



# Chickens by the Millions (Learning Experience #1) Lesson Plan



## Overview

Students use their own lunch choices to calculate how many chickens must be raised in order to satisfy our regional demand for chicken meat. They are asked to consider how much manure is generated in the process and what may be done to dispose of it in a way that maintains good water quality in their home region and the Chesapeake Bay.

**Lesson Essential Question:** How do our food choices affect the environment in which we live?

---

## Objectives

Students will:

- work productively as a part of a project team.
- use a variety of resources to investigate the background information necessary for this project.
- research and summarize information about content of chicken feed.
- keep accurate, complete records in a journal
- calculate amount of chicken eaten by classmates based on an informal survey.
- calculate amount of chicken raised in a year in the Chesapeake Bay watershed.

## Materials for Chicken by the Millions:

- One packet containing a copy of each of the following documents per group:
  - *Back to the (Chicken) Farm* (Student Sheet #1)
  - McDonald's or other fast food menu
- Chart paper and markers
- Notebooks or small binders or folders to be used as journals for all LEs, one for each student

**Grade Level:** 7 – 12





## Subject Areas

Biology, chemistry, mathematics, nutrition, environmental science

## Timeline

Teacher preparation: 20 minutes

Learning Experience: 60 minutes

## Setting

Classroom, laboratory or computer lab

## Skills

Communicate to team and classmates, use simple math calculations to answer questions, organize information, research in print materials and on web sites

## Vocabulary

Anaerobic digester; biogas; litter; manure; methane; nitrates; nutrients; phosphates; potash

---

## Procedure

1. Post the essential question for this scenario on a piece of chart paper. Ask the students to copy it into their journals and take a few minutes to answer it. Ask students to discuss their ideas with the class, noting that their answers may depend on where they live and how much experience they have had on a farm.
2. Ask students to imagine that someone has offered to buy their lunch at a fast food restaurant in your area (McDonald's, Wendy's, etc.). They should think about what they would choose from the menu and record it in their journals. Then calculate what percent of the members of the class would chose chicken nuggets, chicken fingers or a chicken sandwich as a part of their order. Ask them to use that percent to estimate how many students in your school would order chicken today if they had the opportunity. How could they get an estimate of the number of people in your state who will choose to eat chicken today, and how many individual birds are necessary to provide that many chicken meals? Ask students to devise a strategy for answering this question and write it in their journals.
3. Tell students that they will be working in a project team of three or four. Each team member will have a task: researcher (may have two of these), recorder, communicator. They all will be responsible for their team's work.





4. Ask teams to reflect on where the chicken meat in their imaginary lunch comes from (the answer is not the freezer in the rear of the restaurant) and complete questions one through three in *Back to the (Chicken) Farm* (Student Sheet #1). Students will need the following information, which is included on their answer sheets:
  - a. There are more than 17 million people living in the Chesapeake Bay watershed;
  - b. On average, each American eats approximately 86.5 pounds (39.3 kilograms) of chicken meat each year;
  - c. Each chicken contains approximately 3 pounds (1.4 kilograms) of marketable meat.
5. After students calculate how many birds must be raised in order to satisfy our appetite for chicken meat each year, ask students to think about how and where most of those chickens are raised. Explain that, although “free range” chickens may roam freely outside searching for food and return to a coop at night, almost all chickens produced for meat in this country are “warehoused” and raised in large chicken houses where they spend much of their lives inside.
6. Instruct students to complete *Back to the (Chicken) Farm*, question #4.
7. Instruct students to open their journals and write a few sentences about the environmental impacts that result from raising warehoused chickens in the Chesapeake Bay watershed. Once the students have completed the task, lead a class discussion, using the following questions as a guide:
  - a. Are the impacts listed positive or negative?
  - b. What is a way to mitigate one of the negative impacts?

Have students share their ideas with their teams, and add their top suggestion to a class list.

8. Some of your students may suggest that reducing chicken meat consumption is one way to mitigate pollution from chicken manure. You could suggest the topic of meat consumption (types and amount) to their health teacher as an extension of this idea. How does reducing or eliminating meat consumption affect human health? Are the common substitutes for poultry (beef, pork, fish, etc.) more healthful or less damaging to the environment when raised in quantity?