Part 2: Introductory Homework Assignment

NSF Farm Hub Project

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Timing within Module:

This should be completed during the week in which the introductory activity is occurring.

Goal:

Students will log their meals for a full day, calculate the CO2 equivalent of their meals, and reflect on their findings. Through this assignment, they will become acquainted with how their personal food choices impact the environment.

Learning Objectives:

1. To learn about CO_2 footprints, how they are calculated, and what they tell us.
2. To assess the CO_2 footprint of a typical day's meals.
3. To reflect on what an individual can do to reduce their CO_2 footprint through simple food choices.

Materials:

Pens
Paper
Computer
Internet access

Preparation:

Prepare 5-minute presentation on carbon footprints (#1 below) & prepare to close the assignment with the environmental impact of a small food change (#4 below).

Length:

20-30 minutes. This lesson is assigned as a homework assignment. Faculty can decide whether reflections are written assignments, in-class discussions, or both.

Award # 1609219

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Faculty instructions

1. ***IN-CLASS.*** Introduce the concept of a carbon footprint.

   Most food produced in the industrial/conventional food system arrives to your plate after extensive processing that requires energy and releases more global warming pollution into the air. A carbon footprint is used to describe the amount of greenhouse gases emitted throughout a product's entire life cycle.

   The "carbon footprint" of hamburger, for example, includes

   - All of the fossil fuels that that went into producing the fertilizer, pumping the irrigation water, and harvesting the corn that fed the cow
   - Emissions that result from converting forest land to grazing land
   - Methane (a potent global warming gas) released from the animals' digestion and manure
   - Fossil fuels used to transport, process, and package food
   - Fossil fuels used in the storage and sales for wholesale and retail outlets
   - Cooking

   The carbon footprint of a particular product is often expressed as a carbon dioxide equivalent (CO_2e^i). CO_2 is one of eight greenhouse gases, each with a different magnitude of effect on the earth's atmosphere. CO_2e^i makes it easier to compare impacts of different products by converting them all to a common denominator, CO_2.

2. ***HOMEWORK.*** Students will keep a diary of meals for 1 day. They don't have to track individual ingredients, only meals (Ex. Cereal with banana or Philly cheesesteak and French fries). They will then go the Food CO_2 Calculator at: http://www.eatlowcarbon.org/ to calculate their total CO_2 equivalent consumed for the day by summing up the CO_2e^i values for all meals over the course of a day.

3. ***HOMEWORK, IN-CLASS, OR BOTH.*** The students will then write a short reflection piece and/or discuss their findings in class. Reflection/discussion should cover:
   a. What a CO_2 footprint is and why is it important?
   b. The CO_2 footprint of their diet on that date.
   c. What changes could they make to reduce their footprint?
      - The "diet tips" button the website can provide students with guidance on what they can do to reduce their food CO2 footprint.
      - They can also explore different choices on the Food Scores.

4. ***IN-CLASS.*** Make sure to end on a high note (you can have students work through these calculations to practice conversions and scaling!).

It's Easy to Make an Environmental Impact through Small Changes!

Reducing beef intake by only ¼ lb. saves 1,701 grams CO_2e^i = 3.75 lbs. CO_2e^i.

If each person in the class reduced their beef intake by ¼ lb. per week, it would save ___ lbs. CO_2e^i in year (multiply 3.75 by # students and 52 weeks).

If every student at Butler (4,750) reduced their beef intake by ¼ lb. per week, it would save 926,250 lbs. CO_2e^i in a single year. This is equal to 89 cars off the road!

NRDC estimates that if all Americans eliminated one quarter-pound serving of beef per week, the reduction in global warming gas emissions would be equivalent to taking four to six million cars off the road.

Sources:

www.eatlowcarbon.org

NRDC (2010) Eat Green: Our everyday food choices affect global warming and the environment. Natural Resources Defense Council.

https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle-0