating.

Include: serving size recommendations according to age for each food group. GLO: B3, C3, C4, C8

5.1-05 Evaluate prepared food products using the design process.

Examples: freeze pizza; snack foods; beverages... GLO: B3, C3, C4, C8

5.1-06 Identify the major components of the digestive system, and describe its role in maintaining human health.

Include: teeth, mouth, esophagus, stomach, and intestines break down food to GLO: D1, E1

5.1-07 Identify the major components of the skeletal, muscular, and nervous systems, and describe the role of each system in the human body.

Include: the skeleton provides protection and support; muscles, tendons, and ligaments enable movement; brain, spinal cord, and nerves receive sensory input, process information, and send out signals. GLO: D1, E2

5.1-08 Identify the skin as the major component of the integumentary system, and describe its role in protecting and supporting the human body. GLO: D1, E2

5.2-01 Use appropriate vocabulary related to their investigations of weather.

Include: weather; precipitation; temperature; wind; air mass; front; weather instrument; severe weather; forecast; accuracy; water cycle; climate; summaries of weather. GLO: C8, D5

5.2-02 Describe how weather conditions may affect the activities of humans and other animals.

Examples: heavy rainfall may cause roads to wash out; storm conditions may prevent a space shuttle launching; in excessive heat cattle may produce less milk... GLO: C2, D1

5.2-03 Describe properties of air.

Include: has mass and volume; expands to fill a space; expands and contracts with changes in temperature; exerts pressure; moves from areas of high pressure to areas of low pressure. GLO: D3

5.2-04 Recognize that warm and cold air masses are important components of weather, and describe the difference in their characteristics when they move across Canada. GLO: D3, D4, E5

5.2-05 Identify potentially harmful chemical products used at home, and describe practices to ensure personal safety.

Include: use of products with parental supervision, recognition of safety symbols, procedures to follow in case of an emergency, proper storage of chemical products. GLO: B1, C1, D3

5.2-06 Evaluate household chemical products using the design process. GLO: B3, C3, C4, C8

5.2-07 Research and describe how raw materials are transformed into useful products.

Examples: food processing, oil refining, paper milling, plastic moulding, gold mining... GLO: B1, B4, C2, E3

5.2-08 Demonstrate that changes of state are reversible through the addition or removal of energy.

Include: melting, freezing/solidification, condensation, evaporation. GLO: D3, E3, E4

5.2-09 Explore to identify reversible and non-reversible changes that can be made to substances.

Examples: reversible — folding paper; mixing baking soda and vinegar; non-reversible — cutting paper; mixing baking soda and vinegar. GLO: C2, D3, E3

5.2-10 Recognize that a physical change alters the characteristics of a substance without producing a new substance, and that a chemical change produces a new substance with distinct characteristics and properties. GLO: D3, E3

5.2-11 Observe examples of changes in substances, classify them as physical or chemical changes, and justify the designation.

Examples: physical — bending a nail; chemical — cooking food; chemical — rusting of a nail, burning wood, cooking food... GLO: C2, D3, E3

5.3-01 Use appropriate vocabulary related to their investigations of forces and simple machines.

Include: force arrows representing direction and relative strength of forces acting in the same plane, balanced and unbalanced forces.

GLO: C6, D4

5.3-02 Describe, using diagrams, the forces acting on an object and the effects of those forces on the object.

Include: force; axes; torque; fulcrum. GLO: C6, D4

5.3-03 Investigate a variety of levers used to accomplish particular tasks in order to compare them qualitatively with respect to fulcrum position, applied force, and load.

Include: determining how characteristics and properties of substances may change when they interact with one another. GLO: D2, D3, E3

5.3-04 Investigate how a variety of simple machines work together.

Examples: the screws in a door lock require a greater force but apply it over a shorter distance. GLO: B3, C4, C5, C8

5.3-05 Investigate friction, terms related to types of simple machines. GLO: C3, D4, E2

5.3-06 Investigate how a variety of levers used to accomplish particular tasks in order to compare them qualitatively with respect to fulcrum position, applied force, and load.

Include: a system of pulleys reduces the force required while increasing the distance over which the force is applied. GLO: B3, C4, C5, C8

5.3-07 Explain how human health may be affected by lifestyle choices and natural-and human-caused environmental factors.

Include: smoking and poor air quality may cause respiratory disorders; unhealthy eating and physical inactivity may lead to diabetes or heart disease; prolonged periods in the sun can cause skin cancer. GLO: B1, B3, C5, D1

5.3-08 Investigate devices that use variations of simple machines to accomplish tasks in a controlled way to perform a specific function. GLO: C3, C4, C5, D2

5.4-01 Use appropriate vocabulary related to their investigations of weather.

Include: weather; precipitation; temperature; wind; air mass; front; weather instrument; severe weather; forecast; accuracy; water cycle; climate; summaries of weather. GLO: C8, D5

5.4-02 Describe how weather conditions may affect the activities of humans and other animals.

Examples: heavy rainfall may cause roads to wash out; storm conditions may prevent a space shuttle launching; in excessive heat cattle may produce less milk... GLO: C2, D1

5.4-03 Describe properties of air.

Include: has mass and volume; expands to fill a space; expands and contracts with changes in temperature; exerts pressure; moves from areas of high pressure to areas of low pressure. GLO: D3

5.4-04 Recognize that warm and cold air masses are important components of weather, and describe the difference in their characteristics when they move across Canada. GLO: D3, D4, E5

5.4-05 Identify potentially harmful chemical products used at home, and describe practices to ensure personal safety.

Include: use of products with parental supervision, recognition of safety symbols, procedures to follow in case of an emergency, proper storage of chemical products. GLO: B1, C1, D3

5.4-06 Evaluate household chemical products using the design process. GLO: B3, C3, C4, C8

5.4-07 Research and describe how raw materials are transformed into useful products.

Examples: food processing, oil refining, paper milling, plastic moulding, gold mining... GLO: B1, B4, C2, E3

5.4-08 Investigate various ways of predicting weather, and evaluate their usefulness.

Examples: weather-related readings; traditional knowledge; folk knowledge; observations of the natural environment... GLO: A2, A4, B2, C8

5.4-09 Contrast the accuracy of short- and long-term weather forecasts, and discuss possible reasons for the discrepancies. GLO: C2, D3, E3

5.4-10 Investigate various ways of predicting weather, and evaluate their usefulness.

Include: long-term forecasts may not be accurate as weather is a complex natural phenomenon that science is not yet able to predict accurately. GLO: A1, C2

5.4-11 Describe examples of technological advances that have enabled humans to determine the long-term weather forecast. GLO: B3, C3, D4, E1

5.4-12 Investigate how changes in the Sun’s energy evaporates water and warms the Earth’s land, water, and air;

Include: weather includes the atmospheric conditions existing at a particular time and place; climate describes the long-term weather trend of a particular region. GLO: D5, E1, E5, B1, D1

5.4-13 Describe how the transfer of energy from the Sun affects weather conditions.

Include: the Sun’s energy evaporates water and warms the Earth’s land, water, and air; and a system of ocean currents. GLO: D5, E2

5.4-14 Explain how cloud forms, and relate cloud formation and precipitation to the water cycle.

GLO: D3, E2

5.4-15 Identify and describe weather-related clouds formations.

Examples: cumulonimbus, stratus, altostratus, nimbostratus... GLO: D3, E1

5.4-16 Differentiate between weather and climate.

Include: weather includes the atmospheric conditions existing at a particular time and place; climate describes the long-term weather trend of a particular region. GLO: D5, E1, E5, B1, D1

5.4-17 Identify factors that influence weather and climate in Manitoba and across Canada, and describe their impacts.

Examples: wind, snow, humidity, temperature, precipitation... GLO: D3, E2, E4, E5

5.4-18 Recognize that climates around the world are ever changing, and identify possible explanations.

Examples: volcanic eruption, ozone depletion, greenhouse effect, El Niño, deforestation... GLO: B5, D3, E2, E3
Cluster 1: Diversity of Living Things

6-1-10 Provide examples of a variety of invertebrates to illustrate their diversity. Include: sponges, worms, molluscs, arthropods. GLO: D1, E1

6-1-11 Compare and contrast adaptations of common earthworms, and describe how these adaptations enable them to live in particular habitats. GLO: D2, E1

6-1-12 Classify vertebrates as fish, amphibians, reptiles, birds, and mammals, and provide examples to illustrate the diversity within each group. GLO: D1, E1

6-1-13 Compare and contrast the adaptations of closely related vertebrates living in different habitats, and suggest reasons that explain these adaptations. GLO: D1, E1

6-1-14 Identify, based on evidence gathered by paleontologists, similarities and differences in animals living today and those that lived in the past. GLO: A1, A2, E1, E3

6-1-15 Identify and describe contributions of scientists and naturalists who have increased our understanding of the diversity of living things. GLO: A2, A4, B4, D1

6-1-16 Observe and describe the diversity of living things within the local environment. Include: fungi, plants, animals. GLO: A1, C2, D1, E1

6-1-17 Recognize that the animal kingdom is divided into two groups, vertebrates and invertebrates, and differentiate between the two. Include: vertebrates have backbones, invertebrates do not. GLO: D1, E1

6-1-18 Explore to determine factors that affect bulb brightness in simple series and parallel circuits. Example: organisation of phone numbers in a phone book, books in a library, groceries in a supermarket. GLO: B1, B2, E1

6-1-19 Develop a system to classify objects or living things into groups and subgroups, and explain the reasoning used in the system’s development. Example: classification of birds, butterflies, animal tracks, winter twigs. GLO: C2, C3, C4, E1

6-1-20 Identify advantages and disadvantages of having a common classification system and describe appropriate safety precautions. Include: number of bulbs, number of batteries, placement of bulbs and batteries. GLO: C2, C3, C4, E1

6-1-21 Recognize that many living things are difficult to see with the unaided eye, and observe and describe some examples. GLO: C2, D1, E1

6-1-22 Observe and describe the diversity of living things within the local environment. Include: fungi, plants, animals. GLO: A1, C2, D1, E1

Cluster 2: Electricity

6-3-10 Use the design process to construct an electrical circuit that performs a useful function. Examples: doorbell, alarm, motorized toy, game. GLO: C3, D4

6-3-12 Demonstrate, using a simple electromagnet constructed in class, that an electromagnet can create a magnetic field. GLO: C4, D4

6-3-13 Explore motors and generators to determine that electromagnets transform electricity into motion, and motion into electricity. GLO: A2, D4, E4

6-3-14 Identify forms of energy that may result from the transformation of electrical energy, and recognize that energy can only be changed from one form into another, not created or destroyed. Include: light, heat, sound, motion. GLO: D4, E4

6-3-15 Identify the two major sources of electrical energy, and provide examples of each. Include: chemical sources such as batteries; electromagnetic sources such as turbine motion caused by wind, falling water, and steam. GLO: B1, D4, E4

6-3-16 Identify renewable and non-renewable sources of electrical energy, and discuss advantages and disadvantages of each. Examples: renewable sources such as hydroelectric, wind, geothermal; solar: non-renewable sources such as fossil fuels, nuclear fission. GLO: B5, E4

6-3-17 Evaluate an electrical device using the design process. Examples: light bulb, kitchen appliances... GLO: B5, C4

6-3-18 Describe factors that affect the consumption of electrical energy, and outline an action plan to reduce electrical energy consumption at home, at school, or in the community. GLO: B5, C4, E4

6-3-19 Describe the ways in which electricity has had an impact on daily life. GLO: B1, B5

6-3-20 Use appropriate vocabulary related to their investigations of flight. Include: propulsion, gravity, thrust, drag, Bernoulli’s Principle, propulsion, unbalanced forces. GLO: C6, D4

6-3-22 Describe properties of fluids using air as an example, and identify manifestations of fluid properties in daily life. Include: air and water flow and exert pressure; objects can flow through air and water; warm air and water rise. GLO: B1, D1, E1

6-3-23 Explain that electricity has the ability to propel themselves through air, or to be transported by the wind. Examples: the helicopter-like motion of the winged fruit of maple trees, the parachute-like motion of birds, bats, and many insects. GLO: A1, D4

6-3-24 Recognise that in order for devices or living things to fly they must have sufficient lift to overcome the downward force of gravity, and that the lift force increases as mass increases. GLO: A1, D4

6-3-25 Describe how ‘lighter-than-air’ flying devices are able to achieve lift. Include: hot-air balloons, helium balloons. GLO: D4

6-3-26 Test models of animals to observe Bernoulli’s Principle. Include: the shape of a wing affects the speed of airflow, creating lift in a ‘lighter-than-air-flying device’. GLO: C2, C3, D1, D4

6-3-27 Explain how changes in the shape of a device other than an aircraft. Example: para glider produces forces. GLO: A1, B4, D1

6-3-28 Provide examples of design features or adaptations that enhance or reduce lift, and explain how they work. Example: elevate cargo reduces lift; bird using shape enhances lift... GLO: A1, B5, D1, D4

6-3-29 Provide examples of design features or adaptations that enhance or reduce drag, and explain how they work. Examples: pipes used to increase fluid flow; aircraft wings. GLO: A1, B1, D4

6-4-01 Use appropriate vocabulary related to their investigations of Earth and space. Include: atmosphere, communication and remote sensing satellites, solar system, inner and outer planets, terrestrial body, mass, weight, points of reference, geocentric system, astrology, astronomy, rotation, revolution, axis, moon phases, eclipses. GLO: C6, D6

6-4-02 Identify technological developments that enable astronauts to meet their basic needs in space. Examples: dehydrated foods, backpacks with an oxygen supply, automatically controlled life support systems and air controls. GLO: B1, B2, D6

6-4-03 Identify careers that have contributed to space science or space technology, and describe their achievements. Examples: Apollo, Mars, International Space Station... GLO: A1, A4, A5, B1, B4

6-4-04 Investigate past and present space research programs involving astronauts, and explain the contributions to scientific knowledge. Examples: Apollo, Mars, International Space Station... GLO: A1, A4, A5, B1, B4

6-4-05 Identify careers that have contributed to space science or space technology, and describe their achievements. Examples: Apollo, Mars, International Space Station... GLO: A1, A4, A5, B1, B4

6-4-06 Investigate past and present space research programs involving astronauts, and explain the contributions to scientific knowledge. Examples: Apollo, Mars, International Space Station... GLO: A1, A4, A5, B1, B4

6-4-07 Investigate past and present space research programs involving astronauts, and explain the contributions to scientific knowledge. Examples: Apollo, Mars, International Space Station... GLO: A1, A4, A5, B1, B4

6-4-08 Recognize that the Sun is the centre of the solar system and it is the source of energy for all life on Earth. GLO: D6, E2, E4

6-4-09 Identify the planets in the solar system and describe their size relative to the Earth and their position relative to the Sun. GLO: D6, E1, E2

6-4-10 Classify planets as inner or outer planets, based on their position relative to the Earth, and describe characteristics of each type. Include: inner planets are small and rocky; outer planets (except Pluto) are giant balls of gas. GLO: D6, E1

6-4-11 Recognize that mass is the amount of matter in an object, that weight is the force of gravity on the mass of an object, and that the force of gravity varies from planet to planet. GLO: D6, E1

6-4-12 Explain, using models and simulations, how the Earth’s rotation causes the cycle of day and night, and how the Earth’s tilt of axis and revolution causes the yearly cycle of seasons. GLO: A2, D2, E4

6-4-13 Use the design process to construct a prototype that tells the time of day or measures a time span. GLO: C3, D6

6-4-14 Explain how the relative positions of the Earth, moon, and Sun are responsible for moon phases and eclipses. GLO: D6, E2

6-4-15 Identify points of reference in the night sky and recognize that the apparent movement of celestial objects is regular, predictable, and related to the Earth’s rotation and revolution. Examples: planets, constellations. GLO: D6, E2, E3

6-4-16 Describe and identify how people from various cultures, past and present, apply astronomy in daily life. Examples: celestial bodies to navigate; knowing when to plant crops... GLO: A4, A5, B1, B2

6-4-17 Describe and explain how astronomy, and explain why astronomy is considered a scientific discipline. GLO: A1, A2, C5, C8

Cluster 4: Exploring the Solar System
7-3-01 Use appropriate vocabulary related to their investigations of the particle theory of matter.
Examples: boiling and melting points, pure substance, scientific theory, particle theory of matter, temperature, heat, conduction, convection, radiation, mixture, solution, mechanical mixture, homogenous, heterogeneous, solutes, solvents, solubility, concentration, dilute, concentrated, saturated, unsaturated, terms related to forms of matter. GLO: C1, C3
7-3-02 Evaluate different types of thermometers using the design process.
Examples: materials used, range, sensitivity, durability, scale, cost... GLO: C1, C3
7-3-03 Demonstrate the effects of heating and cooling on the volume of solids, liquids, and gases, and give examples from daily life. GLO: A2, C1, D5, E4
7-3-04 Compare the boiling and melting points of a variety of substances and recognize that boiling and melting points are properties of pure substances.
Examples: water: C2, D3, E3, E4
7-3-05 Explain what scientific theories are, and provide some examples. GLO: B3, C2, C4
7-3-06 Use the design process of a science fair investigation to help you explain an observation, when this explanation has been repeatedly tested and shown to be consistent it is generally accepted in the scientific world. GLO: A1, A2
7-3-07 Describe the particle theory of matter and use it to explain changes of state. GLO: A2, C1, D3, D4
7-3-08 Demonstrate how heat can be transmitted through solids, liquids, and gases.
Examples: conduction, convection, radiation. GLO: C1, C3, D4, E4
7-3-09 Plan an experiment to identify materials that are good heat insulators and good heat conductors, and describe some uses of these materials. GLO: B1, D3, D4
7-3-10 Use the design process to construct a prototype that controls the transfer of heat energy. GLO: B5, B6, C2
7-3-11 Demonstrate different methods of separating the components of both solutions and mechanical mixtures. GLO: distillation, chromatography, evaporation, freezing, filtration, refrigeration... GLO: C1, C2
7-3-12 Identify different forms of energy that can be transformed into heat energy. GLO: chemical, nuclear, electrical. GLO: C1, D3, D4
7-4-01 Use appropriate vocabulary related to their investigations of the particle theory of matter.
Examples: boiling and melting points, pure substance, scientific theory, particle theory of matter, temperature, heat, conduction, convection, radiation, mixture, solution, mechanical mixture, homogenous, heterogeneous, solutes, solvents, solubility, concentration, dilute, concentrated, saturated, unsaturated, terms related to forms of matter. GLO: C1, C3
7-4-02 Describe the Earth’s structure.
Examples: crust, mantle, outer core, inner core. GLO: C6, D5
7-4-03 Describe the geological processes involved in rock and mineral formation, and classify rocks and minerals by their method of formation. GLO: D3, D5, E3
7-4-04 Investigate and describe the processes of weathering and erosion, and recognize that they change the shape of the landscape over time. GLO: physical, biological, and chemical weathering. GLO: D3, D5, E3
7-4-05 Explain how rocks on the Earth constantly undergo a slow process of change through the rock cycle. GLO: D3, E5
7-4-06 Identify geological resources that are used by humans as sources of energy, and describe their method of formation.
Examples: fossil fuels, geothermal energy. GLO: D4, E3, E4
7-4-07 Identify geological resources that are present in Manitoba and Canada, and describe the processes involved in their location, extraction, processing, and recycling. GLO: fossil fuels, minerals. GLO: A5, B3, D5, E3
7-4-08 Identify environmental impacts of geological resource extraction, and describe techniques used to minimize these impacts. GLO: B1, C1, C3
7-4-09 Recognize that soil is a natural resource, and explain how the characteristics of soil determine its use. GLO: D5, E3
Cluster 1: Cells and Systems

8-1-01 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, energetics, terms related to disease, cellular structure, components of blood, and primary and secondary defense systems. GLO: C6, D1

8-1-02 Identify and describe the structures of living things, and describe how different living things exhibit these characteristics.
Include: composed of; reproduce; grow; repair themselves; require energy; respond to the environment; have a lifespan; produce waste. GLO: D1, E1

8-1-03 Describe the 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. GLO: A2, D1, E2

8-1-04 Identify major events and technological innovations that have enabled scientists to increase our understanding of cell biology.
Examples: invention of the light and electron microscopes; works of Robert Hook, Anton van Leeuwenhoek, Matthias Schleiden and Theodor Schwann. GLO: A2, A4, B1, B2

8-1-05 Describe the process by which structures in plants and animals, and explain their function.
Include: cell membrane, cytoplasm, mitochondria, nucleus, vacuoles, wall, chloroplasts. GLO: C1, D1

8-1-06 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; focusing; observing specimens; indicating magnification. GLO: C1, C2, D1

8-1-07 Describe the movement of nutrients and wastes across cell membranes and explain its importance.
Include: diffusion, selective permeability. GLO: D1

8-1-08 Differentiate between unicellular and multicellular organisms.
GLO: C1, C2, C3

8-1-09 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. GLO: C2, D1

Cluster 2: Fluids

8-2-01 Use appropriate vocabulary related to their investigations of fluids. Include: buoyant force, flow, density, frequency, gravity, temperature, viscosity, weight. GLO: C1, C2, D1

8-2-02 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. GLO: D1, E1

8-2-03 Compare and contrast the structure and function of arteries, veins, and capillaries. GLO: D1, E1

8-2-04 Identify components of blood and describe the function of each.
Include: red blood cells carry oxygen; white blood cells fight infection; platelets. GLO: D1, E1

8-2-05 Describe the relationship between blood pressure and blood flow rate.
Include: blood pressure; flow rate in a given vessel. GLO: C3, D4

8-2-06 Demonstrate the effects of changes in lens position on the size and location of the image.
GLO: A5, B1, B2

8-2-07 Explain how the eye detects colour, and how the ability to perceive colour may vary from person to person. GLO: A2, E1

8-2-08 Describe, using the subtractive theory, how colours are produced, and identify applications of this theory in daily life. GLO: A1, A2, B1

8-2-09 Explain how the human eye detects colour, and how the ability to perceive colour may vary from person to person. GLO: A2, E1

8-2-10 Demonstrate, using a double convex lens, how different objects can be magnified. GLO: B2, B4

8-2-11 Explain how reflection and refraction produce natural phenomena.
Examples: satellite dish, radar, blue sky. GLO: D4, D5

8-2-12 Investigate how different lighting uses concave and convex lenses and mirrors, and provide examples of their use in various optical instruments and systems. GLO: C3

8-2-13 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.
Examples: magnify or reduce an image by altering the placement of one or more lenses. GLO: C3, D4

8-2-14 Comprehend the functional operation of the human eye that is based on focusing an image. GLO: A5, C4, D1, D4
### Cluster 0: Overall Skills and Attitudes Chart — Grades 5 to 8 Science

Specific student learning outcomes taken from Grades 5 to 8 Science: Manitoba Curriculum Framework of Outcomes

<table>
<thead>
<tr>
<th>Students will...</th>
<th><strong>Grade 5</strong></th>
<th><strong>Design Process</strong></th>
<th><strong>Grade 6</strong></th>
<th><strong>Design Process</strong></th>
<th><strong>Grade 7</strong></th>
<th><strong>Design Process</strong></th>
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<tbody>
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<td><strong>Design Process</strong></td>
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</tbody>
</table>
| 5-0-1a Formulate, with guidance, specific questions that lead to investigations. Includes rephrase questions to a testable form, focus research questions. | GLO: A1, C2 (ELA Grade 5, 3.1.1; Math: SP-I,1.5) | **Formulate specific questions that lead to investigations. Include: rephrase questions to a testable form, focus research questions.**
(Examples: How can I determine the mass of air? Which type of pizza should I buy?...)
GLO: C3 | 5-0-1b Identify variables that might have an impact on their experiments and, with guidance, select and justify variables to be held constant to ensure a fair test.
GLO: A2, C2 (Math: SP-I,1.4) | **Identify variables that might have an impact on experiments, and variables to hold constant to ensure a fair test.**
GLO: A2, C2 | 5-0-2a Access information using a variety of sources.
Examples: libraries, magazines, community resource people, outdoor experiences, videos, CD-ROMs, Internet...
GLO: C6 | **Access information using a variety of sources.**
Examples: libraries, magazines, community resource people, outdoor experiences, videos, CD-ROMs, Internet...
GLO: C6 | 8-0-2c Develop criteria to evaluate prototype or consumer product. Include: function, aesthetics, environmental considerations, cost, efficiency.
GLO: C3 | **Develop criteria to evaluate a prototype or consumer product. Include: function, aesthetics, environmental considerations, cost, efficiency.**
GLO: C3 |
| **Initiating** | **GLO: C6** | **GLO: C2 (ELA Grade 5, 3.2.2; Math: SP-II,1.5)** | **GLO: C2 (ELA Grade 5, 3.2.2; Math: SP-II,1.5)** | **GLO: C2 (ELA Grade 7, 3.2.3; Math: SP-II,1.7)** | **GLO: C3 (Math: SP-II,1.8)** | \(\Rightarrow\) **Identify practical problems to solve.**
Examples: How can I make water flow uphill? Which type of bottled water should I buy?... | **Identify practical problems to solve.**
Examples: How can I make water flow uphill? Which type of bottled water should I buy?... |
| **Initiating** | **GLO: C3, C6** | **GLO: C2 (ELA Grade 5, 3.1.4)** | **GLO: C2 (ELA Grade 5, 3.1.4)** | **GLO: C3 (Math: SP-II,1.7)** | **GLO: C3 (Math: SP-II,1.8)** | \(\Rightarrow\) **Identify practical problems to solve.**
Examples: How can I make water flow uphill? Which type of bottled water should I buy?... | **Identify practical problems to solve.**
Examples: How can I make water flow uphill? Which type of bottled water should I buy?... |
| **Revising** | **GLO: C6** | **GLO: C6** | **GLO: C6** | **GLO: C6** | **GLO: C6** | **GLO: C6** | **GLO: C6** | **GLO: C6** |
5-0-4c Work co-operatively with group members to carry out a plan, and troubleshoot problems as they arise.
GLO: C7 (ELA Grade 5, 5.2.2)
5-0-4d Assume various roles and share responsibilities as group members.
GLO: C7 (ELA Grade 5, 5.2.2)
5-0-4e Use tools and materials in a manner that ensures personal safety and the safety of others.
GLO: C1
5-0-4f Record and organize observations in a variety of ways.
GLO: A1, A2, C2

6-0-5a Carry out, with guidance, procedures that comprise a fair test. Include controlling variables, repeating measurements to increase accuracy and reliability.
GLO: C2
6-0-5b Construct a prototype.
GLO: C3
6-0-5c Work co-operatively with team members to carry out a plan, and troubleshoot problems as they arise.
GLO: C7 (ELA Grade 6, 5.2.2)
6-0-5d Assume various roles to achieve group goals.
GLO: C7 (ELA Grade 6, 5.2.2)
6-0-5e Estimate and measure mass/weight, length, volume, and temperature using SI and other standard units.
GLO: C1
6-0-5f Record, compile, and display observations and data, using an appropriate format.
GLO: C1

GLO: C2, C3 (ELA Grade 6, 3.3.1; Math: SP-III.2.8)

7-0-5a Make observations that are relevant to a specific question.
GLO: A1, A2, C2
7-0-5b Construct a prototype.
GLO: C3
7-0-5c Select and use tools to observe, measure, and construct.
GLO: C2, C5 (Math: SS-IV.1.5, SS-III.1.5, SS-III.1.6, SS-I.1.5)
7-0-5d Estimate and measure accurately using SI and other standard units.
GLO: C1
7-0-5e Evaluate the strengths and weaknesses of different methods of collecting and displaying data, and potential sources of error.
GLO: A1, A2, C2, C5
7-0-5f Record, compile, and display observations and data, using an appropriate format.
GLO: C1

8-0-5a Make observations that are relevant to a specific question.
GLO: A1, A2, C2
8-0-5b Construct a prototype.
GLO: C3
8-0-5c Select and use tools to observe, measure, and construct.
GLO: C2, C5 (Math: SS-IV.1.5, SS-III.1.5, SS-III.1.6, SS-I.1.5)
8-0-5d Evaluate the strengths and weaknesses of different methods of collecting and displaying data, and potential sources of error.
GLO: A1, A2, C2, C5
8-0-5e Record, compile, and display observations and data, using an appropriate format.
GLO: C1

Intermediate A

Observing, measuring, data recording
GLO: C2, C5 (ELA Grade 7, 3.3.1; Math: SP-III.2.7)

Analyzing and interpreting
GLO: C2, C5 (ELA Grade 7, 3.3.4)

Evaluating a process
GLO: C3, C4
5-0-7e Propose and justify a solution to the initial problem. 

GLO: C3

5-0-7f Draw, with guidance, a new prediction/hypothesis based on investigation results. 

GLO: A2, C2 (ELA Grade 6, 3.3.4)

5-0-7g Identify new practical problems to solve. 

GLO: C3

5-0-7h Identify, with guidance, a new practical application of investigation results. 

GLO: A2, C2 (ELA Grade 6, 3.3.4)

5-0-7i Reflect on prior knowledge and experiences to construct new understanding, and apply this new knowledge in other contexts. 

GLO: A2, C4

5-0-7j Communicate methods, results, conclusions, and new knowledge in a variety of ways. 

Examples: oral, written, multimedia presentations...

GLO: C4 (ELA Grade 6, 4.4.1); TFS: 3.2.2, 3.2.3)

5-0-7k Identify with guidance, potential applications of investigation results. 

GLO: C4

6-0-8a Describe how society has developed as a result of the gradual accumulation of evidence. 

GLO: A2

6-0-8b Recognize that science is a way of describing phenomena in the world and that there are questions that science cannot answer. 

GLO: A1, A3

6-0-8c Describe examples of scientific knowledge that have developed as a result of the gradual accumulation of evidence. 

GLO: B1

6-0-8d Provide examples of technologies from the past and describe how they have evolved over time. 

GLO: A2, B1

6-0-8e Describe examples of how scientific knowledge has evolved in light of new evidence, and the role of technology in this evolution. 

GLO: A2, A5, B1

6-0-8f Relate personal activities in formal and informal settings to specific scientific disciplines. 

GLO: A1, A4

6-0-8g Discuss societal, environmental, and economic impacts of scientific and technological endeavours. 

Include: local and global impacts. GLO: A1, B1, B5

6-0-9a Distinguish between science and technology. 

Include: purpose, procedures, products. GLO: A3

6-0-9b Describe examples of how scientific knowledge has evolved in light of new evidence, and the role of technology in this evolution. 

GLO: A2, A5, B1

6-0-9c Describe examples of how technologies have evolved over time in response to changing needs and scientific advances. 

GLO: A5, B1, B2

6-0-9d Describe examples of how technologies have evolved over time in response to changing needs and scientific advances. 

GLO: A5, B1, B2

6-0-9e Describe examples of Canadian institutions and individuals who have contributed to science and technology, and describe their contributions. 

GLO: A1, A4, B1

6-0-9f Relate personal activities in formal and informal settings to specific scientific disciplines. 

GLO: A1, B4

6-0-9g Discuss societal, environmental, and economic impacts of scientific and technological endeavours. 

Include: local and global impacts. GLO: A1, B1, B5

6-0-9h Describe and explain the potential consequences of their actions. 

GLO: B5, C4

6-0-9i Frequently and thoughtfully evaluate the potential consequences of their actions. 

GLO: B5, C4

6-0-9j Prove, with a new case, a new prediction/hypothesis based on investigation results. 

GLO: A1, C2

6-0-9k Critically evaluate conclusions, basing arguments on fact rather than opinion. 

GLO: C4

6-0-9l Identify a new prediction/hypothesis based on investigation results. 

GLO: A1, C2 (ELA Grade 7, 3.3.4)

6-0-9m Identify and evaluate potential applications of investigation results. 

GLO: C4

6-0-9n Identify new practical problems to solve. 

GLO: C3

6-0-9o Propose and justify a solution to the initial problem. 

GLO: C3

7-0-7a Critically evaluate conclusions, basing arguments on fact rather than opinion. 

GLO: C4

7-0-7b Critically evaluate conclusions, basing arguments on fact rather than opinion. 

GLO: C4