

Extreme Weather Inquiry

Spiral Inquiry Activity
Grade Level: 9-12
Climate Change Where I Live



About This Activity

Learners will use GreenLearning's Spiral Inquiry Model to examine the impacts of climate change where they live, identify the mitigation and adaptation measures required to address these changes, and take action.

Learning Outcomes

By the end of this activity, learners will:

- Discover the implications of climate change on where they live
- Investigate various topics surrounding extreme weather, and present their findings to the class
- Collaborate amongst peers to develop their own focus question(s) and inquiry plan

Length of Activity

1 – 1.5 hours

Materials List

Internet-enabled device
 Extreme Weather Inquiry Worksheet

Step 1: Spark (A Student Investigation)

- a. Begin by getting familiar with GreenLearning's Spiral Inquiry Model found here: <https://programs.greenlearning.ca/course/spiral-inquiry-model>
- b. Have learners imagine what it would be like to be evacuated from where they live.

- c. Pose the following question to learners: *Imagine what it would be like to wake up one morning sleeping in the basement of a Church or local school along with many other families. As you gather your thoughts and look around you remember the conversation from the night before where your parents were worried about whether anything in your basement or storage locker will be salvageable.*
- d. What would they be feeling? How would their family react? This is what can happen to families when extreme weather hits local communities. The Ice Storm of 1998 in Eastern Canada and the Spring Floods of 2013 in Alberta are just two examples.
 - i. Allow learners to break out into think-pair-share groups to begin generating some ideas.
 - ii. Ask the groups to share their ideas, and record down their responses in a bullet list at the front of the class on the board.
 - iii. Each bullet can be discussed at large with the class by providing them with some teaser information on those points so it really gets them thinking further.

Step 2: Hypothesize and Plan

- a. As a class, decide the focus of your inquiry.
- b. Learners can be split up into groups so that they can brainstorm potential inquiry questions. Have the groups discuss what they have taken away from the class discussions.
- c. You will want learners to choose how they structure their inquiry and this will emerge as you listen and help guide their discussions from the side. One way they might structure the inquiry is for small groups to each look at the effects of an extreme weather event or natural disaster on a different sector of their local area. For example:
 - Property damage
 - Insurance costs and legal ramifications
 - Infrastructure damage
 - Effect on property values
 - Natural disaster preparedness (including in schools)
- d. Remind learners that the inquiry question needs to investigate both the impacts of climate change on where they live and the actions required to address it.
- e. Allow learners to state their questions as a hypothesis using the “If...then...because...” format. For example, “If climate change continues as it is, then extreme weather such as flooding will increase resulting in displaced families because of rising temperatures”
- f. Hand out the Extreme Weather Inquiry Worksheet to the learners in their groups and have them complete Part 1 of it.

Step 3: Explore and Research

- a. This step involves the groups of learners to research the information required for your topic.
- c. Inform learners in their groups to gather and review information needed to answer their questions or to test their hypotheses. The internet, libraries, or experts in the field are all great tools for research.

- c. Have learners complete Part 2 of the worksheet. Be sure to remind learners to record their information and remember to keep track of their sources. Groups can evaluate their information they have collected and answer these questions:
 - i. Does your research answer your questions or test your hypothesis?
 - ii. Does it raise more questions, and how can you answer these?
- b. Allow groups to reflect and discuss their findings and observations to their previous knowledge. They may need to clarify and modify their focus question(s) and inquiry plan.

Step 4: Analyze and Check

- a. Have learners compare, sort and classify their information.
 - i. Learners reflect on and discuss their preliminary findings and observations to compare this to their previous knowledge and they clarify and modify their focus question(s) and inquiry plan.
 - ii. Learners review and evaluate the information they collected and record this information.
 - iii. Learners use their information to answer their inquiry question(s), test their hypotheses, describe patterns and draw conclusions.
- b. Have learners draw conclusions about their questions and hypotheses.
- c. Have learners complete Part 3 of the worksheet.

Step 5: Communicate and Act

- a. Now the groups are ready to turn their knowledge into action. Allow the learners to communicate their findings to the class. Be sure to remind them about the message they want to get across and to tailor it to the classroom audience.
- b. During their research, learners may have come across many calls to action. There are many choices of learner assessment that are possible for this inquiry. Look for opportunities for authentic tasks connected to your area. Think of events where the vulnerability of the community in the face of climate change can be highlighted or where public awareness can be raised. There might be a local official or elected representative who has talked about how extreme weather and climate change will affect the city budget and might be receptive to hearing from learners. Maybe there are even hearings in your area and you could make deputations. You might want to describe or illustrate what your area could look like in 25 years. Maybe you want to educate other learners through the school website or in an assembly or display in the school.
- c. Individually – create a mind map, poem/song, poster, infographic, PSA (public service announcement), or some other form of work (in consultation with the educator) that addresses your hypothesis, as formed, of your inquiry.

Step 6: Conclusion

- a. Refer to the marking rubrics on the various ways learners could communicate their findings.