

Science 4–6 Streamlined Curriculum

Science 4: HABITATS			
Skills and Concepts	Outcomes	Performance/Assessment Indicators	Guiding Question(s) and Focus
<p>Skills</p> <ul style="list-style-type: none"> infer predict explore reach conclusions analyze data investigate describe <p>Outcome 1 Concepts</p> <ul style="list-style-type: none"> living things find environments that have items and conditions that they need to grow and survive <p>Outcome 2 Concepts</p> <ul style="list-style-type: none"> changes in habitat can affect the survival of an organism or a species food chains have a role in population changes human choices and actions impact the environment, with a focus on Aboriginal perspectives on interrelatedness habitats are interrelated respect for living things and environment 	<p>Outcome 1 Students will explore a variety of local natural habitats.</p> <p>Outcome 2 Students will investigate the interrelatedness among animals, plants, and the environment in local habitats.</p>	<p>Outcome 1 Indicators</p> <ul style="list-style-type: none"> Explore 2 to 3 models of habitats. (Com, CI, CT, TF) Use data from explorations to recognize patterns and relationships and reach conclusions. (Com, CI, CT, PCD, TF) Infer why particular organisms share a habitat. (Com, CI, CT, TF) Predict the effect of change in the environment to the habitat. (Com, CI, CT, TF) <p>Outcome 2 Indicators</p> <ul style="list-style-type: none"> Investigate and share the characteristics of a variety of habitats. (Com, CT, PCD, TF) Investigate and compare local habitats and their associated populations of plants and animals, inclusive of Aboriginal perspectives. (Com, CT, PCD, TF) Describe how human actions and natural phenomena can change and/or conserve the environments of habitats, inclusive of Aboriginal perspectives. (CZ, Com, CT, PCD) Predict how a change in the food chain can affect a habitat. (Com, CI, CT) Analyze simple food chains. (Com, CT, TF) 	<p>Questions</p> <ul style="list-style-type: none"> How do living things sense, respond, and adapt to stimuli in their environment? What evidence is there of interdependence between living and non-living things in ecosystems? <p>Focus</p> <ul style="list-style-type: none"> The focuses in this unit are inquiry and decision making. Students, while exploring and investigating the habitats that plants and animals may live in, should realize the impact humans can have on the environment. The concept of interrelatedness can be expanded upon further looking at a variety of populations that exist in a habitat and the impact of the loss of one population on a community.

Citizenship (CZ) Communication (Com) Creativity and Innovation (CI) Critical Thinking (CT) Personal Career Development (PCD) Technological Fluency (TF)

Science 4: LIGHT			
Skills and Concepts	Outcomes	Performance/Assessment Indicators	Guiding Question(s) and Focus
<p>Skills</p> <ul style="list-style-type: none"> describe observations handle materials safely by following specific directions predict the results of investigations, including specific experiments compare and contrast experiment investigate <p>Outcome 3 Concepts</p> <ul style="list-style-type: none"> the properties of natural and artificial light how light interacts in various environments how light travels light's relationship with energy forms of light are invisible or non-visible light can travel in straight lines light can bend light is measurable <p>Outcome 4 Concepts</p> <ul style="list-style-type: none"> many technologies are using properties of light 	<p>Outcome 3 Students will investigate light and how it interacts in the environment.</p> <p>Outcome 4 Students will investigate how light is used.</p>	<p>Outcome 3 Indicators</p> <ul style="list-style-type: none"> Investigate and classify natural and artificial sources of light. (Com, CT, PCD, TF) Explore how light is absorbed, transmitted, or reflected using a variety of materials. (Com, CI, CT, TF) Observe and describe how light interacts in various environments. (Com, CI, CT, TF) <p>Outcome 4 Indicators</p> <ul style="list-style-type: none"> Investigate how light is used in optical devices to help us extend our vision. (CZ, Com, CI, CT, PCD, TF) Experiment with an optical device that performs a specific function (periscope, kaleidoscope, glasses, microscope). (CZ, Com, CI, CT, PCD, TF) 	<p>Questions</p> <ul style="list-style-type: none"> What are different light sources? What are some properties of light? How can we control light? <p>Focus</p> <ul style="list-style-type: none"> The main focus in this unit is on inquiry, with an emphasis on observing and making inferences. Students become involved with light interacting with a variety of materials. These interactions will lead to qualitative inferences about the behaviour of light. A strong technology focus allows students to explore optical devices over time and be involved in making some devices whether by given procedures or designing their own. Technological processes leading to products will result.

Science 4: SOUND			
Skills and Concepts	Outcomes	Performance/Assessment Indicators	Guiding Question(s) and Focus
<p>Skills</p> <ul style="list-style-type: none"> ▪ explore ▪ record ▪ demonstrate ▪ predict ▪ describe ▪ discover <p>Outcome 5 Concepts</p> <ul style="list-style-type: none"> ▪ the oscillation (shaking) of objects is called vibrating ▪ sound is caused by vibrations in a medium <p>Outcome 6 Concepts</p> <ul style="list-style-type: none"> ▪ properties of sound ▪ sound can be audible or not ▪ higher and lower frequency corresponds to higher and lower pitch ▪ sound travels through solids, liquids, and gases 	<p>Outcome 5 Students will explore and describe a variety of sounds in the environment.</p> <p>Outcome 6 Students will investigate properties of sound.</p>	<p>Outcome 5 Indicators</p> <ul style="list-style-type: none"> ▪ Explore and describe examples of sounds in everyday life. (Com, CI, CT, TF) ▪ Discuss the possible impacts of sounds in everyday life. (Com, CI, CT, TF) <p>Outcome 6 Indicators</p> <ul style="list-style-type: none"> ▪ Recognize through discovery that vibration is the source of sound. (Com, CI, CT, TF) ▪ Investigate how sound is absorbed, transmitted, or reflected, using a variety of materials. (Com, CI, CT, TF) ▪ Explore various devices that produce, amplify, and receive sound. (Com, CI, CT, PCD, TF) ▪ Record changes in vibration and pitch. (Com, CI, CT, TF) ▪ Demonstrate how various materials will absorb, reflect, or transmit sound. (Com, CI, CT, TF) ▪ Predict changes in vibration and pitch. (Com, CI, CT, PDC, TF) ▪ Describe the relationship between vibration and pitch. (Com, CI, CT) 	<p>Questions</p> <ul style="list-style-type: none"> ▪ What are different sources of sound? ▪ What are some properties of sound? ▪ How can we modify sound? <p>Focus</p> <ul style="list-style-type: none"> ▪ This unit has a dual focus of inquiry and design technology as students will inquire about sound production and how pitch and intensity can be varied. ▪ Students will be able to design their own sound-making devices.

Science 4: ROCKS, MINERALS, AND EROSION			
Skills and Concepts	Outcomes	Performance/Assessment Indicators	Guiding Question(s) and Focus
<p>Skills</p> <ul style="list-style-type: none"> ▪ interpret investigations ▪ use tools to collect information ▪ classify collections ▪ examine ▪ investigate ▪ report ▪ explore <p>Outcome 7 Concepts</p> <ul style="list-style-type: none"> ▪ rocks are made up of minerals ▪ minerals have unique properties ▪ minerals are made from pure substances (elements) in Earth’s crust <p>Outcome 8 Concepts</p> <ul style="list-style-type: none"> ▪ rocks can be classified by how they are formed ▪ fossils in rocks allow us to interpret ancient environments ▪ characteristics of rocks and minerals and their uses ▪ comparing characteristics of rocks ▪ how soil is formed (rock cycle, weathering, erosion) ▪ Earth’s surface changes over time 	<p>Outcome 7 Students will explore the characteristics of rocks, minerals, and fossils.</p> <p>Outcome 8 Students will explore how the Earth’s surface changes over time.</p>	<p>Outcome 7 Indicators</p> <ul style="list-style-type: none"> ▪ Explore rocks in the environment, collect samples, and record observations. (Com, CT, PCD, TF) ▪ Classify and compare rocks and minerals according to characteristics. (Com, CI, CT, TF) ▪ Explore the uses of rocks. (Com, CT, PCD, TF) ▪ Infer how fossils can help us interpret past environments. (CZ, Com, CI, CT, PCD, TF) ▪ Explore how fossils are formed. (Com, CT, PCD, TF) <p>Outcome 8 Indicators</p> <ul style="list-style-type: none"> ▪ Explore the connections among the rock cycle, soil, and weather. (Com, CI, CT) ▪ Investigate an example of erosion. (Com, CI, CT, TF) 	<p>Questions</p> <ul style="list-style-type: none"> ▪ Why is planet Earth considered a closed material system? ▪ What are the effects of weather on the Earth’s surface? <p>Focus</p> <ul style="list-style-type: none"> ▪ This unit provides many opportunities for students to practice their inquiry skills. ▪ Students will observe, record descriptions, and classify rocks and minerals in their local habitat. They will explore the make-up of soil and the fossils that can be found in it. This observation and exploration will reveal the impact of humanity and nature on Earth and how Earth is a dynamic planet.
<p>Literacy Outcome Students will apply literacy learning in Science 4 by engaging in listening and speaking, reading and viewing, writing, and other ways of representing.</p>			

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Science 5: WEATHER			
Skills and Concepts	Outcomes	Performance/Assessment Indicators	Guiding Question(s) and Focus
<p>Skills</p> <ul style="list-style-type: none"> ▪ identify relevant data ▪ record data using graphs, tables, or charts ▪ interpret data from recorded observations ▪ observe weather conditions ▪ predict ▪ infer <p>Outcome 1 Concepts</p> <ul style="list-style-type: none"> ▪ weather conditions that can be measured and/or observed include precipitation, air pressure, cloud formations, temperature, wind and speed directions ▪ relationships among atmosphere (including clouds), water cycle, environment ▪ weather conditions that can be observed and/or measured, with consideration of cultural oral traditions ▪ the surface of Earth is surrounded by an atmosphere ▪ most of Earth is covered by water ▪ Earth is heated by energy from the sun 	<p>Outcome 1</p> <p>Students will measure and observe to predict weather conditions.</p>	<p>Outcome 1 Indicators</p> <ul style="list-style-type: none"> ▪ Investigate factors contributing to weather conditions. (Com, CI, CT, TF) ▪ Use weather instruments to observe, collect data and make predictions. (Com, CI, CT, PCD, TF) ▪ Interpret and compare collected sets of data. (Com, CI, CT, TF) ▪ Discuss weather-related oral traditions. (CZ, Com, CT) 	<p>Question</p> <ul style="list-style-type: none"> ▪ How does weather affect everyday life? <p>Focus</p> <ul style="list-style-type: none"> ▪ The focus of this unit is inquiry with data collection. Students will develop predicting processes. ▪ Opportunities to collect a wide variety of data on weather by using instruments and interacting with a variety of people and resources to determine techniques, instruments, and indicators for predicting weather.

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Science 5: WEATHER			
Skills and Concepts	Outcomes	Performance/Assessment Indicators	Guiding Question(s) and Focus
Outcome 2 Concepts <ul style="list-style-type: none"> ▪ weather conditions affect living things with consideration of connections to first nations and weather folklore ▪ weather conditions affect non-living things ▪ the relationship between precipitation, air pressure, cloud formations, temperature, wind, and directions in the water cycle in creating our weather conditions 	Outcome 2 Students will investigate how weather impacts our lives.	Outcome 2 Indicators <ul style="list-style-type: none"> ▪ Infer how the weather affects living things. (Com, CI, CT, TF) ▪ Infer how the weather affects nonliving things. (Com, CI, CT, TF) ▪ Gather evidence on the impact of weather on our daily lives. (Com, CT, PDC, TF) 	

Science 5: FORCES AND SIMPLE MACHINES			
Skills and Concepts	Outcomes	Performance/Assessment Indicators	Guiding Questions and Focus
<p>Skills</p> <ul style="list-style-type: none"> perform self-design investigations to test and compare measure force use material and equipment effectively and safely explore investigate design <p>Outcome 3 Concepts</p> <ul style="list-style-type: none"> types of forces (friction, gravity) identification of types of simple and compound machines (levers, pulleys, ramps, screws, wheels, wedge, incline plane) used in daily life 	<p>Outcome 3</p> <p>Students will explore forces and mechanical advantage by designing common simple and compound machines.</p>	<p>Outcome 3 Indicators</p> <ul style="list-style-type: none"> Explore the effects of forces on motion (friction, gravity, push, pull, momentum). (Com, CI, CT, TF) Locate examples of simple and compound machines used in daily life (levers, pulleys, ramps, screws, wheels, wedge, inclined plane). (Com, CI, CT, PCD, TF) Investigate common simple and compound machines, and the relationship between the two. (CZ, Com, CI, CT, PCD, TF) Design and experiment with an imaginary compound machine using the processes of start, reason, draw design, build a working model, identify and difficulties, improve design. (Com, CI, CT, TF) 	<p>Question</p> <ul style="list-style-type: none"> How can a simple machine help us do work? <p>Focus</p> <ul style="list-style-type: none"> This unit's focus is on problem solving should allow many opportunities for hands-on, minds-on exploration and open-ended challenges using simple machines either in combination or singly to design solutions. The effect of forces on motion will happen at the beginning of the unit as students explore. Students can define problems to solve and then design solutions involving simple machines.

Science 5: HEALTHY BODY			
Skills and Concepts	Outcomes	Performance/Assessment Indicators	Guiding Questions and Focus
<p>Skills</p> <ul style="list-style-type: none"> ▪ experiment ▪ explore ▪ investigate <p>Outcome 4 Concepts</p> <ul style="list-style-type: none"> ▪ general overview of structures and functions of basic body systems, such as the brain, heart, lungs, and skin ▪ body organs interact with each other to survive in the environment ▪ the function of each studied system ▪ the systems are interconnected 	<p>Outcome 4</p> <p>Students will examine how the body functions to meet our needs.</p>	<p>Outcome 4 Indicators</p> <ul style="list-style-type: none"> ▪ Investigate the function and structure of a particular body system. (Com, CI, CT, PCD, TF) ▪ Explore ways to maintain healthy selected body systems. (CZ, Com, CI, CT, PCD, TF) ▪ Investigate ways the body protects itself. (Com, CI, CT, PCD) ▪ Monitor health indicators and vital signs by using measuring tools. (Com, CT, TF) 	<p>Guiding questions:</p> <ul style="list-style-type: none"> ▪ How can I maintain a healthy body? ▪ Why is a healthy body important? <p>Focus:</p> <ul style="list-style-type: none"> ▪ Students investigate the factors that increase heartbeat, build models of organs and systems to see how they function, and experiment to see results. ▪ Students will actively construct to investigate the factors that affect them to see how their body systems work together.

Science 5: CHEMICAL AND PHYSICAL PROPERTIES			
Skills and Concepts	Outcomes	Performance/Assessment Indicators	Guiding Questions and Focus
<p>Skills</p> <ul style="list-style-type: none"> follow a given set of procedures to observe and identify changes in various objects identify changes classify changes use appropriate tools and techniques to gather, analyze, and interpret information recognize that an experiment must be repeated recognize that an experiment must yield consistent results to be shared develop models to represent matter handle chemicals and equipment safely and responsibly according to WHMIS and MSDS standards <p>Outcome 5 Concepts</p> <ul style="list-style-type: none"> materials can be solids, liquids, or gases interactions among materials physical and chemical changes mass of a whole to sum of its parts (law of conservation of mass) matter is anything that has mass and volume mixtures can be separated physically or chemically by various methods to remove a component 	<p>Outcome 5</p> <p>Investigate how physical and chemical properties and changes affect matter.</p>	<p>Outcome 5 Indicators</p> <ul style="list-style-type: none"> Differentiate between physical and chemical properties of matter. (Com, CI, CT) Safely experiment with physical and chemical changes in matter initially and over time. (Com, CI, CT, PCD, TF) Share conclusions of experiments and discuss real life applications of them. (CZ, Com, CI, CT, TF) 	<p>Question</p> <ul style="list-style-type: none"> What constitutes a physical and chemical change? <p>Focus</p> <ul style="list-style-type: none"> The focus of this unit is on inquiry and investigation. Students explore a wide range of physical and chemical changes in substances, and separate mixtures to identify the composition of substances.
<p>Literacy Outcome</p> <p>Students will apply literacy learning in Science 5 by engaging in listening and speaking, reading and viewing, writing, and other ways of representing.</p>			

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Science 6: ELECTRICITY			
Skills and Concepts	Outcomes	Performance/Assessment Indicators	Guiding Questions and Focus
<p>Skills</p> <ul style="list-style-type: none"> ▪ compare and contrast ▪ investigate and describe ▪ manipulate, construct, and test ▪ demonstrate <p>Outcome 1 Concepts</p> <ul style="list-style-type: none"> ▪ static electricity: how and what it is ▪ electric current: how and what it is ▪ electricity may flow in series or parallel circuits ▪ electric currents have magnetic fields ▪ insulators and conductors <p>Outcome 2 Concepts</p> <ul style="list-style-type: none"> ▪ various methods of generating electricity including renewable and non-renewable ▪ steps to produce electrical energy ▪ electricity can be transformed into light, sound, motion, heat, and magnetic effects ▪ different sources of energy can be transferred to produce electrical energy 	<p>Outcome 1 Students will explore series and parallel circuits.</p> <p>Outcome 2 Students will explain how renewable and non-renewable electricity is generated and its local and global environmental impacts.</p>	<p>Outcome 1 Indicators</p> <ul style="list-style-type: none"> ▪ Investigate materials that conduct electricity. (Com, CI, CT, PCD, TF) ▪ Investigate static electricity, drawing conclusions based on evidence. ▪ Safely construct series and parallel circuits. (Com, CI, CT, PCD, TF) ▪ Represent results of constructed circuits. (Com, CI, CT, PCD, TF) ▪ Investigate how series and parallel circuits are used. (CZ, Com, PCD, CI, CT, TF) <p>Outcome 2 Indicators</p> <ul style="list-style-type: none"> ▪ Explore different sources of renewable energy that can be transferred to produce electrical energy. (CZ, Com, CI, CT, PCD, TF) ▪ Explore different sources of non-renewable energy that can be transferred to produce electrical energy. (CZ, Com, CI, CT, PCD, TF) ▪ Investigate actions that lead to reducing electrical energy consumption in the environment. (CZ, Com, PCD, CI, CT, TF) 	<p>Questions</p> <ul style="list-style-type: none"> ▪ What is electricity and how is it generated? <p>Focus</p> <ul style="list-style-type: none"> ▪ The dual focus on inquiry and problem solving allows students to investigate materials that conduct electricity and compare circuit pathways in order to design solutions to electrical problems.

Science 6: FLIGHT			
Skills and Concepts	Outcomes	Performance/Assessment Indicators	Guiding Questions and Focus
<p>Skills</p> <ul style="list-style-type: none"> ▪ collect ▪ demonstrate ▪ build/design ▪ analyze ▪ investigate ▪ collaborate ▪ interpret data <p>Outcome 3 Concepts</p> <ul style="list-style-type: none"> ▪ connect the characteristics of living things and flight technologies ▪ demonstrate methods and adaptations in flight design 	<p>Outcome 3</p> <p>Students will investigate the characteristics that influence flight.</p>	<p>Outcome 3 Indicators</p> <ul style="list-style-type: none"> ▪ Use the scientific process to create model planes. (Com, CI, CT, PCD, TF) ▪ Collaborate with others to improve upon model plane designs. (CZ, Com, CI, CT, PCD, TF) ▪ Investigate drag, lift, thrust, and propulsion. (Com, CI, CT, PCD, TF) ▪ Explore connections between the characteristics of flight designs and living things. (CZ, Com, CI, CT, TF) ▪ Design, build, and experiment with flying devices. (Com, CI, CT, PCD, TF) 	<p>Question</p> <ul style="list-style-type: none"> ▪ What are the principles of flight? <p>Focus</p> <ul style="list-style-type: none"> ▪ Problem solving allows rich learning experiences as students design, build models, test models, modify designs, and retest their models. ▪ Students use imagination, creativity, and research skills to design model planes and flying devices.

Science 6: SPACE			
Skills and Concepts	Outcomes	Performance/Assessment Indicators	Guiding Question(s) and Focus
<p>Skills</p> <ul style="list-style-type: none"> gather information compare demonstrate identify patterns based on recorded observations investigate the nature of technological advancement use appropriate tools to gather and analyze scientific information/data distinguish <p>Outcome 4 Concepts</p> <ul style="list-style-type: none"> physical characteristics of components of the solar system and constellations the relative positions of Earth, its moon, and its sun with respect to tides, eclipses, and moon phases stars are made of burning gases planets revolve around a star the cycle of day and night is a result of Earth's rotation about its axis Earth revolves around the Sun the stars and constellations have a special significance to various cultures, including Acadians, African Nova Scotians, Gaels, and Mi'kmaq 	<p>Outcome 4</p> <p>Students will explore space and its components.</p>	<p>Outcome 4 Indicators</p> <ul style="list-style-type: none"> Demonstrate how Earth's rotation relates to the cycle of day and night. (Com, PCD, CI, CT, TF) Demonstrate how Earth's revolutions relate to the cycle of season. (Com, PCD, CI, CT, TF) Collaboratively investigate and share the physical characteristics of a component of our solar system. (CZ, Com, CI, CT, PCD, TF) Examine how various cultures have interpreted the stars and constellations, including Acadians, African Nova Scotians, Gaels, and Mi'kmaq. (CZ, Com, CT, PCD) 	<p>Question</p> <ul style="list-style-type: none"> How does planet Earth relate to the rest of the universe? <p>Focus</p> <ul style="list-style-type: none"> Students create and use models to simulate and explore interactions within major components of the universe while they investigate and learn skills for searching out and personalizing knowledge through past contributions to this industry.

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Science 6: SPACE			
Skills and Concepts	Outcomes	Performance/Assessment Indicators	Guiding Question(s) and Focus
Outcome 5 Concepts <ul style="list-style-type: none"> ▪ technologies allow humans to live in areas where they have not adapted ▪ humans need more complicated technologies to survive in areas such as space ▪ Canadians have contributed to technological advancements in space and other environments 	Outcome 5 Students will examine the contributions of Canada and additional countries to space exploration.	Outcome 5 Indicators <ul style="list-style-type: none"> ▪ Explore Canadian technologies that have led to space exploration. (CZ, Com, CT, PCD, TF) ▪ Explore global innovations in space exploration. (CZ, Com, CT, PCD, TF) ▪ Investigate how astronauts meet their needs in space using technologies. (CZ, Com, CI, CT, PCD, TF) 	

Science 6: DIVERSITY OF LIFE			
Skills and Concepts	Outcomes	Assessment Indicators	Guiding Questions and Focus
<p>Skills</p> <ul style="list-style-type: none"> ▪ appropriate use of tools to examine living things that cannot be seen with the naked eye ▪ explore ▪ classify ▪ compare ▪ differentiate <p>Outcome 6 Concepts</p> <ul style="list-style-type: none"> ▪ needs to sustain life ▪ single- and multi-celled organisms ▪ how to classify animals ▪ specific adaptations of various life forms and possible explanations of how this helps them interact in their environment 	<p>Outcome 6</p> <p>Students will explore diversity with a particular focus on the Animal Kingdom.</p>	<p>Outcome 6 Indicators</p> <ul style="list-style-type: none"> ▪ Explore animal life, from single-celled to multi-celled, using appropriate tools. (Com, CI, CT, PCD, TF) ▪ Classify a set of living things and share rationale. (CZ, Com, CI, CT, TF) ▪ Differentiate animals based on their characteristics (mammals, birds, reptiles, amphibians, and fishes), including vertebrates and invertebrates. (Com, CT, PCD, TF) ▪ Compare how animal families adapt differently depending on where they live. (CZ, Com, CI, CT, TF) 	<p>Questions</p> <ul style="list-style-type: none"> ▪ Why are single- or multi-celled organisms important in the Animal Kingdom? <p>Focus</p> <ul style="list-style-type: none"> ▪ Inquiry is the focus of this unit, with an emphasis on observation and classification. Students observe living things, note features, and construct classification schemes that group organisms with like features together. ▪ The formal classification with a main emphasis on animals will connect with the diversity of life locally, nationally, and globally, and over time.
<p>Literacy Outcome</p> <p>Students will apply literacy learning in Science 6 by engaging in listening and speaking, reading and viewing, writing, and other ways of representing.</p>			