

BECOME A CLIMATE CHANGE SCIENTIST: CITIZEN SCIENCE RESEARCH

Getting Started

BACKGROUND

Citizen science refers to the collection and analysis of data relating to the natural world by members of the general public. Typically, these projects are in collaboration with professional scientists and scientific organizations. There are many great citizen science initiatives that engage students in scientific activities such as monitoring natural process, conducting species counts, and observing changes to surrounding ecosystems. These activities can help students understand the impact of climate change on humans, animals, and ecosystems. Information collected during these experiments can be used for classroom lessons and are then shared with the wider scientific community.

Materials

- Optional: chart paper or chalkboard
- Optional: computer lab
- Optional: magnifying glasses, clipboards with paper and pencil

Curriculum

There are many ways to incorporate a citizen science project into a variety of science and math lessons for a range of grades from kindergarten to grade 12.

LEARNING ACTIVITY

Ignite

Get students thinking about what a scientist does to track climate change. Guide conversation around how scientists monitor climate change and how students can help contribute to this research as citizen scientists. Write student answers on chart paper or chalkboard.

Guiding questions for younger students:

- What is a scientist? *A person who tries to understand our world, or how things in our world work. Some scientists study the natural world (like bees, weather, oceans, or plants).*
- How do you think scientists study the natural world? *By looking at it and recording what they find. By conducting experiments.*
- How can we, as a class, become scientists and conduct scientific investigations? *Choose something in nature, observe it, and record what we find.*

Guiding questions for older students:

- What causes climate change? *Greenhouse gas emissions from driving cars, throwing away garbage, using electricity, etc.*
- What are the effects of climate change? *Loss of animal or plant species, increased rainfall, etc.*
- How might scientists monitor the effects of climate change? *Monitoring a change in natural processes (i.e., tracking rainfall over time), conducting species counts (tracking the number of bees in a particular region), and observing changes to surrounding ecosystems (tracking if plants start flowering at different times).*
- How might we be able to contribute to this body of knowledge? *Participate in citizen science by collecting data to share with professional scientists.*

Explore

- There are many citizen science projects that students can contribute to (see resource list below). Select a project for younger students or have older students research and select the projects they would like to learn more about.
- As a class, create a document that outlines what the citizen science project monitors and how it contributes to climate change research.
- Outline the steps that need to be taken to properly monitor the selected item (location, time of year, observation methods, etc.).
- Follow clear safety procedures, ensure that students are dressed appropriately for the weather, and create distinct boundaries for exploration.
- Get outside to observe and record your findings. Select any materials appropriate or necessary to your investigations (e.g., magnifying glasses, clipboards, paper, etc.). Have students input their results into the science database upon completing the observations.

Reflect & Discuss

As a class, discuss what you saw and how it made you feel. Would it make sense to go out and observe again? Take time to review all the findings and what trends can be observed. Discuss how it felt to contribute to the greater science community.

Extensions

- Schedule regular class monitoring over a period of time (weeks or months). Create a graph with the data you have collected.
- Design an information campaign on the item you are monitoring. Let other people know about your citizen science research and get them involved in the fun and research.
- Host a school-wide monitoring event and invite parents and community partners.

Resources

Links to some citizen science projects:

- FrogWatch: www.naturewatch.ca/frogwatch
- PlantWatch: www.naturewatch.ca/plantwatch
- IceWatch: www.naturewatch.ca/icewatch
- WormWatch: www.naturewatch.ca/wormwatch
- Bird Studies Canada: www.birdscanada.org
- North American Butterfly Association Butterfly Counts: www.naba.org/butter_counts.html
- Monarch Watch: www.monarchwatch.org
- Bumble Bee Watch: www.bumblebeewatch.org
- Rink Watch: www.rinkwatch.org
- Directory of Ontario Citizen Science: www.ontarionature.org/directory-of-citizen-science/home.php