BEAN
Biodiversity Education and Awareness Network

What Size Footprint Are You Leaving on the Earth?

Bethany Kempster, Teacher, Royal Ontario Museum

MATERIALS NEEDED

- Computers with internet access

TIME NEEDED:

- 1-3 class periods

CURRICULUM CONNECTIONS:

Issues in Canadian Geography, Grade 9 Academic CGC1D

- C1.4 analyse the roles and responsibilities of individuals in promoting the sustainable use of resources

Issues in Canadian Geography, Grade 9 Applied CGC1P

- A1.4 interpret and analyse data and information relevant to their investigations, using various tools, strategies, and approaches appropriate for geographic inquiry
- C1.3 analyse their personal use of natural resources
- E1.1 use a variety of measurements to compare the impact on the natural environment of people in Canada and people in other countries

ACTIVITY DESCRIPTION:

A typical Canadian's resource consumption is far above the average of other people on Earth. One way of examining our personal impact on the environment is by measuring our ecological footprint and calculating the number of global hectares required to support our demands. This lesson plan contains activities for Grade 9 Geography students and reinforces the Interrelationships concept of geographic thinking. After calculating their ecological footprints using an online footprint calculator, students will analyze and interpret their data, consider the importance of metaphors, and work in groups to hold a class debate on issues of responsibility and sustainability. No prior knowledge beyond basic concepts of sustainability are required for completion of these activities.

WHAT IS AN ECOLOGICAL FOOTPRINT?

An ecological footprint measures an individual's impact on the environment. It measures the amount of biologically productive area on Earth needed for cropland, fishing grounds, forest products, grazing land, built-up areas, and to absorb the waste greenhouse gases emitted by human activities including transportation. If everyone on Earth had the same demands as an average person in Ontario had in 2010, about 3.5 earths would be needed to support our demands on the environment.

WHAT IS BIOCAPACITY?

Biocapacity can be measured in terms of global hectares. A global hectare is 10 000 square metres or roughly 2.5 acres that has world average productivity. The Earth's biocapacity is currently 1.7 global hectares for every person on Earth. A typical Ontarian, however, required 6.2 global hectares in 2010 to support their demands on the environment.

TEACHING PROCESS:

CALCULATING YOUR ECOLOGICAL FOOTPRINT:

1. Visit the Footprint Calculator, from the Global Footprint Network, at http://www.footprintcalculator.org/ You will need to sign up (for free) in order to access the calculator and its accompanying resources.
2. Answer the questions about your life as best you can. The calculator takes approximately ten-fifteen minutes to complete.

CLASS ACTIVITIES:

ACTIVITY 1: LOOKING AT THE DATA (INDIVIDUAL ACTIVITY, GROUP DISCUSSION)

- If the average Ontarian needs 6.2 global hectares to meet our demands, how did your results compare to the averages? Can you determine why your data may have been higher or lower than average?
- Have everyone in the class compare results (number of Earths and global hectares). What factors could explain the variations in the results?
- What steps could you take to reduce your ecological footprint? Brainstorm three-five ideas and see if they make a difference by recalculating your ecological footprint. Did it have the impact you thought it would? Why or why not? Take it one step further and try these changes for a week. Would you consider making these changes permanent? Why or why not?
- For discussion: The results from ecological footprint calculators are almost always negative. For some people, this can lead to a sense of futility and a sense of 'why even bother?' How can we use the discouraging results from the ecological footprint to empower people to make positive and lasting change?

ACTIVITY 2: CHANGING THE METAPHOR (INDIVIDUAL ACTIVITY, GROUP DISCUSSION)

- The ecological footprint uses the metaphor of a footprint to describe our impact on the Earth. Read the article "Is a Footprint the Right Metaphor for Ecological Impact" by Laura Jane Martin, Scientific American April 2, 2014, available at https://blogs.scientificamerican.com/guest-blog/is-a-footprint-the-right-metaphor-for-ecological-impact/
- For discussion: Why are metaphors used to help facilitate discussion of personal environmental impact? Do you agree with the idea that a handprint is a better metaphor than a footprint? Why or why not?
- Create your own metaphor to describe the impact that our resource use is having on the environment. Does your metaphor rely on positive or negative messaging?

ACTIVITY 3: HOLD A DEBATE (GROUP ACTIVITY)Y)

- Hold a class debate about issues of sustainability. Debate topics might include:
  1. In order to lower Ontario's footprint, the Ontario government needs to impose environmental regulations upon the entire province;
  2. Countries with high ecological footprints should look to countries with low ecological footprints as models of how to live sustainably;
  3. We will be able to lower our ecological footprint with the use of future technology and do not need to worry about our current resource use

ASSESSMENT:

These activities were designed to facilitate classroom discussions around the issues of sustainability and personal choices. Activities two (individual) and three (group) could be assessed and would fall under the communication assessment and evaluation category.