



# World Population

Grades: 5-8

Time: 1 class period (45-50 minutes)

## Purpose

- To provide an overview of the history of world population growth
- To relate population growth at current rates to the carrying capacity of planet Earth
- To consider some of the effects of population growth

## Objectives

- To understand the rate of growth of the world population over the last two hundred years.
- To identify the time period during which the most rapid growth occurred.
- To demonstrate the finite resources used to support this population.
- To identify the effects of a rapidly growing population on the environment and the people of Earth.

## Materials

- Video: *World Population* (6:30 minutes)
- Apples/Knives/Script
- Discussion Questions
- Marker/Board
- VCR/TV

## Procedure

1. Introduce the topic of world population growth. This lesson would be appropriate for starting a unit in which you will examine how human numbers and activities affect the health and well-being of the planet and all living things.
2. Show video: *World Population Video* developed by Zero Population Growth, 1400 16th St. NW, Suite 320, Washington, D.C. 20036  
Catalog of other materials available at this address. It really should be shown 2 or even 3 times so that students have adequate time to process the finer points of population growth and to relate to the dates and historical icons. You may also need to explain historical image icons though that is not essential for students to understand the message of the film.
3. **Discussion Questions:** Ask for students' reactions to what they saw. Use questions to highlight the most important points. Sample questions and answers are attached.
4. Introduce term: CARRYING CAPACITY = the point at which there are not enough resources to support more members of a given species.
5. **Activity:** Earth: The Apple of Our Eye **DO NOT** use knives with students. Consider using clay, play dough, or goop and plastic knives to re-enact the cutting of the apple. Script is attached.
6. **Activity:** Making Connections: Encourage students to make observations that connect the video and the apple activity. You may want to record observations. Conclude with an activity on the board.  
  
Start with the concept of "More People." Have students brainstorm things that more people might lead to. Encourage expression of positives as well as negatives. Cluster responses connected with arrows to show cause and effect. Include social, economic, and environmental issues.
7. Follow Up- In class if time permits or as a homework assignment, students will write a brief reflection or reaction to these activities. They should include the questions as well as concerns generated by this lesson. NOTE: All of these activities and more are included in the booklet which comes from ZPG. ZPG has an obvious bias and motive for developing this film that I believe you can use without actively promoting these goals. The apple activity is also scripted in a really terrific book called: *EARTHSEARCH: A Kid's Geography Museum in a Book* by John Cassidy published by Klutz Press, Palo Alto, CA, 1993 ISBN 1-878257-74-9

## National Geography Standards

14: How human actions modify the physical environment

15: How physical systems affect human systems

16: The changes that occur in the meaning, use, distribution, and importance of resources

## Discussion Questions and Possible Answers

1. What was the sound in "World Population"? What did this sound symbolize?

*(A heartbeat, symbolizing the real people represented by the dots.)*

2. Approximately what year did you begin to notice a large increase in population growth? What historical events, scientific advances or social changes at that time period may have contributed to that population growth?

*(The population growth surge began around 1800. At this time, the Industrial Revolution, advances in sanitation and nutrition all began to lower death rates while birth rates remained high.)*

3. Were there any points in the film when you noticed slight decreases in the population? If so, in what parts of the world did you notice decreasing population? What historical events in those time periods may have contributed to population decreases?

*(A population decrease can be noted in the fourteenth century when the Bubonic Plague killed millions of people in Europe and Asia. Central and South America lost population in the 1500's when Spanish conquistadors arrived in Mexico and Peru.)*

4. In what time period did the most population growth occur? During that time period, which parts of the world experienced the most growth?

*(Most of the population growth occurs in the twentieth and twenty-first centuries. Developing countries in Africa, Asia, and Latin America experienced the most growth.)*

5. Are there any areas of the world that are likely to remain relatively unpopulated by the year 2020? Why would this be so?

*(Areas comprised of desert, frozen tundra, swamps and high rocky mountains will most likely remain sparsely populated, since they are largely uninhabitable. NOTE: In order to accommodate all of the dots needed to represent the projected future growth, some dots appear in areas which are not likely to be inhabited. Therefore, even countries which appear to be filled up in 2020 may still have sparsely populated areas.)*

6. Why were there no dots in North America prior to the 16th century? What about Native Americans?

*(Estimates on the Native Americans population in the Western Hemisphere prior to Columbus' arrival vary from eight million to one hundred million, with an estimated 5 million Native Americans living in the area of the United States. However, their hunter-gatherer lifestyle precluded concentrations of a million people in any one place.)*

## **EARTH: The Apple of Our Eye - SCRIPT**

1. Consider the apple to represent Earth.
2. Carry out the following sequence:
3. Slice an apple into quarters.
4. Set aside three of the four quarters.
5. Ask audience: What do they represent?
6. (They represent the oceans of the world.)
7. What fraction do you have left?  $\frac{1}{4}$
8. Slice this land in half.
9. Set aside one of the pieces.
10. The portion set aside represents the land area that is inhospitable to people: the polar areas, deserts, swamps, very high and rocky mountains.
11. What fraction do you have left?  $\frac{1}{8}$
12. The piece that is left is land area where people live, but do not necessarily grow the foods needed for life.
13. Slice the  $\frac{1}{8}$  piece into four sections.
14. Set three of these aside.

15. What fraction do you have left?  $\frac{1}{32}$
16. The  $\frac{3}{32}$  set aside represent the areas too rocky, too wet, too cold, too steep, or with too poor soil to actually produce food. They also contain the cities, suburban sprawl, highways, shopping centers, schools, parks, factories, parking lots, and other places where people live but do not necessarily grow food.
17. CAREFULLY peel the  $\frac{1}{32}$  slice of the earth. This tiny bit of peeling represents the surface of the earth, the very thin skin of the earth's crust, or top soil upon which humankind depends. It is less than five feet deep and is a quite fixed amount of food-producing land. Due to erosion and overfarming, we lose 25 billion tons of it per year. It takes 100 years for one inch of topsoil to form.

You may now eat the rest of the apple, but carefully save this tiny piece of skin. Treat it as if your life depends on it.



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