

















# Long Range Plan Model 2 - Grade 3

STRAND A: STEM Skills and Connections	 <b>A1.1 Scientific Research</b>	 <b>A1.2 Scientific Experimentation</b>	 <b>A1.3 Engineering Design</b>	 <b>A1.4 Safety</b>	 <b>A1.5 Communication</b>	 <b>A2. Coding and Emerging Technologies</b>	 <b>A3. Applications Connections and Contributions</b>
	<p><b>A1. STEM Investigation and Communication Skills:</b> use a scientific research process, a scientific experimentation process, and an engineering design process to conduct investigations, following appropriate health and safety procedures</p> <p> A1.1 use a scientific research process and associated skills to conduct investigations</p> <p> A1.2 use a scientific experimentation process and associated skills to conduct investigations</p> <p> A1.3 use an engineering design process and associated skills to design, build, and test devices, models, structures, and/or systems</p> <p> A1.4 follow established health and safety procedures during science and technology investigations, including wearing appropriate protective equipment and clothing and safely using tools, instruments, and materials</p> <p>   A1.5 communicate their findings, using science and technology vocabulary and formats that are appropriate for specific audiences and purposes</p> <p> <b>A2. Coding and Emerging Technologies:</b> use coding in investigations and to model concepts, and assess the impact of coding and of emerging technologies on everyday life</p> <p>A2.1 write and execute code in investigations and when modelling concepts, with a focus on creating clear and precise instructions for simple algorithms</p> <p>A2.2 identify and describe impacts of coding and of emerging technologies on everyday life</p> <p> <b>A3. Applications, Connections, and Contributions:</b> demonstrate an understanding of the practical applications of science and technology, and of contributions to science and technology from people with diverse lived experiences</p> <p>A3.1 describe practical applications of science and technology concepts in their home and community, and how these applications address real-world problems</p> <p>A3.2 investigate how science and technology can be used with other subject areas to address real-world problems</p> <p>A3.3 analyse contributions to science and technology from various communities</p>						

## Overview

Big Idea: Thinking and communicating like a scientist, will be connected in all learning areas when building routines and norms at the beginning of the year (i.e. think/communicate like a writer, Mathematician, etc). Students will develop observational skills including documentation, questioning, and investigating through the cookie float experiment. The 3D model of scientists can remain in the classroom as a reference and/or be photographed and displayed if space is a challenge. The compost bin will be the launch of the yearlong Eco club where students will raise awareness about human impact on the environment and the benefits of composting. To reintroduce vocabulary and the concepts of coding, the year will begin with concrete examples in unplugged activities, before moving to more abstract formats with technology. Careers in STEM should be highlighted throughout the year for both live guest speakers as well as pre-recorded job shadows included in resources.

**Strands & Expectations** (in addition to the Strand A expectations listed at the beginning of this document):

### B- Life Systems: Growth and Changes in Plants

B1.2 assess ways in which human activities have an impact on plants and plant habitats, and identify personal actions that they could take to minimize harmful effects and enhance positive ones

B2.4 describe ways in which a variety of plants adapt and/or react to their environment and to changes in their environment

### C- Matter and Energy: Forces in Motion

C1.1 assess the effects of the action of forces from natural phenomena on natural and built environments, and identify ways in which human activities can reduce or enhance these effects

C1.2 assess harmful effects of forces that may result from various human activities and describe how health and safety devices can minimize these effects

C2.1 describe different types of contact forces and non-contact forces C2.2 describe different ways a force can be exerted on an object

C2.3 describe how different forces applied to an object, including forces of varying magnitude, can cause the object to start, stop, or change its direction, speed, or shape

C2.4 identify ways in which forces are used in their daily lives



### E- Earth and Space Systems: Soil in the Environment





E1.1 assess the importance of soils for society and the environment

E2.1 identify the living and non-living components of soil, and describe the characteristics of healthy soil

E2.3 examine different types of soils found in Ontario, and describe how different soils are suited to growing different types of food, including

E2.6 describe the process of composting, and explain some benefits of composting

Month or Suggested Timeline	STEM Skills and Connections	Guiding Questions	Cross-Curricular Integration	Resources	First Steps & Next Steps
September	  A1.5 A 3D model of a scientist using recyclable materials, with labels	What does a safe classroom look, sound, and feel like?  How do scientists communicate?	<b>Language</b> Procedural writing (safety)	-Local experts in science and technology and skilled trades. Plan for a monthly/bi-monthly guest	Connect with local individuals in science and technology to coordinate monthly guest

	<p>explaining how they communicate, ask questions, and the skills they use</p> <p> <b>A1.5</b> Marshmallow and spaghetti building challenge: focus on teambuilding and communication, and safety. Design and build a school compost bin.</p> <p> <b>A1.2</b> Does a cookie float in milk?: practicing the scientific method and making observations, hypothesizing, and analysing data</p> <p> <b>A1.4</b> Using clear directional language, students guide a classmate carefully through a life-sized grid with verbal instructions.</p> <p> <b>A2.2</b> See the Resources column for videos to show in your classroom.</p>	<p>What skills do we need to focus on and develop as scientists?</p> <p>What types of questions do scientists ask/investigate?</p> <p>What are some of the contributions of scientists in our community?</p> <p>What is composting? How does it work?</p>	<p><b>Math</b> Coding, number sense (communication in math, e.g. place value and representations of numbers)</p> <p><b>Arts</b> Safety infographic</p> <p><b>Combined Grade Opportunities</b></p> <p><b>Grade 2</b> Science Strand A-Safety</p> <p><b>Grade 4</b> Science Strand A-Safety</p>	<p>speaker to share experiences with careers in STEM.</p> <p>Use <a href="#">Scientists in School</a> to search videos of experts in the desired fields: <a href="#">Planetary Scientist</a> <a href="#">Bird Biologist</a> <a href="#">Environmental advisor</a></p> <p>Find a location for a class garden, assessing risk and safety considerations. Refer to the <a href="#">STAO Safety in Elementary Science and Technology</a> guide.</p> <p>Research and evaluate the techniques in composting and assessing compost bin designs, forming an ECO club for interested individuals, and building the chosen compost bin design.</p> <p>Check out these videos from Let's Talk Science about emerging technologies. <a href="#">Innovation in Nunavut</a> <a href="#">Turn your lawn into a food garden</a> <a href="#">First Robot Citizen</a></p>	<p>speaker/virtual meetings to share their experiences.</p> <p>Speak with custodian about cardboard collected throughout the year</p>
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## Overview

**Big Idea:** Relationships. Students will be tuning into the relationships within the community, and between living things. This will be connected across strands through the inquiry into human relationship to plants and the parts of a plant, as well as the purpose of structures and the connection between stability and forces. The relationship between natural-made structures such as beehives will be researched and built to emphasize the connectedness between bees and plants in pollination. Students will apply their knowledge of structures, forces and growth, and changes in plants by inventing a plant that has adapted for the winter, building a 3D model, and including a structure to protect the plant from the elements. Materials for building projects should be collected throughout the year, with a reminder to families included in communication (i.e. monthly newsletter).

**Strands & Expectations** (in addition to the Strand A expectations listed at the beginning of this document):

### **B- Life Systems: Growth and Changes in Plants**

B1.2 assess ways in which human activities have an impact on plants and plant habitats, and identify personal actions that they could take to minimize harmful effects and enhance positive ones

B2.4 describe ways in which a variety of plants adapt and/or react to their environment and to changes in their environment

### **C- Matter and Energy: Forces in Motion**

C1.1 assess the effects of the action of forces from natural phenomena on natural and built environments, and identify ways in which human activities can reduce or enhance these effects

C1.2 assess harmful effects of forces that may result from various human activities, and describe how health and safety devices can minimize these effects

C2.1 describe different types of contact forces and non-contact forces

C2.2 describe different ways a force can be exerted on an object

C2.3 describe how different forces applied to an object, including forces of varying magnitude, can cause the object to start, stop, or change its direction, speed, or shape

C2.4 identify ways in which forces are used in their daily lives

### **D- Structures and Mechanisms: Strong and Stable Structures**

D1.1 assess effects on society and the environment of strong and stable structures

D1.2 assess the environmental impact of structures built by various animals, including structures built by humans

D2.1 describe a structure as a supporting framework that holds a load and has a definite size, shape, and function, and identify structures in the natural environment and in the built environment

D2.2 demonstrate an understanding of the relationship between form and function for various structures 121

D2.3 identify the strength of a structure as its ability to support a load and describe ways to increase the strength of structures, including ways to increase the strength of different materials used to build them

D2.4 describe the stability of a structure as its ability to keep its shape, maintain balance, float, and/or stay fixed in one spot when a force is applied to the structure, and describe ways to improve a structure's stability

D2.5 identify properties of materials that need to be considered when building structures

D2.6 describe ways in which different forces can affect the shape, balance, or position of structures





D2.7 explain the role of struts and ties in structures under load






**E- Earth and Space Systems: Soil in the Environment**

E2.4 explain the process of erosion, including its causes and its impact on soils

E2.5 identify various strategies used to maintain and improve soil health in Ontario

E2.6 describe the process of composting, and explain some benefits of composting

Month or Suggested Timeline	STEM Skills and Connections	Guiding Questions	Cross-Curricular Integration	Resources	First Steps & Next Steps
<p><b>October November</b></p>	<p> <b>A1.3</b> Invent a plant that has the adaptations to thrive in your local environment and a structure for it to “live” in.</p> <p> <b>A1.3</b> Using materials (e.g., clay, paper mache) create a 3D model of the plant and its “home” structure.</p> <p> <b>A1.4</b> Build a Mason Bee home, emphasizing safety, the design of the structure, and the best-suited materials. See resources column.</p> <p> <b>A1.2</b> Paper book tower experiment: how many books will the paper tower be able to hold? See resources column.</p>	<p>What relationships exist in nature?</p> <p>What is a structure and how are they used in different societies?</p> <p>How does the design of a structure and materials used impact its stability?</p> <p>How can Indigenous knowledge &amp; connection to nature inform our relationship with the environment?</p>	<p><b>Language</b> Research a plant guide for natural medicine, poetry, labeled diagram of structure, plants</p> <p><b>Math</b> Expression through coding, measurement (time, speed, etc.),</p> <p><b>Health</b> Natural remedies, benefits of nature on health</p> <p><b>Art</b> Compost art, photography, a photo-a-day timelapse of the garden, visual timeline of structures</p> <p><b>Dance/Music/Drama</b> The connection between music and movement</p> <p><b>Social Studies</b></p>	<p>Students will research plants in the local community</p> <p>Take a neighbourhood walk or go to the local park and/or farmer’s market to observe what is locally grown</p> <p>Connect with a local beekeeper to investigate the relationship between bees and plants. (<a href="#">Ontario Beekeepers Association</a>)</p> <p><a href="#">Build a Mason Bee house</a> by the David Suzuki Foundation.</p> <p>Check out giant paper book towers on <a href="#">kidztube.com</a></p> <p><a href="#">Indigenous Knowledge:</a></p>	<p>Collect materials for the terrarium in the next month (e.g. bottle/jar)</p> <p>Plan and schedule STEM career connection for December.</p>

	<p> <b>A2.1</b> Error detection magic: Why is it important for computers to detect errors? Using a grid with cards, give a student instructions both clear and unclear to “debug”.</p> <p>  <b>A1.5</b> Introduction to Binary Digits: Bits: explore the sySTEM of communication with digit cards to convey messages.</p> <p> <b>A1.1</b> What do plants need to grow and thrive? Coding using block programming to care for plants</p> <p> <b>A2.2</b> Look for connections to emerging technologies based on student interests. Refer to resources for examples.</p>		<p>Communities in Canada</p> <p><b>Combined Grade Opportunities</b></p> <p><b>Grade 2</b> Science- B Growth &amp; Changes in Animals, D- Simple Machines SS- A: Changing Family &amp; Community Traditions</p> <p><b>Grade 4</b> Science-B: Habitats &amp; communities, D- Machines &amp; Mechanisms SS- A: Early Societies</p>	<p><a href="#">The Power of Plants</a> by Biodiversity Education. Students will research the properties of different plants and their healing properties, analysing the human impact and relationship to living things. They will consider this when designing their own plant</p> <p>Indigenous Knowledge: Research traditional medicines through books websites and videos</p> <p>Explore student interest in emerging technologies such as: How close are we to living in the ocean? Refer to <a href="#">Let’s Talk Science STEM Channel</a>.</p>	
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**Overview**

Big Idea: Cause & Effect. To tune into forces and structures, students will conduct experiments that test the strength and stability of a snow sculpture using different forces. They will explore the cause and effect of a growth mindset in STEM, and apply this when debugging code. Through observation and experimentation, students will analyse how a tree survives the winter, considering adaptations plants need to survive in their community. The terrarium experiment will be observed and documented over time, noticing the growth and changes. Algorithms will be explored through baking, mathematics, and coding.

**Strands & Expectations** (in addition to the Strand A expectations listed at the beginning of this document):

**B- Life Systems: Growth and Changes in Plants**

B1.2 assess ways in which human activities have an impact on plants and plant habitats, and identify personal actions that they could take to minimize harmful effects and enhance positive ones

B2.3 describe changes that different plants undergo in their life cycles

B2.4 describe ways in which a variety of plants adapt and/or react to their environment and to changes in their environment

**C- Matter and Energy: Forces in Motion**

C1.1 assess the effects of the action of forces from natural phenomena on natural and built environments, and identify ways in which human activities can reduce or enhance these effects

C2.3 describe how different forces applied to an object, including forces of varying magnitude, can cause the object to start, stop, or change its direction, speed, or shape

**D- Structures and Mechanisms: Strong and Stable Structures**

D1.2 assess the environmental impact of structures built by various animals, including structures built by humans

D2.2 demonstrate an understanding of the relationship between form and function for various structures

D2.3 identify the strength of a structure as its ability to support a load and describe ways to increase the strength of structures, including ways to increase the strength of different materials used to build them

D2.4 describe the stability of a structure as its ability to keep its shape, maintain balance, float, and/or stay fixed in one spot when a force is applied to the structure, and describe ways to improve a structure's stability

D2.5 identify properties of materials that need to be considered when building structures


D2.6 describe ways in which different forces can affect the shape, balance, or position of structures






**E- Earth and Space Systems: Soil in the Environment**

E2.4 explain the process of erosion, including its causes and its impact on soils

E2.5 identify various strategies used to maintain and improve soil health in Ontario

E2.6 describe the process of composting, and explain some benefits of composting

Month or Suggested Timeline	STEM Skills and Connections	Guiding Questions	Cross-Curricular Integration	Resources	First Steps & Next Steps
December	 <b>A1.2</b> Design and build strong and stable snow or ice structure that can withstand the force of your catapult force.	What does the plant (animal/living thing for G2/4) need to survive the winter?  What technology can be used to support living things?	<b>Language</b> Media (timelapse), text features, paragraphs  <b>Math</b> fractions, operations (algorithms)	<a href="#">How do trees survive the winter? By Let's Talk Science</a> is a useful resource for this unit. Students will return to the plant they have been observing and add a	Book technology for coding experiences in Jan/Feb.  Collect materials for vehicle build and terrarium experiment

	<p> <b>A1.3</b> Snowball launcher Students create a snowball launcher for the challenge: Who's snowball can be launched the furthest? Reflect and modify the catapult design.</p> <p> <b>A1.4</b> Design, build, and evaluate a structure to protect a plant through the winter months.</p> <p> <b>A1.1</b> Students will build their own terrarium in small groups to explore how plants can be grown indoors</p> <p> <b>A2.1</b> Baking with algorithms Students follow step-by-step operations, connecting to measurement and fractions in math while preparing for using an algorithm to illustrate a math word problem.</p> <p> <b>A1.5</b> Students will use a coding program to animate a math word problem.</p>	<p>What do you need to consider when composting in the winter?</p> <p>What are some careers in design and building?</p> <p>How do forces impact a structure?</p> <p>How can you build a structure to be strong and more stable?</p> <p>How can I construct a terrarium?</p>	<p><b>Social Studies</b> Communities in Canada</p> <p><b>Combined Grade Opportunities</b></p> <p><b>Grade 2</b> Science- B Growth &amp; Changes in Animals Social Studies - A: Changing Family &amp; Community Traditions</p> <p><b>Grade 4</b> Science- B: Habitats &amp; communities Social Studies- A: Early Societies</p>	<p>winter observational drawing and make predictions of how it has adapted for winter. They will then research and check their predictions using books, videos, and websites.</p> <p>Create a skit and/or dance showing how coders have a growth mindset when faced with the challenge of debugging. <a href="#">Canada Learning Code: Coding a Growth Mindset.</a></p>	<p>Book STEM career speaker and/or virtual job shadow.</p> <p>Consider weather for snow sculpture builds</p>
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**A3.2**

Explore the solution of green walls to improve air quality. Making buildings greener with plant walls, and improving air quality.

**A3.3**

Look for connections to emerging technologies based on student interests.

**Overview**

Big Idea: Systems and Structures. Students will be designing, building, and testing a vehicle using various forces experiments. The big idea of Systems and Structures will also be explored through the unplugged coding activity where students will design an app to support other students in STEM. They will “pitch” their app idea, connecting it to literacy. Using their prior coding knowledge, students will use a block coding program to create a virtual sculpture garden. The second build will continue to connect structures and Systems including forces when students create a structure to protect toys from the wind. Students will explore the structures in their community, comparing them to structures around the world through neighbourhood walks and/or excursions.

**Strands & Expectations** (in addition to the Strand A expectations listed at the beginning of this document):

**B- Life Systems: Growth and Changes in Plants**

B1.2 assess ways in which human activities have an impact on plants and plant habitats, and identify personal actions that they could take to minimize harmful effects and enhance positive ones

B2.3 describe changes that different plants undergo in their life cycles

B2.4 describe ways in which a variety of plants adapt and/or react to their environment and to changes in their environment

**C- Matter and Energy: Forces in Motion**

C1.1 assess the effects of the action of forces from natural phenomena on natural and built environments, and identify ways in which human activities can reduce or enhance these effects

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**D- Structures and Mechanisms: Strong and Stable Structures**

D1.2 assess the environmental impact of structures built by various animals, including structures built by humans

D2.2 demonstrate an understanding of the relationship between form and function for various structures 121

D2.3 identify the strength of a structure as its ability to support a load and describe ways to increase the strength of structures, including ways to increase the strength of different materials used to build them

D2.4 describe the stability of a structure as its ability to keep its shape, maintain balance, float, and/or stay fixed in one spot when a force is applied to the structure, and describe ways to improve a structure's stability

D2.5 identify properties of materials that need to be considered when building structures






D2.6 describe ways in which different forces can affect the shape, balance, or position of structures



**E- Earth and Space Systems: Soil in the Environment**

E2.4 explain the process of erosion, including its causes and its impact on soils

E2.5 identify various strategies used to maintain and improve soil health in Ontario

E2.6 describe the process of composting, and explain some benefits of composting

Month or Suggested Timeline	STEM Skills and Connections	Guiding Questions	Cross-Curricular Integration	Resources	First Steps & Next Steps
<p><b>January February</b></p>	<p> <b>A1.3</b> Students will design and build a vehicle to be used in several forces experiments.</p> <p> <b>A1.4</b> Structure challenge: How can we build a structure to protect toys from the wind?</p> <p> <b>A1.2</b> Students perform forces experiments using vehicle prototypes (e.g. push/pull, direct/indirect force, etc).</p> <p>  <b>A.2, A3.3</b> Research how developers create</p>	<p>What natural and human-made structures exist?</p> <p>How do strength and stability impact the purpose, form, and function of a structure?</p> <p>What is a force and how might it impact a structure?</p> <p>How do forces cause motion and changes in motion?</p>	<p><b>Language</b> Grammar, Editing</p> <p><b>Math</b> Geometry</p> <p><b>Social Studies</b> - Living &amp; Working in Ontario</p> <p><b>Combined Grad Opportunities</b></p> <p><b>Grade 2</b> Science- C: Liquids &amp; Solds, D- Simple Machines Social Studies - B: Global Communities</p> <p><b>Grade 4</b> Science- C- Light &amp; Sound, D- Machines &amp; Mechanisms</p>	<p><a href="#">Why is a triangle a strong shape? By Let's Talk Science.</a> Students research structures and compare and contrast the use of struts with bridges.</p> <p>Bridgeworks example: experiment with bridge design and ability to carry the load of various vehicles.</p> <p>Neighbourhood walk to identify and analyse different structures. Students compare and contrast neighbourhood structures with famous ones.</p>	<p><b>Next Steps:</b></p> <p>Book field trip</p> <p>Book guest speaker</p> <p>Arrange technology</p>

	<p>apps and design and share an app to support students with STEM.</p> <p> <b>A2.1</b> Using a block coding program, students create a sculpture garden</p> <p> <b>A3.1, A3.2, A3.3</b> Students look for connections to emerging technologies based on their interests.</p>		<p>Social Studies - B: Political &amp; Physical Regions of Canada</p>		
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**Overview**

March- National Engineering month (see resources)

Big Idea: Environmentalism. Students will research their region of Ontario to gain a deeper understanding of vegetation, types of soil, and common plants. They will also research through excursions and local experts, locally grown food or lack thereof to create a photo essay that illustrates a food issue currently impacting their community. They will build their own soil sifter to investigate soil in their environment, as well as make improvements to the compost bins using their observations over time. Students will take on the role of activist, preparing for their final project in May/June by exploring their responsibility to the environment through builds and experiments.

**Strands & Expectations** (in addition to the Strand A expectations listed at the beginning of this document):

**B- Life Systems: Growth and Changes in Plants**

B1.1 assess ways in which plants are important to humans and other living things, taking different perspectives into consideration, and identify ways in which humans can protect native plant species and their habitats

B1.2 assess ways in which human activities have an impact on plants and plant habitats, and identify personal actions that they could take to minimize harmful effects and enhance positive ones

B1.3 assess the benefits and limitations of locally grown food

B2.1 describe the basic needs of plants, including the need for air, water, light, heat, nutrients, and space, and identify environmental conditions that may threaten plant survival

B2.2 identify different parts of plants, including the root, stem, flower, stamen, pistil, leaf, seed, cone, and fruit, and describe how each part contributes to plants' survival within their environment

B2.3 describe changes that different plants undergo in their life cycles

B2.4 describe ways in which a variety of plants adapt and/or react to their environment and to changes in their environment

B2.5 demonstrate an understanding that most plants get energy directly from the Sun through the process of photosynthesis, which involves the absorption of carbon dioxide and the

release of oxygen

B2.6 describe ways in which people, including Indigenous peoples, from various cultures around the world use plants for food, shelter, medicine, and clothing

B2.7 describe various plants used for food, including those grown by First Nations, Métis, and Inuit, and identify local settings where these plants are grown or found

B2.8 describe ways in which plants and animals, including humans, depend on each other

**E- Earth and Space Systems: Soil in the Environment**

E1.1 assess the importance of soils for society and the environment

E1.2 assess the impact of human activity on soils, and describe ways in which humans can improve the quality of soils and/or lessen or prevent harmful effects on soils

E2.1 identify the living and non-living components of soil, and describe the characteristics of healthy soil




E2.2 identify different substances that are commonly added to, or absorbed by, the soil, and describe their effects on soil health




E2.3 examine different types of soils found in Ontario, and describe how different soils are suited to growing different types of food, including crops

E2.4 explain the process of erosion, including its causes and its impact on soils

E2.5 identify various strategies used to maintain and improve soil health in Ontario

E2.6 describe the process of composting, and explain some benefits of composting


Month or Suggested Timeline	STEM Skills and Connections	Guiding Questions	Cross-Curricular Integration	Resources	First Steps & Next Steps
<p><b>March April</b></p>	<p> <b>A1.3, A1.4</b> Students design and build a soil sifter.</p> <p> <b>A3.1, A3.2</b> Compost Bin Art: Students complete the challenge: how can we improve the effectiveness of our compost bin and also make it a piece of art? See the resources column for an example.</p> <p> <b>A1.1, A1.2</b> Students create a soil profile using a recycled bottle or jar.</p>	<p>How can we preserve natural resources?</p> <p>In what ways have the resources in our community changed over time?</p> <p>What is our responsibility to the environment?</p>	<p><b>Language/ Art</b> Photo essay about food issues, expression through the Arts communicating the message of sustainability.</p> <p><b>Math</b> Number (timeline), Data</p> <p><b>Social Studies</b> Living &amp; Working in Ontario</p> <p><b>Combined Grade Opportunities</b></p> <p><b>Grade 2</b> Science- Air &amp; Water Social Studies- B: Global</p>	<p>Field trip suggestions</p> <ul style="list-style-type: none"> <li>• a community garden to compare &amp; contrast to class garden</li> <li>• greenhouse</li> <li>• virtual field trips with nature conservatories</li> </ul> <p><b>Careers in STEM</b> Connect with a soil scientist and/or plant engineer, refer to <a href="#">Let's Talk Science - Careers</a>.</p> <p><a href="#">National Engineering Month: Chart your course</a>. Students will identify an interest (i.e. help reduce</p>	<p><b>Next Steps:</b></p> <p>Begin collecting recyclable materials for the end-of-year project</p> <p>Reserve technology regularly for May and June</p> <p>Book field trip for May/June</p>

	 <b>A1.2, A1.3</b> Gardening without soil: grow a sweet potato plant without soil .		Communities  <b>Grade 4</b> Science- E: Rocks & Minerals Social Studies- B: Political & Physical Regions of Canada	our carbon footprint) and be directed to connected engineering careers)  Participate in the digital <a href="#">2023 Engineering month challenge</a> .  Check out online resources regarding emerging technologies in farming (e.g. aeroponic vertical farming).	
	 <b>A2.1</b> Students use a block-coding program to care for soil and harvest crops.				
	 <b>A2.2</b> Look for connections to emerging technologies based on student interests.				

**Overview**

Big Idea: Activism & Hope. Students will apply their learning and skills developed throughout the year to take action, designing an invention that is a solution to an SDG. They will go through the design process, planning, prototyping, and research before building. The cause chosen and invention will vary from student to student and act as a culmination of the year. Conferencing will be used to create personalized learning goals for the students and identify the strand and expectations that are connected to the project.

**Strands & Expectations :**  
 All strands and expectations are incorporated into this unit. Refer to the chart of all expectations on the following page. Each student will identify the expectations they are focusing on for their project.

Month or Suggested Timeline	STEM Skills and Connections	Guiding Questions	Cross-Curricular Integration	Resources	First Steps & Next Steps
May June	 <b>A1.3, A1.4</b> Students build a prototype of their invention using classroom available or recycled materials.	How have scientists impacted the world?  Revisit: How do scientists	<b>Media Literacy</b> Creating media to share a message	Students will have a copy of learning goals and/or curriculum expectations from the strands (see	Students will design an invention and/or experiment to address a problem in the world and create a positive



**A1.2, A1.5, A2.2**

The balloon-powered car: sharing hypothesis, analysing data, stating a conclusion, and connecting to SDG and other current issues.



**A1.1**

Students examine solutions to problems that have had a positive impact on the world. An example may be the progress in addressing the plastics problem. This is used as inspiration for students when engineering for good through their invention.



**A1.5, A2.1**

Using a programmable computer (e.g. micro:bit) or a block-coding program (e.g. Scratch) students will demonstrate their solution to one of the SDG.



**A2.2, A3.1, A3.2, A3.3**

Look for emerging technologies that interest students and connect to their inventions

communicate?

What positive change can you create?

How can the SDGs be addressed?

**Social Studies**

Living & Working in Ontario

**Combined Grade Opportunities**

**Grade 2**

Science- All strands  
Social Studies - B: Global Communities

**Grade 4**

Science- All strands  
Social Studies -B: Political & Physical Regions of Canada

overview below) and discuss which strands and SDG goals their invention is connected to, explaining why

Compare and contrast SDG projects from students around the world, tuning into their individual interests. See this example from [SDGs For Children](#).

[Coding for the Goals: Do your Bit](#)

change, this can be from any strand

Extra time has been allotted to account for EQAO assessment