Having an impact on climate change

Critical Challenge

The Ontario government wishes to reduce our carbon footprint. The Ministry of the Environment has come up with 20 ways that the average Ontario citizen can reduce their impact. They have asked students to identify the 3 most significant changes the average person can make so that they can focus their environmental campaign on these three changes.

TYPE OF CRITICAL CHALLENGE

Judge better or best

REQUISITE TOOLS

Background knowledge

- understanding of the factors that have an impact on climate change

Criteria for judgment

Criteria for an effective action to reduce climate change:

- cost effective
- contributes to significant reduction in our impact on climate change
- minimizes impact on life style

Critical thinking vocabulary

- Argument: To give reasons for or against a proposal or an idea. The use of logic and evidence to support or refute a point.
- Criteria: A set of standards, rules or tests by which something can be measured or judged.

Thinking strategies

- rating scale

Habits of mind

- **Independent-minded**: Resists the pressures to adopt and espouse opinions merely because they are popular.
- **Respectful**: Is willing to engage respectfully in discussion with others.
- **Open-minded**: Is open to views other than one's own, especially to contrary positions.

SUGGESTED ACTIVITIES

Connecting to students prior beliefs and to the discipline of science

- Invite students to consider the issue of climate change. Remind students that many different people study and talk about the environment and climate change – geographers, politicians, environmental activists, corporations, scientists, etc. Ask students to think to themselves about what the role of the scientist is, particularly in relation to the issue of the environment and climate change.
- Consider structuring their thinking by providing students with 4 seemingly unrelated images and ask them to consider which one best represents, in their view, the role of scientists when it comes to climate change. Is the job of the scientist to be like a bridge? Like a lighthouse? Like a courtroom? Or like a ...? Post each image on a different wall of the classroom.
- When students have had a minute to think to themselves, ask them to move to the wall that best represents their opinion. Once there, invite students to pair up with another student under the same sign and briefly share their opinion and the reasons for it. Consider randomly asking pairs to share their discussion with the class

Introduce the critical challenge

- Present the following scenario to students: The Ontario government wishes to reduce our impact on global climate change. The Ministry of the Environment has come up with 20 ways that the average Ontario citizen can reduce their impact. They have asked students to identify the 3 most significant changes the average person can make so that they can focus their environmental campaign on these three changes.

Building criteria

- Ask students to consider purpose and audience. Discuss with them why the government would ask a consulting firm to do this (e.g. to guide their decision making, to focus a public awareness campaign, etc.). Also ask them to consider the audience (i.e. not only the government but also the individual Ontario citizen who will be asked to make the changes we suggest). Given this purpose and audience, invite students to brainstorm what criteria should their proposal of the 3 most effective actions meet?
- It may be helpful to support students in their thinking about criteria to provide some extreme example. For example, ask them to discuss the following suggestions for individual actions:
    - Getting rid of all the cars in your family
    - Installing solar panels and switching your energy consumption entirely to solar energy
    - Growing all your own food
- Introduce or draw out the following criteria from the discussion:
  Criteria for an effective action to reduce climate change:
    - cost effective
    - contributes to significant reduction in our impact on climate change
    - minimizes impact on life style
- Explain to students that although they will examine many ways to combat climate change, their final recommendations need to consider the criteria above.

Structuring research

- Organize students into groups. Each group will be a different consulting firm. Consider how to structure the group work to encourage engagement and accountability. Different ways to structure the group's task might be:
    - Give each group 4 different ideas (individual actions to combat climate change) and ask each group member to focus their research on one of those ideas.
    - If there are a total of 20 or 25 ideas to combat climate change, assign each student a different one and have them report on it in a concise way (e.g. a post card or mini-poster); the groups then work collaboratively to assess all 20 ways and choose their top 3 based on the criteria
    - Use a jigsaw strategy where students are assigned different ideas in the home group, then move into expert groups to research their assigned idea and then reconvene in their home group to share their research
- Provide students with information sources or invite them to gather research on their assigned idea. Some useful sources of information on climate change from a scientific perspective include:
    - Environment Canada: The Science of Climate Change http://www.ec.gc.ca/climate/overview-e.html
    - Environment Canada: Take Action http://www.ec.gc.ca/education/default.asp?lang=En&n=E413CCE7-0
    - Intergovernmental Panel on Climate Change http://www.ipcc.ch/

Making a judgment

- Once students have gathered research on their idea and shared their research with their group, invite them to individually choose their top 5 ideas based on the criteria above and rate them in a chart like the one below.
- Consider using a round-robin or similar strategy through which group members can share their top choices with each other and justify their selections in light of the criteria. Invite groups to collaboratively choose their top 3 choices and prepare a proposal to present to the Ministry of the Environment.

MY TOP 5 CHOICES OF EFFECTIVE INDIVIDUAL ACTIONS TO COMBAT CLIMATE CHANGE

Criteria	Cost effective	Contributes to significant reduction in our impact on climate change	Minimizes impact on lifestyle
Idea for Effective Action #1:	5 ⟷ 1 Explanation:	5 ⟷ 1 Explanation:	5 ⟷ 1 Explanation:
Idea for Effective Action #2:	5 ⟷ 1 Explanation:	5 ⟷ 1 Explanation:	5 ⟷ 1 Explanation:
Idea for Effective Action #3:	5 ⟷ 1 Explanation:	5 ⟷ 1 Explanation:	5 ⟷ 1 Explanation:
Idea for Effective Action #4:	5 ⟷ 1 Explanation:	5 ⟷ 1 Explanation:	5 ⟷ 1 Explanation:
Idea for Effective Action #5:	5 ⟷ 1 Explanation:	5 ⟷ 1 Explanation:	5 ⟷ 1 Explanation:

- introduce habits of mind re: suspending judgment? tolerance for ambiguity? etc.
- introduce thinking tool – fill in criteria – use a rating scale?
- gather information – divide up between group (e.g. 5 ideas per person) – report back to group – group uses thinking tool/rating scale to decide on their top 5?