

SUSTAINABLE DEVELOPMENT GOALS

In association with



INTER-SCHOOL STEM CHALLENGE

13 CLIMATE ACTION



TEACHER GUIDE

This document is designed at an aspect ratio for on-screen presentation, not printing.

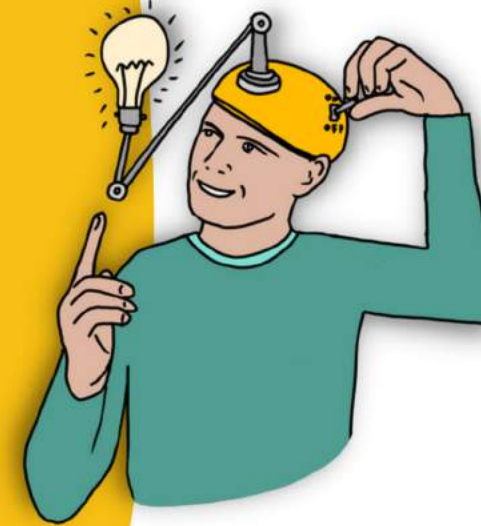
**TOMORROW
PROJECTS**



We are Little Inventors

Part of the Tomorrow Projects international creative education organisation - Little Inventors inspires imagination by taking children's amazing ideas seriously.

Our mission is to give children across the world the opportunity to develop and showcase their creativity and problem-solving skills, build their confidence, curiosity and resilience to become caring citizens of our planet; all invaluable attributes that will support them as adults in their everyday life and chosen career paths.



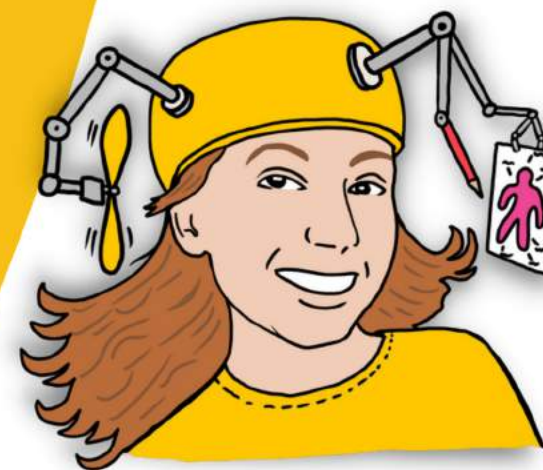
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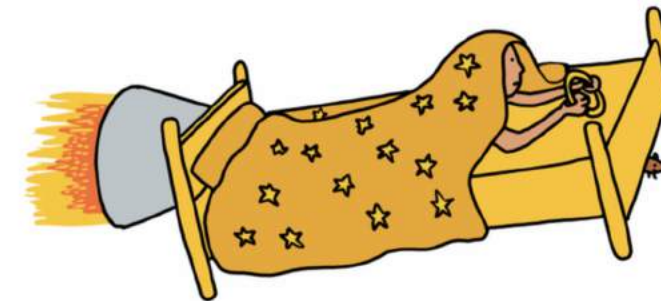
What do we want this challenge to achieve?



To support and increase the understanding of STEM and other creative skills in young people.



To encourage young people to start considering their own careers from an early age through creativity, exploration and innovation.



To support young people to develop their creativity and problem-solving skills, ability to work in teams, build their confidence, curiosity and resilience.



To increase awareness of the need for sustainable development and the goals set by the United Nations, and the power young people have to make a difference.

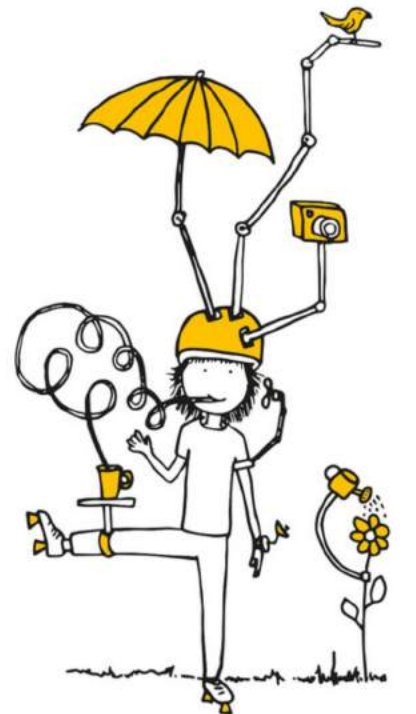
Challenge Background

The aim of Little Inventors challenges is to allow students to express the far reaches of their imagination through creativity. We want to inspire young people to think up and draw original, ingenious, funny, fantastical or perfectly practical invention ideas. There are no limits!

What could you invent to help us stop climate breakdown and better protect our planet?

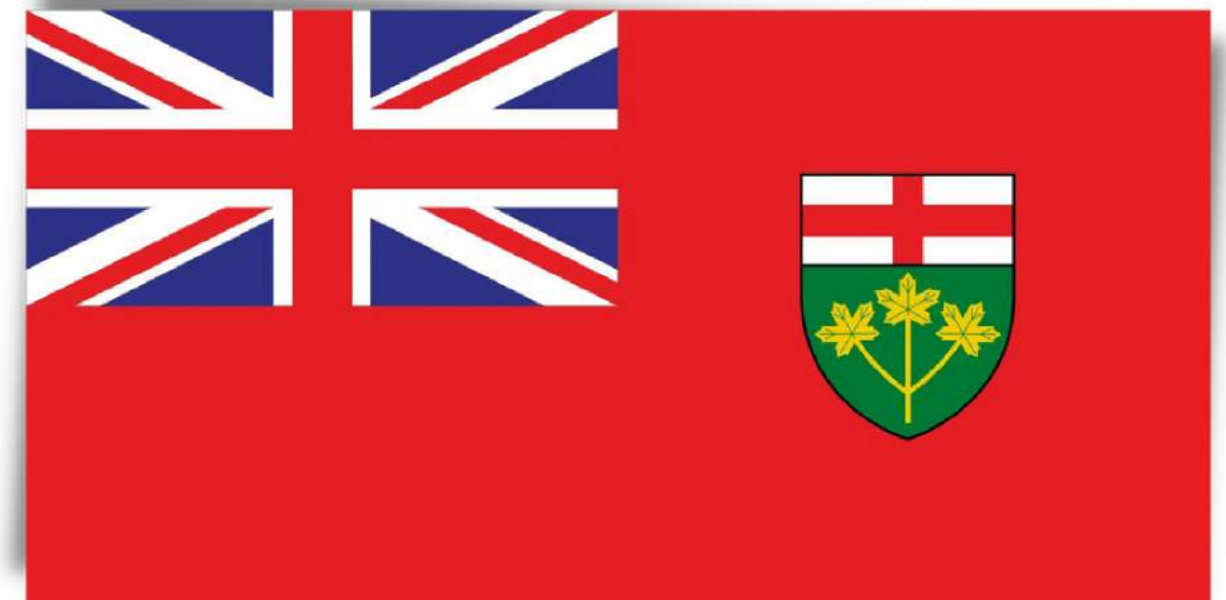
We want to encourage children to think about where they live and the local environment that is around them. They will be able to draw and submit their own inventions to appear on sustainable-development-goals.littleinventors.org where they will be reviewed by the Little Inventors team.

Their idea might be chosen as a Little Inventors team favorite, or even brought to life by one of our Magnificent Makers.



Ontario Curriculum Connections

This challenge is designed to align with the following curriculum expectations outlined in the latest Ontario Curriculum documents as of June 2023.



Kindergarten

Problem solving and innovating: This frame encompasses children's learning and development with respect to:

- exploring the world through natural curiosity, in ways that engage the mind, the senses, and the body;
- making meaning of their world by asking questions, testing theories, solving problems, and engaging in creative and analytical thinking;
- the innovative ways of thinking about and doing things that arise naturally with an active curiosity, and applying those ideas in relationships with others, with materials, and with the environment.

The learning encompassed by this frame supports collaborative problem solving and bringing innovative ideas to relationships with others.

Belonging and contributing: This frame encompasses children's learning and development with respect to: their sense of connectedness to others;

- their relationships with others, and their contributions as part of a group, a community, and the natural world;
- their understanding of relationships and community, and of the ways in which people contribute to the world around them.

The learning encompassed by this frame also relates to children's early development of the attributes and attitudes that inform citizenship, through their sense of personal connectedness to various communities.

Grade 1

Science

A3.2 investigate how science and technology can be used with other subject areas to address real-world problems

B1.1 describe changes or problems that could result from the loss of living and non-living things that are part of everyday life, while taking different perspectives into consideration

B1.2 identify actions that can be taken to contribute to a healthy environment

C1.1 describe everyday uses of energy at school and at home, and suggest ways to use energy responsibly

C1.2 describe how the lives of people and other living things would be affected if electrical energy were no longer available

C2.5 demonstrate an understanding that humans get the energy resources they need from the world around them, and that the supply of many of these resources is limited

D1.1 identify the kinds of waste materials produced by humans, and plan and carry out a course of action for minimizing waste in the classroom or at home, explaining why each action is important

D1.2 assess everyday objects, including structures, that have similar purposes, in terms of the materials they are made from, the source of these materials, and what happens to these objects when they are worn out or no longer needed

Social Studies:

B1.3 create a plan that outlines some specific ways in which they can responsibly interact with the built and/or natural environment in the local community

Grade 2

Science

A3.2 investigate how science and technology can be used with other subject areas to address real-world problems

B1.1 examine impacts that animals can have on society and the environment, and describe some ways in which any negative impacts can be minimized

B1.2 assess impacts of various human activities on animals and the places where they live, and describe practices that can minimize negative impacts

D1.2 assess the impact on the environment of technologies that use simple machines to facilitate movement

E1.1 assess the impact of human activities on air and water, taking various perspectives into consideration, including those of First Nations, Métis, and Inuit, and plan a course of action to protect the quality of the air and/or water in the local community

E1.2 assess their personal and household uses of water, and create a plan to use water responsibly

E1.3 examine the availability of freshwater and drinking water around the world, and describe the impact on communities

Social Studies:

B1.3 demonstrate an understanding of the importance of sustainability in people's interrelationship with their natural environment and of some of the consequences of sustainable and/or non-sustainable actions

Grade 3

Science

- A3.2 investigate how science and technology can be used with other subject areas to address real-world problems
- 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
- 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
- E2.5 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

Social Studies:

- B2.1 formulate questions to guide investigations into some of the short- and/or long-term effects on the environment of different types of land and/or resource use in two or more municipal regions of Ontario
- B2.2 gather and organize a variety of data and information on the environmental effects of different land and/or resource use and measures taken to reduce the negative impact of that use
- B2.5 evaluate evidence and draw conclusions about some of the short- and long-term effects on the environment of different types of land use in municipal regions of Ontario and about key measures to reduce the negative impact of that use

Grade 4

Science

A3.2 investigate how science and technology can be used with other subject areas to address real-world problems

B1.1 assess positive and negative impacts of human activities on habitats and communities, while taking different perspectives into account

B1.2 analyse the impact of the depletion or extinction of a species on its habitat and community, and describe possible actions to prevent such depletions or extinctions

C1.2 assess the impacts on the environment of light energy and sound energy produced by various technologies, while taking different perspectives into account

E1.2 assess social and environmental impacts of extracting and refining rocks and minerals and of manufacturing, recycling, and disposing of products derived from rocks and minerals, while taking various perspectives into account

Social Studies:

B1.2 assess aspects of the environmental impact of different industries in two or more physical and/or political regions of Canada

B1.3 describe some key actions taken by both industries and citizens to address the need for more sustainable use of land and resources

B2.1 formulate questions to guide investigations into some of the issues and challenges associated with balancing human needs/wants and activities with environmental stewardship in one or more of the political and/or physical regions of Canada

B2.2 gather and organize information and data from various sources to investigate issues and challenges associated with balancing human needs/wants and activities with environmental stewardship in one or more of the political and/or physical regions of Canada

Grade 5

Science

A3.2 investigate how science and technology can be used with other subject areas to address real-world problems

B1.1 assess effects of a variety of social and environmental factors on human health, and describe ways in which individuals can reduce the harmful effects of these factors and take advantage of those that are beneficial

C1.1 assess the impacts on society and the environment of various processes used in the manufacture of common products

C1.2 assess how the use of specific materials in the manufacture of common products affects the environment, and identify actions that society and individuals can take to mitigate negative impacts

E1.1 analyse long-term impacts of human uses of energy and natural resources, on society and the environment, including climate change, and suggest ways to mitigate these impacts

E1.2 evaluate effects of various technologies on energy consumption, and describe ways in which individuals can use technology to reduce energy consumption

Social Studies:

B1.3 create a plan of action to address an environmental issue of local, provincial/territorial, and/or national significance, specifying the actions to be taken by the appropriate government or governments, including Indigenous governments, as well as by citizens

B2.1 formulate questions to guide investigations into social and/or environmental issues in Canada from various perspectives, including the perspective of Indigenous peoples and of the level (or levels) of government responsible for addressing the issues

B3.9 describe some different ways in which citizens can take action to address social and environmental issues

Grade 6

Science

A3.2 investigate how science and technology can be used with other subject areas to address real-world problems

B1.2 analyse a local issue related to biodiversity while considering different perspectives; plan a course of action in response to the issue; and act on their plan

C1.2 assess choices that reduce personal use of electrical energy from both renewable and non-renewable sources, and advocate for the responsible use of electrical energy by the school community

E1.2 assess the role of space exploration technology in observing and understanding environmental changes on Earth, including climate change

Social Studies:

B1.3 explain why some environmental issues are of international importance and require the participation of other regions of the world, along with that of Canada, if they are to be effectively addressed

B2.1 formulate questions to guide investigations into global issues of political, social, economic, and/or environmental importance

Grade 7

Science

A3.2 investigate how science and technology can be used with other subject areas to address real-world problems

B1.1 assess the impact of various technologies on the environment

B1.2 assess the effectiveness of various ways of mitigating the negative and enhancing the positive impact of human activities on the environment

B2.5 describe how matter is cycled within the environment, and explain how the cycling of matter promotes sustainability

D1.1 evaluate environmental, social, and economic factors that should be considered when designing and building structures to meet specific needs for individuals and communities

E1.2 analyse various social, economic, and environmental impacts, including impacts related to climate change, of using non-renewable and renewable sources of energy

Geography

B1.2 analyse natural resource extraction/harvesting and use in some specific regions of the world including the sustainability of these practices

B1.4 create a personal plan of action outlining how they can contribute to more sustainable natural resource extraction/harvesting and/or use

B3.2 describe ways in which people use the natural environment, including specific elements within it, to meet their needs and wants

Grade 8

Science

A3.2 investigate how science and technology can be used with other subject areas to address real-world problems

C1.1 assess the environmental, social, and economic impacts of various innovations and technologies that are based on the properties of fluids

E1.1 assess the social and environmental impact of the scarcity of fresh water, and propose a plan of action to help address fresh water sustainability issues

E1.3 assess the impact of scientific discoveries and technological innovations on local and global water systems

Geography

A1.2 analyse how processes related to the physical environment may affect human settlements in the future

A1.3 describe possible features of a sustainable community in the future

Grade 9

Science (De-streamed SNC1W)

B1.1 assess impacts of climate change on the sustainability of local and global ecosystems, describe local or global initiatives for combatting climate change, and identify solutions to address some of the impacts

B1.2 assess impacts of climate change on communities in Canada, including First Nations, Métis, and Inuit communities

B2.6 identify and use various indicators of climate change to describe the impacts of climate change on local and global ecosystems, and analyse how human activities contribute to climate change

D1.3 develop a plan of action to address a local or global electrical energy production or consumption issue, including strategies for energy conservation

E1.2 evaluate how space observation and exploration technologies contribute to our understanding of climate change, natural disasters, and other phenomena

Grade 9 continued

Geography (Academic CGC1D):

B1.4 explain how human activities can alter physical processes and contribute to occurrences of natural events and phenomena

C2.3 assess the renewability and non-renewability of various natural resources in Canada

E1.5 propose courses of action that would make a community more sustainable

Geography (Applied CGC1P):

B1.4 explain how human activities in their local region can have an impact on natural processes

C1.3 analyse their personal use of natural resources

C1.4 develop a personal plan of action that supports the idea of stewardship of resources

E1.3 describe ways in which communities can improve their environmental sustainability

E1.4 identify actions that individuals can take to live more sustainably, and explain the benefits for their local community

Grade 10

Science (Academic SNC2D) - D: Earth and Space Science:- Climate Change

D1. analyse some of the effects of climate change around the world, and assess the effectiveness of initiatives that attempt to address the issue of climate change;

D2. investigate various natural and human factors that influence Earth's climate and climate change;

D3. demonstrate an understanding of natural and human factors, including the greenhouse effect, that influence Earth's climate and contribute to climate change.

Science (Applied SNC2P) - D: Earth and Space Science:- Earth's Dynamic Climate

D1. analyse effects of human activity on climate change, and effects of climate change on living things and natural systems;

D2. investigate various natural and human factors that have an impact on climate change and global warming;

D3. demonstrate an understanding of various natural and human factors that contribute to climate change and global warming.

Uploading your invention ideas

Visit sustainable-development-goals.littleinventors.org, click the yellow 'Upload' button and upload the ideas.

Make sure to take a photograph or scan of the invention sheet that's clear and bright.

