

# Earth "Spheres" Concept Map

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## Introduction

This year-end summative project for my Grade 7 Geography students is actually a "new and improved" version of a similar assignment I have done in the past with my World Issues students. The students were asked to choose a behaviour or product and examine its effects on the "four spheres" of the Earth (lithosphere, hydrosphere, atmosphere, biosphere).

There are five parts to this project (see next page for more info):

- online **Ecological Footprint** (75 minutes in computer lab);
- research sheet (75 minutes in computer lab);
- concept map rough copy (75 minutes);
- concept map good copy (150 minutes);
- solution write-up (150 minutes in computer lab).

If you don't think the whole project is a good fit for your class, you might consider using the online **Ecological Footprint (EF)** calculator ([www.footprintnetwork.org](http://www.footprintnetwork.org) > *Your Footprint* > *Take the Quiz*) as a stand-alone assignment. This excellent new EF calculator is from the same designers who created "*The Matrix*" and "*The Story of Stuff*".

## Selected Ministry Expectations

Even though this assignment was designed for my Grade 7 classes, I believe it could be modified for a number of different courses. I have highlighted a few of them below with the main corresponding expectations:

## Grade 7 Geography

- communicate the results of inquiries and analyses for specific purposes and audiences, using computer slide shows, videos, websites, oral presentations, written notes and descriptions, drawings, tables, charts, diagrams, maps, models, and graphs.

## Grade 9 Geography of Canada (CGC1D)

- explain how human activities affect, or are affected by, the environment.
- predict the consequences of human activities on natural systems.

## Grade 11 Physical Geography (CGF3M)

- evaluate the impact of human life on the environment.

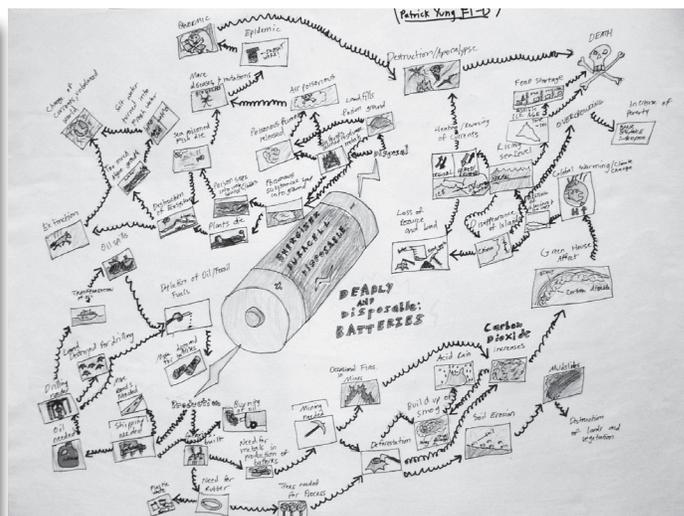
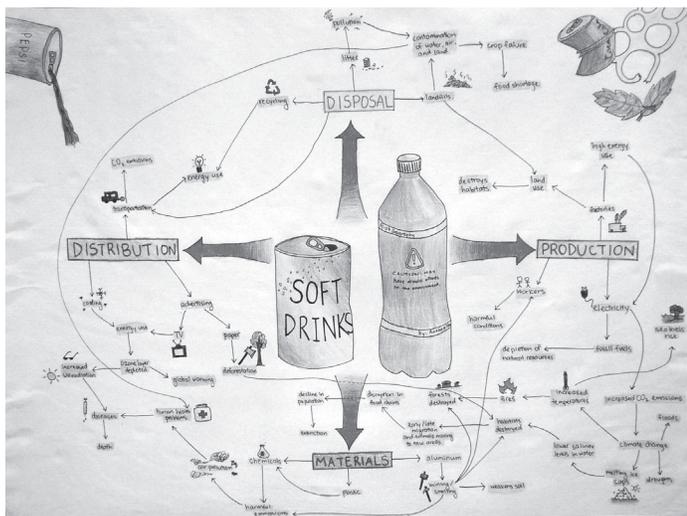
## Grade 12 Canadian and World Issues (CGW4U)

- explain how the earth's natural and human systems are interconnected in multiple, complex ways.

## Selected Further Resources

- "*Garbage: The Revolution Starts at Home*" video ([www.garbagerevolution.com](http://www.garbagerevolution.com));
- Inspiration Software (concept-mapping software – I haven't used this, but it's supposed to be very good);
- for more info or a digital copy, you can contact me at [mfarley@utschools.ca](mailto:mfarley@utschools.ca) or [michael.farley@tel.tdsb.on.ca](mailto:michael.farley@tel.tdsb.on.ca).

## Concept Map Exemplars





# THE MONOGRAPH

## Online Ecological Footprints (EF)

1. Go to: [www.footprintnetwork.org](http://www.footprintnetwork.org) > *Your Footprint* > *Take the Quiz* (do the “detailed information” route)
  - a) If everyone lived like you, how many Planet Earths would we need to provide enough resources?
  - b) How many hectares of the Earth’s productive area does it take to support your lifestyle? (note: you must convert acres to hectares; 1 acre = 0.405 hectare) . How many tons of carbon dioxide do you create each year? (note: you must convert tons (imperial) to tons (metric); 1 imperial ton = 0.907 metric ton) .
  - c) How does your EF break down? (%) Food , Shelter , Mobility , Goods , Services .
  - d) Using the “*Edit Your Footprint*” and “*Explore Scenarios*” links, see if you can reduce your EF. Record your revised numbers:
    - If everyone lived like you, how many Planet Earths would we need to provide enough resources? .
    - How many hectares of the Earth’s productive area does it take to support your lifestyle? (note: you must convert acres to hectares; 1 acre = 0.405 hectare) . How many tons of carbon dioxide do you create each year? (note: you must convert tons (imperial) to tons (metric); 1 imperial ton = 0.907 metric ton) .
    - How does your EF break down? (%) Food , Shelter , Mobility , Goods , Services .
    - What are some of the ways you reduced your EF? (briefly explain)
  - e) What did you like about this EF calculator? Explain.

- f) Can this EF calculator be improved? Is there anything that it leaves out? (you may need to come back to this question once you tried some of the other calculators below)



2. If time permits, try some of the following EF calculators:
  - [www.myfootprint.org](http://www.myfootprint.org)
  - [www.ecologicalfootprint.com](http://www.ecologicalfootprint.com)
  - [www.royalsaskmuseum.ca/gallery/life\\_sciences/footprint\\_mx\\_2005.swf](http://www.royalsaskmuseum.ca/gallery/life_sciences/footprint_mx_2005.swf)
  - [www.mec.ca/Apps/ecoCalc/ecoCalc.jsp](http://www.mec.ca/Apps/ecoCalc/ecoCalc.jsp) (do the second of the two calculators listed)
  - see if you can find other EF calculators and give them a try

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Rubric for Concept Map

Name: \_\_\_\_\_

	<b>Look-fors</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	<b>Level 4</b>	<b>Mark:</b>
<b>Concept Map: identification of effects</b>	- thorough research - excellent annotations	- minimal identification and description of environmental consequences (10-11)	- satisfactory identification and description of environmental consequences (12-13)	- good identification and description of environmental consequences (14-16)	- excellent identification and description of environmental consequences (17-20)	/20 (K/U)
<b>Concept Map: linking of effects</b>	- ability to make links between environmental consequences	- minimal linking between environmental consequences (5)	- satisfactory linking between environmental consequences (6)	- good linking between environmental consequences (7-8)	- excellent linking between environmental consequences (9-10)	/10 (T/I)
<b>Concept Map: creativity</b>	- creativity - design - "WOW!" factor	- concept map shows little creativity and design (5)	- concept map shows some creativity and design (6)	- concept map shows substantial creativity and design (7-8)	- concept map shows abundant creativity and design (9-10)	/10 (C)
<b>Concept Map: construction</b>	- ink and colour - neatness and organization	- concept map construction is disorganized, messy, and unappealing (5)	- concept map construction is somewhat organized, tidy and appealing (6)	- concept map construction is organized, tidy and appealing (7-8)	- concept map construction is exceptionally organized, tidy and appealing (9-10)	/10 (A) <b>Total:</b> <b>/50</b>

Rubric for Written Work

	<b>Look-fors</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	<b>Level 4</b>	<b>Mark:</b>
<b>Ecological Footprint Sheet</b>	- complete - insightful - organized	- sheet is incomplete, lacks insight and is disorganized (2)	- sheet is complete, somewhat insightful and moderately organized (3)	- sheet is complete, insightful and organized (4)	- sheet is complete, very insightful and very well-organized (5)	/5 (K/U)
<b>Research Sheet</b>	- complete - insightful - organized	- sheet is incomplete, lacks insight and is disorganized (2)	- sheet is complete, somewhat insightful and moderately organized (3)	- sheet is complete, insightful and organized (4)	- sheet is complete, very insightful and very well-organized (5)	/5 (T/I)
<b>Write-up: research</b>	- thorough research	- write-up lacks research (5)	- write-up contains satisfactory research (6)	- write-up contains solid research (7-8)	- write-up contains exceptional research (9-10)	/10 (T/I)
<b>Write-up: writing mechanics</b>	- spelling and grammar	- countless spelling and grammatical errors (2)	- many spelling and grammatical errors (3)	- few spelling and grammatical errors (4)	- excellent spelling and grammar (5)	/5 (C)
<b>Write-up: Works Cited and Referencing</b>	- embedded citations in text - Works Cited list	- embedded citations and Works Cited list do not follow MLA guidelines (2)	- embedded citations and Works Cited list follow MLA guidelines somewhat (3)	- embedded citations and Works Cited list mostly follow MLA guidelines (4)	- embedded citations and Works Cited list follow MLA guidelines exactly (5)	/5 (A) <b>Total:</b> <b>/30</b>