



FOOD FOR 9 BILLION

The Challenge of Feeding the World

A Hungry World?

Teacher Notes

Before You Start

Grade Level:

Grade 9-10

Concepts Covered:

Statistics, figure reading, malnutrition, hunger index, calories, undernourishment

Time Frame:

30-50 minutes

Materials Needed:

Computers with Internet access, student handout **A Hungry World?**

Overview

This activity emphasizes graphic reading skills and finding trends in different data sets. The lesson utilizes an interactive World Food Map that provides students an opportunity to manipulate and make sense of data about feeding 9 billion people worldwide.

Objectives

- Students will understand that there are different ways to measure hunger and that malnutrition and undernourishment levels vary in different parts of the world.
- Students will practice graphic reading skills and finding trends in different data sets.

Prior Knowledge

None.

Teaching Tips/ Activity Sequence

1. Introduce and provide some context for the activity by listening to one of the stories about food and hunger on Marketplace or PBS News Hour.
 - A good introductory story is “The Scientific Challenge:” <http://cironline.org/reports/scientific-challenge>.
 - NewsHour story on food insecurity in the United States: http://www.pbs.org/newshour/extra/teachers/lessonplans/economics/july-dec11/food_11-18.html
 - New Hour story India’s school lunch program at http://www.pbs.org/newshour/bb/world/july-dec11/indialunch_10-03.html.
2. Begin with a short discussion of what hunger is and how we can measure it. See the teacher resource, “**Facilitating a discussion about quantifying hunger**” for more information.
3. Have students complete the activity in groups or pairs.
4. Conclusion: Gather the whole group together and have students share their explanations of the hunger situation worldwide, discuss the factors that might contribute to alarming hunger situations in certain countries, and review the different ways in which hunger is quantified

Extensions

- Another lesson, “Why Are People Hungry?” is available at <http://www.ricediversity.org/outreach/educatorscorner/foodfor9billion/>.
- A NewsHour Extra activity “Food Insecurity in the United States” uses household budgeting to explore effects of rising food prices on food insecurity. http://www.pbs.org/newshour/extra/teachers/lessonplans/economics/july-dec11/food_11-18.html.
- Another NewsHour Extra activity “Malnutrition in India” includes a reading comprehension exercise that partners nicely with the “A Hungry World?” data exercise. http://www.pbs.org/newshour/extra/features/world/jan-june12/india_01-20.html

Standards

*National Science Education Standards
Grades 9-12*

Science in Personal and Social Perspectives
Population Growth 2.1

National Curriculum Standards for Social Studies

3. People, Places, and Environments
7. Production, Distribution, and Consumption
9. Global Connections

*Common Core State Standards for Literacy in
History / Social Studies,
Science and Technical Subjects 6-12*

Reading Standards
Key Ideas and Details RST1, RH1
Integration of Knowledge and Ideas RST7
Writing Standards
Text Types and Purposes WHST2
Production and Distribution of Writing WHST4
Range of Writing WHST10

National Geography Standards

2. Knows the location of places, geographic features, and patterns of the environment
9. Understands the nature, distribution and migration of human populations on Earth's surface
18. Understands global development and environmental issues

Acknowledgements

Susan Dodge, M.S. Ed for Creative Curriculum, produced these teacher notes and resources in conjunction with the “Food for 9 Billion” project (<http://FoodFor9Billion.org>) with funding from the National Science Foundation (PGRP grant #1026555; <http://ricediversity.org>) and Cornell University.

A Hungry World?

Facilitating a Discussion about Quantifying Hunger



Teacher Resource

Taking the time to engage the students in a short discussion about hunger allows students to activate their prior knowledge about the topic and allows you, as a teacher, to build a shared base of knowledge. It also provides an opportunity to examine the complexity underneath a simple word and the challenges inherent in quantifying a concept like hunger.

1. Begin by asking the students, “What is hunger?” Have them discuss briefly with pairs or small groups and then provide an answer back to the larger group. Depending upon prior knowledge and experience, students will answer in different ways. It is likely that they’ll start with a basic definition, such as a need for food or a feeling of needing food, or lacking a certain nutrient. *Defining and measuring hunger is far from simple!*
2. Encourage students to elaborate. Continue the discussion by asking more questions, such as:
 - Are you “hungry” if you have enough food to eat but it’s not healthy food?
 - Are you “hungry” if you have enough food most of the time but every year your food runs out for a month or two, as in much of rural Africa?
 - Are you “hungry” if you have enough food most of the time, but run out of money for a week every month and can’t afford to buy food?
3. Move towards a discussion about quantifying and measuring hunger. Ask, “How can you quantify hunger?” Solicit student feedback and encourage them toward seeking items or conditions that can be quantified.
4. Conclude the discussion with an explanation of two metrics that have been developed to quantify hunger. The first is “food security” and the second is the Global Hunger Index.
 - Many scholars are more comfortable talking about “food security” than they are with “hunger,” because food security can be carefully defined by the availability of food and people’s ability to make use of it. The United States Department of Agriculture has defined levels of food security and hunger, which are available at <http://www.ers.usda.gov/Briefing/FoodSecurity/labels.htm>. Food insecurity includes being without food, eating less than you feel you should, skipping meals or going without eating, or being unable to afford a balanced meal.
 - The FAO, or Food and Agriculture Organization, also measures food security. They keep track of food security worldwide and measure annually the Prevalence of Undernourishment (% of the population) in countries. The statistic indicates the percent of the population that regularly doesn’t consume enough food to meet dietary energy requirements (Calories). Those data can be seen at <http://www.fao.org/economic/ess/ess-fs/en/> and at <http://data.worldbank.org/indicator/SN.ITK.DEFC.ZS>.
 - The Global Hunger Index, established by the International Food Policy Research Institute, measures hunger differently. The index measures three indicators (the child mortality rate, the proportion of people who are undernourished, and the proportion of children under five who are underweight) and ranks nations on a scale of 0 – 100, zero being no hunger. A score between 20 and 29.9 indicates an alarming hunger situation and a score above 30 indicates extremely alarming situations. More explanation is available in the full report is available at <http://www.ifpri.org/publication/2012-global-hunger-index>.

Name: _____



Date: _____ Class: _____

A Hungry World?

By the year 2050, the population of human beings on Earth is projected to reach 9 billion. Each one of those people will need food to eat.

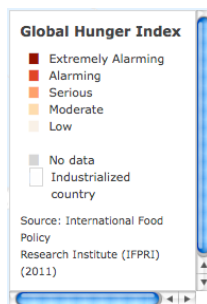
Even today, it is a significant challenge to feed the world's population. There's a lot of food in the world, more than enough to feed everyone. However, millions of people are dying of hunger and millions more are chronically hungry.

Let's learn more about our hungry world by exploring an interactive map. Go to <http://cironline.org/reports/map-world-food-statistics>.

On the bar at the top, select "Global Hunger Index" from the pull-down menu. The Global Hunger Index ranks countries based upon their food situation. The calculation is based on how many people are undernourished and many children are undernourished or dying before the age of 5. Countries where many people do not have adequate access to food are categorized as having serious, alarming or extremely alarming amounts of hunger.

To learn more about hunger around the world, listen to the first two minutes (16:48 – 18:46) of "[The Scientific Challenge](#)" on Marketplace.

Find the KEY or LEGEND and pay attention to what the different colors mean.



1. What does the deepest maroon / red color mean?
2. What do the very light colors (white, light peach) mean?
3. On what continents are the most countries with the greatest number of people going hungry?

Name: _____



Date: _____ Class: _____

A Hungry World?

4. You can roll over any country for a snapshot of its food situation. Pick two countries in the world with “extremely alarming” hunger situations, roll over the countries, read about them and fill in the chart below.

Country name		
What factors contribute to the “extremely alarming” food situation there?		
Other interesting facts		

Undernourishment, or not eating a minimum amount of calories, is another way to think about whether people have adequate access to food. Use the pull-down menu at the top to switch to “Undernourishment.”

5. What is the source of the data on undernourishment?
6. On what continents are the countries that have more than 25% of the population suffering from undernourishment?

Calories are a way to measure the amount of energy found in food. Use the pull-down menu at the top to switch to “Food Consumption.”

7. On what continents are the countries where people eat more than 3000 Calories/day?

How can we make sense of all this information? What trends did you notice?

8. In the space below, explain the current state of hunger worldwide to someone who has never seen the map.

A Hungry World?

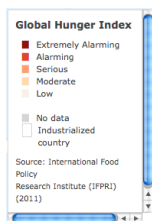
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Find the KEY or LEGEND and pay attention to what the different colors mean.



1. What does the deepest maroon / red color mean?

The deep maroon / red color indicates the countries with extremely alarming hunger situations. The most people are hungry in countries with deep red color.

2. What do the very light colors (white, light peach) mean?

The light colors denote countries with "low hunger" levels or "industrialized countries," where relatively few people are undernourished.

3. On what continents are the most countries with the greatest number of people going hungry?

Africa and Asia have the most countries with extremely alarming and alarming food situations. South America has countries with moderate and serious food situations. Note that Haiti, which is considered part of North America, has an alarming food situation.

To learn more about hunger around the world, listen to the first two minutes (16:48 – 18:46) of "[The Scientific Challenge](#)" on Marketplace.

A Hungry World?

4. You can roll over any country for a snapshot of its food situation. Pick two countries in the world with “extremely alarming” hunger situations, roll over the countries, read about them and fill in the chart below.

Country name	<i>Chad, Democratic Republic of the Congo, Eritrea, or Burundi</i>	
What factors contribute to the “extremely alarming” food situation there?	<i>Answers will vary depending upon country chosen. This question is a good starting point for a class discussion.</i>	
Other interesting facts		

Undernourishment, or not eating a minimum amount of calories, is another way to think about whether people have adequate access to food. Use the pull-down menu at the top to switch to “Undernourishment.”

5. What is the source of the data to make this map?
The World Bank (2008). (Look in the legend).
6. On what continents are the countries that have more than 25% of the population suffering from undernourishment?
Africa and Asia have the greatest number of countries. However, there are also countries that meet the criteria in South America and North America.

Calories are a way to measure the amount of energy found in food. Use the pull-down menu at the top to switch to “Food Consumption.”

7. On what continents are the countries where people eat more than 3000 Calories/day?
North America, South America, Europe, northern Asia and the Middle East, northern Africa, and Australia.

How can we make sense of all this information? What trends did you notice?

8. In the space below, explain the current state of hunger worldwide to someone who has never seen the map.
Student answers will vary. The hunger situation is worst in Africa and Asia, although on those continents, there are countries that have less severe hunger issues. People in North America, South America, Europe, northern Asia, and the Middle East are, in general, getting many more calories per day, though hunger has certainly not been eradicated in these places.