

The Real Cost of Food

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GRADE LEVEL: 9

SUBJECT: Issue in Canadian Geography, CGC 1D

OVERVIEW

In this lesson, students will watch a video on 'The Real Cost of Food' and then calculate and compare the cost of transporting non-local fresh produce to their local grocery store to the cost of transporting local produce.

Extensions include looking at the other hidden costs of eating non-local produce.

PREPARATION

Preparation Time:

Approximately 15 minutes to photocopy student handouts, confirm internet access of videos and preview them, either book a computer lab or print a set of world maps, locate local farms that grow produce (not grains or livestock) and to review the provided teacher notes and resources.

Length of Lesson:

2 Periods

Required Resources:

- Computer with speakers and projector
- Videos downloaded from
 - <http://content.sierraclub.org/creative-archive/video/2012/05/true-cost-food>
 - https://www.youtube.com/watch?v=bO_XMq0bonA
- Computer lab or set of world maps
- Location of local farms that sell produce (not grains or livestock)
- 'The Real Cost of Food Video Questions' handout
- 'Researching Produce' handout
- 'Mapping Origin of Produce' handout
- 'Reflection: The Real Cost of Food' handout

CURRICULUM EXPECTATIONS

1. BIG IDEAS

Students will apply their research and geographic skills, such as mapping, to look at the 'real' cost of food grown both locally and at a far distance.

2. OVERALL EXPECTATIONS

To compare and contrast local and non-local foods and its journeys from field to market.

3. LEARNING GOAL

By the end of this activity, students will:
Become more aware of where their food comes, how it is produced and what it takes to get the food to the store.

INSTRUCTIONAL PLANNING AND DELIVERY

1. INTRODUCTION/MINDS-ON

- Introduce the topic of 'The Real Cost of Food' by showing students one of the videos. (They are two versions of the same video. The Sierra Club video is much clearer, but may not be accessible at all schools.

The videos are available at:

<http://content.sierraclub.org/creative-archive/video/2012/05/true-cost-food>

https://www.youtube.com/watch?v=bO_XMq0bonA

- Have students complete the 'Real Cost of Food Video Questions' while watching the video.
- Take up the answers and generate further discussion on the topic.

2. ACTION

- Have students visit a local grocery store and record where produce comes from on the 'Grocery Store Produce' handout. Consider dividing the produce up among the students ahead of time to avoid students looking at the same produce. Alternatively, have students research where their favourite produce is typically grown.
- Give each student a world map and the 'Mapping Origin of Produce' assignment. Their task is to mark on the map the origins of the 10 imported types of produce. At least two of the fruits or vegetables must be available locally for part of the year and imported the remainder of the year (e.g. Ontario grown strawberries are available from June to September, but you can purchase California grown strawberries in January). The map must include:
 1. Scale
 2. North arrow
 3. Title
 4. Legend
 5. 10 types of produce
 6. A flight path from that country to the location of the local airport marked with the distance.
- Have students calculate the distance from the closest international airport to the local grocery store when travelling by streets. Use the Google Earth measuring tool.
- Have students calculate the cost of transporting nonlocal food to the local grocery store using current fuel costs/L.
- Have students find the location of local farms (or provide them with this information) and calculate the transportation costs of getting the farms' produce to the market using the Google Earth measuring tool.

3. CONSOLIDATION

- Have students individually reflect on their learning by completing the 'Reflection: The Real Cost of Food' handout.

4. DISCUSSION AND QUESTIONS

- What is the dollar amount saved by buying locally?
- What is the amount of fuel saved by buying locally?
- If it costs so much to bring in nonlocal food, why do grocery stores do it?
- What are some of the other hidden costs associated with their chosen produce?
- Can we estimate these hidden monetary costs? Explain.
- Which hidden costs are reduced when locally grown produce is purchased?
- Which hidden costs are eliminated by buying locally grown produce?

5. NEXT STEP

- Consider having the students investigate where the food is purchased for the school's cafeteria and how more locally grown food could be offered.

TEACHER NOTES

It is helpful to have some knowledge of where produce is imported from and visiting the local grocery store to see what is labelled and where it is from. Also, familiarize yourself with the equations for fuel consumption as students who either struggle or are not confident in math will likely need assistance in getting started.

Prior to the lesson confirm access on the school computer to the selected video's web site.

ASSESSMENT OPPORTUNITIES

Assess the completed video answer sheet. (Knowledge and Understanding)

Assess the completed 'Grocery Store Produce' assignment. (Thinking and Inquiry)

Assess the completed 'Mapping Origin of Produce' assignment. (Application)

Assess each student's participation in class discussions and their completed 'Reflection:

The Real Cost of Food' handout. (Communication)

EXTENSION ACTIVITIES

Students could create media campaigns or petition various governments and community leaders to commit to change in sourcing of food for events and in the community in general.

Student could research the costs associated with hired help and the working conditions of farmers in Ontario compared to farmers in another country.

Students could research the conditions required for picked food when being shipped a far distance (e.g. pick under ripe and finish its ripening during shipping) and the resulting impact this has on the flavour (e.g. poorer taste. This would be convincing by having students do a comparative taste test of strawberries grown in Ontario to strawberries grown in California.)

Students could research the use of pesticides in big commercial farms and compare with the pest control methods used on organic farms.

Students could research the advantages and disadvantages of monoculture.

Students could research sustainable agricultural practices.

Extend discussions from the video by researching and verifying the 'real' costs of producing various foods.

Students could start a food garden at the school.

BACKGROUND RESOURCES

Imports and exports in Canada, by country:

<http://www.ats-sea.agr.gc.ca/stats/fs-fd-eng>

California exports (pdf gives lists of produce by country of destination - Canada is on pg 9):

http://www.cdfa.ca.gov/statistics/files/CDFA_Sec10.pdf

'The Real Cost of Food' Video Questions

1. Who made this video?
2. What is Mom's big problem?
3. How does she end up at checkout 16 1/2?
4. What does the cashier say she will show them?

Cow Farm

5. What are the hidden energy costs?
6. What is water used for on the farm? What amounts are used?
7. What are TWO other costs mentioned in the video?

Tomato Farm

8. What is mono-cropping?

9. What reasons are given to support mono-cropping is bad?

10. What are the negative aspects of pesticide use?

11. Under what situations might the use of pesticides be acceptable?

12. Where does agricultural runoff go?

Grocery Store Produce

Part A. Researching Produce

Complete the following table for 10 different imported produce (fruits and vegetables) found at the local grocery store. At least 2 of the produce must be available locally for part of the year.

Name of Produce	Location Grown	Source (Name of Grocery Store or Website)	Distance From Your Nearest International Airport (in km)	Litres of Jet Fuel Used (Distance X 161.5/100) Cost = L x \$3.00
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Some information about 747 Passenger Plane

- Maximum speed: 917km/h
- Weight empty (no cargo): 295 000 kg
- Cost of landing at Pearson International Airport (Toronto): weight x \$25 (landing without cargo: \$7375)
- Fuel tank capacity: 239 000 L of fuel
- Cost of fuel: \$3.00/L
- Range (how far it can go without refueling): 14,800 km with a fuel efficiency (using empty weight) of 161.486 L/100km (Note: a 4 cylinder SUV uses 12 L/100km)
- Cost of a tank of fuel: \$3 x 239 000 L = \$717,000

Part B. Cost of Local Farm Transportation to Market

Answer the following questions in the space provided.

1. Measure the distance from the farm to the Farmer's Market or grocery store. You can use the measuring tool in Google Earth. Make sure you are measuring in km.

Distance = _____ km

Cost of diesel: \$1.20/L

Fuel efficiency of a mid size cargo truck: 23L/ 100km

2. To calculate the cost of driving the truck, first find the litres of fuel: distance x 23L/100km
Then, multiply the litres by the cost of diesel (\$1.20). Show your work.

3. Now, take a moment and compare the fuel cost of nonlocal food with the cost of trucking the food from a local farm to the Farmer's Market.

Local Food	Nonlocal Food

4. What is ONE other hidden cost in farming?

5. How can we calculate the hidden costs and compare it to the local costs? (You do not have to calculate the cost, but rather state what information you would need to find out in order to compare the difference.)

Mapping Origin of Produce

Your task is to mark on a map of the world the origin of the 10 types of imported produce you researched.

At least TWO of the fruits or vegetables must be available locally for part of the year and imported the remainder of the year (e.g. Ontario grown strawberries are available in July, but you can also buy California grown strawberries in January.) Use different colours (but the same symbol) to show the TWO growing locations.

Draw in the flight path from each country to the location of the local airport and mark each distance.

Tips for Producing a Quality Map

You were taught in geography class that maps should contain some basic information so that someone looking at it posted on your home fridge would know what they are looking at.

A fridge worthy map should include:

1. Title: short, but to the point so everyone knows what information is on the map.
2. Scale: so we know what level of detail we are looking at.
3. North Arrow: this helps the reader to orient themselves.
4. Legend: all symbols, lines, colours, etc must be explained in your legend.

Otherwise the map is not helpful!

5. Your Name: take pride in your work!

