

# THE WORLD OF CHILD 6 BILLION

## Lesson Plans

### WHERE WATER IS PRECIOUS

Submitted by Angene Wilson, University of Kentucky, Lexington, Ky

**Objective:** Through listening to and reading Peace Corps Volunteer stories, students will learn about the scarcity of water in some African countries and its impact on communities. Students will then consider the role ingenuity can play in solving problems.

**Standards:**

Geography Standard: How physical systems affect human systems  
NCSS Standard: IX. Global connections

**Materials:** A plastic bucket (blue if possible), a plastic cup, and stories about water by Peace Corps Volunteers from the December 1998 *Under the Village Tree* newsletter of the Returned Peace Corps Volunteers (RPCVs) for Environment and Development, on the Web at [www.cboss.com/rpcv-eandd/index.html](http://www.cboss.com/rpcv-eandd/index.html).

**Procedures:**

1. Begin class by pantomiming, with a plastic bucket and cup, the process of taking a bath with half a bucket of water. (If the teacher is brave, she might walk into the room carrying the bucket of water on her head.) Ask students why this kind of bath might be a necessity in parts of the world. Answers may include such points as: aridness area (54% of Africa is arid or semiarid); drought; long walk to get clean water; need for more wells or bore holes.

2. Read aloud to students the three paragraphs in "Because the Rains Had Come..." by Rachel Morse, which describe her three water buckets. Be sure to have someone point out Zimbabwe on the map.

3. Tell the class they are now going to read more about precious water in Africa. Hand out the rest of Rachel's story to half of the class (from "My last year in Zimbabwe" to the end) and Susan Caster's story ("Remembering Water in a Village in Ghana") to the other half of the class. Have a student show the location of Ghana on the map. Ask students to be prepared to

explain what each Volunteer learned about the impact of water on the community.

4. After students have read the stories, ask two students to share the high points of the stories. Then discuss how scarcity of water affected the relationships at Rachel's school. Ask how, in other situations in their experience, scarcity could be divisive. Ask about situations of scarcity in which cooperation might result. Would it matter how desirable or vital the resource is? Second, discuss how control of water by men made a difference in Susan's village. Ask how, in other situations in their experience, gender has made a difference.

5. Ask what can be done when water or another resource is precious. Ask students to define "ingenuity." Read aloud one more story, this one by Patricia Hamilton, who was a forestry Peace Corps Volunteer, also in Ghana. Her story is entitled "A Nursery in an Arid Land." Ask an artistically inclined student to "draw" this story on the chalk or white board as it is read.

6. After they have listened to the story, ask students to explain the value of ingenuity. In this case, the Peace Corps Volunteer was ingenious. An example of the ingenuity of Ghanaian women is the development of the Chokor oven, an innovative fish-smoking oven which allows women to smoke between four and 12 layers of fish using the same fuel.

7. Challenge and Assignment: Challenge students to try taking a bucket bath. Assign students to write and/or draw a half- to one-page proposal for the next day, using their own ingenuity to come up with an idea for dealing with the problem in Rachel's story, the problem in Susan's story, or a problem in their own school or community. The proposal may be a people solution, a technical solution, or a combination. ■

### POPULATION MATTERS!

Submitted by David Sahr, National Cathedral School, Washington, DC

**Objective:** Students will consider the complexity of the issue of population change.

**Standards:**

NCSS Standards:  
VII. Production, Distribution and Consumption  
IX. Global Connections  
X. Civic Ideals and Practices

**Lesson Organization:**

1. Ask students to read *The World of Child 6 Billion* discussion guide. To obtain copies of this free, colorful brochure, see box at the end of this insert.
2. Give the quiz below.
3. Use the quiz as a springboard for a discussion about population, how the world's population has grown, and how this growth has affected the planet.
4. Use the suggested discussion questions to challenge students to think further about these issues. Students should become aware of the complexity of the relationships between population and the environment.

**Questions for Discussion:**

A. How does consumption relate to population growth? For example, in 1994, industrialized countries used 9,300 billion kilowatts of electricity while economically developing countries used 3,575 billion kilowatts. In 1993, industrialized countries had 390 million cars while less economically developed countries had 65 million. The U.S. population consumes 119 kilograms of meat per capita while Bangladesh consumes 3 kilograms per capita. (Statistics from the United Nations Development Programme (UNDP) Human Development Report 1998)

B. China has received a lot of criticism from the "West" concerning its policy prohibiting a woman from giving birth to more than one child. What are other possibilities for limiting population growth in countries like China and India?

C. Do you think that a doption as a method of building a family will ever replace giving

birth to children? Currently, the U.S. government gives a tax break to families that adopt children. Should incentives like that be given to encourage future adoptions?

D. Is it better for our planet to have a population that is large and lives frugally, or a population that is small and lives more extravagantly? Are these the only alternatives?

E. Industrialized countries have smaller rates of population increase than economically poor countries. Do industrialized countries impose their views and ways of life on developing countries? If so, how?

F. Why might the imposition of one group's views result in subsequent hostility toward that group? Could the issue of race be a factor in such hostility? How could the world community deal with the issue of differing views? ■

## WHY IS GIRL EDUCATION IMPORTANT?

Submitted by Amy Schindler, Teaching Education student at the University of Kentucky, currently teaching in England.

**Class:** Geography, Economics, World Civilizations, or Mathematics

### Objective:

Students will learn about trends in statistical data dealing with literacy and other demographic data and make graphs to compare trends in a number of variables.

### Standards:

NCSS Standards:

I. Culture: h. explain and apply ideas, theories, and modes of inquiry drawn from anthropology and sociology in the examination of persistent issues and social problems

IX. Global Connections: c. analyze and evaluate the effects of changing technologies on the global community

NCTM High School Standards:

1. Mathematics as Problem Solving (apply the process of mathematical modeling to real-world problem situations)

4. Mathematical Connections (use and value the connections between mathematics and other disciplines)

6. Functions (model real-world phenomena with a variety of functions; represent and analyze relationships using tables, verbal rules, equations, and graphs)

10. Statistics (construct and draw inferences from charts, tables, and graphs that summarize data from real-world situations; use curve fitting to predict from data)

### Materials:

Graph paper, pencils, and rulers (or straight-edge)

Sources of data on literacy, fertility, and infant mortality such as: *Material World* by Peter Menzel (San Francisco: Sierra Club Books, 1994); *State of the World's Children 1999* (New York: United Nations Children's Fund (UNICEF), 1999); and *1998 World Population Data Sheet* (Washington, DC: Population Reference Bureau, 1998).

Other related books and pamphlets.

### Instructions:

Have students write down reasons why they think literacy rates might be different in different countries. Students may mention the relation of literacy rates to other demographics, such as infant mortality or gross national product (GNP).

### Activities:

1. Graphing: Have students work in pairs to graph female literacy rates (found in *Material World* and *The State of the World's Children*) against infant mortality rate (*Material World*, *State of the World's Children*, or *World Population Data Sheet*) and then graph female literacy rate against total fertility rate (*State of the World's Children* or *World Population Data Sheet*). They should choose at least 15 countries from all regions of the world. Students should explain why they chose the countries they did.

2. Class Discussion: What were your findings? Does there appear to be a relationship between the variables? If so, what is it? Are there outliers? What can you conclude from these data?

According to *The World of Child 6 Billion* discussion guide, "for every additional year of schooling a girl receives, the chance of her having a baby die is reduced by 10 percent and her expected income rises by 10-20 percent." Does this statement agree with your findings? What else can you learn through this exercise? Why do you think less education is associated with higher infant mortality rate?

3. Group work: Have students get into groups of three and pick a country to read

## POPULATION GROWTH QUIZ

1. Approximately when did the human population first reach one billion worldwide?

a. 300 B.C.    b. 100 A.D.    c. 1200 A.D.    d. 1550 A.D.    e. 1800 A.D.

2. In what year did the human population reach its second billion?

a. 1000    b. 1660    c. 1900    d. 1930    e. 1950

3. At what level is the current world population?

a. 3.1 billion    b. 4.8 billion    c. 5.9 billion    d. 8.2 billion    e. 12.6 billion

4. Most of the world's people live in less industrialized countries. What is the ratio of people in more industrialized countries to those in countries with lower levels of industrialization?

a. 40:60    b. 30:70    c. 20:80    d. 10:90    e. 5:95

5. By how many people does the world's population increase each year?

a. 46 million    b. 84 million    c. 150 million    d. 925 million    e. 1.1 billion

6. Currently, about two out of every five people live in which two countries?

a. U.S. & Russia    b. China & India    c. China & the U.S.    d. India & Indonesia  
e. Canada & Australia

7. Which continent will see the fastest population growth in the 21st century?

a. Asia    b. South America    c. Africa    d. Europe    e. North America

8. Which continent will see the largest population growth in the 21st century?

a. Asia    b. South America    c. Africa    d. Europe    e. North America

Answers: 1. e; 2. d; 3. c; 4. c; 5. b; 6. b; 7. c; 8. a

## POPULATION INFORMATION FOR SELECTED COUNTRIES

Country	Population (millions)	Doubling time	IMR	Life expectancy	Population/square mile
World	5,926	49	58	66	NA
Australia	18.7	101	5.3	78	6
Brazil	162.1	48	43	67	50
Canada	30.6	136	6.3	78	9
China	1,242.5	69	31	71	345
Cuba	11.1	107	7.2	75	262
Egypt	65.5	32	63	67	171
Germany	82.3	NA	4.9	77	610
India	988.7	37	72	59	861
Indonesia	207.4	45	66	62	294
Iraq	21.8	25	127	59	129
Italy	57.7	NA	5.8	78	508
Kenya	28.3	35	62	49	129
Mexico	97.5	32	28	72	132
Nigeria	121.8	23	84	50	346
Russia	146.9	NA	17	67	23
S. Africa	38.9	43	52	58	82
U.K.	59.1	433	6.1	77	634
U.S.A.	270.2	116	7	76	76
Vietnam	78.5	57	38	67	625

Source: 1998 World Population Data Sheet. Population Reference Bureau: Washington, DC:1998.

Note: NA—world population density not available; doubling time not applicable for countries with more annual deaths than births.

**Population:** The population in this country in 1998 in millions of people.

**Doubling time in years at current rate:** This indicates the number of years it would take a population to double if the rate of natural increase stays the same.

**Infant mortality rate (IMR):** The number of deaths of infants under 1 year of age per 1,000 live births.

**Life expectancy at birth:** The average number of years a newborn infant can expect to live under current mortality levels.

**Population per square mile:** This is the average number of people per square mile.

about in *Material World* and other sources. What information can you learn about why this country's statistics appear the way they do? What role does economics play in literacy and infant mortality? What role does religion play? Technology? What about whether people live in urban or rural areas?

4. Presentations: Have students briefly present their findings.

### Conclusion /Assessment:

Have students write a paragraph summarizing the class's overall findings and trends.

### Extensions of Lesson:

A. Have students graph data on the topic of their choice. They must explain what

sort of relationship they are exploring in the data and why they chose the countries they did (for example, literacy vs. family size in the Islamic world or nutrition vs. literacy in Sub-Saharan Africa). Students put findings on posters in a school hallway.

B. Have students use a programmable calculator or computer to explore possible mathematical relationships in the data. Can the students model the trend(s) found with a mathematical equation? Is it linear? exponential? other form? How close a fit are the data? Can the students predict infant mortality from literacy rates? Compare predicted results with data on other countries and offer possible explanations for any differences or similarities. ■

## INFORM PUBLIC POLICY

Submitted by Gabriell DeBear Paye, West Roxbury High School, Boston, Ma

**Objective:** Students will take on the roles of demographers who analyze data to make public policy recommendations to a government about how to enhance health and nutrition.

**Background:** Countries collect data on their people through birth, death and marriage certificates; voter registration; social security registration; drivers license records; and censuses. This information provides information that can help shape public policy. Demographers are scientists who are trained to take raw data on population and other related issues such as life expectancy and analyze these data so that more informed decisions can be made. City, state and national governments often hire demographers to interpret data and make recommendations regarding public policy.

### NCSS Standards:

IX.Global Connections

X. Civic Ideals and Practices

**Procedure:** Hand out the chart below with statistics on population, infant mortality rate (IMR), and life expectancy from selected countries. Ask students to study the chart and definitions at left.

In pairs, students should analyze the data presented by answering these questions:

1. Which countries have the fastest doubling time?
2. Do you have a recommendation to the governments of countries with very high rates of growth?
3. Which countries have a high infant mortality rate? How do you decide what is "high"?
4. What might a high IMR indicate?
5. What do you recommend for the countries with the highest infant mortality rates?
6. Which countries have the longest life expectancy?
7. Which countries have the shortest life expectancy?
8. What is your recommendation for raising the life expectancy in the countries that have lower life expectancies?
9. Which countries have the highest population per square mile?
10. What is your recommendation to these countries in relation to population density?

**Extensions of Lesson:** Ask students to share recommendations made in answering questions 2, 5, 8, and 10. Compare ideas. Consider the connections among the various indicators. ■

## Resources

### FACES MAGAZINE

Health: FACES Magazine, March 1992 - "Protecting Children's Health" has articles appropriate for 4-8 grade giving an overview of health considerations. This is a good collection of simple, brief articles, which could be discussed with a class.

Water: FACES Magazine, April 1989 - "Rain: Key to Survival" has articles appropriate for 4-8 grade highlighting the importance of rain, what happens when the seasonal rains do not come, and rituals that several groups practice in an attempt to ensure plentiful rainfall for their crops.

Education: FACES Magazine, September 1991 - "Education in India," "Learning by Doing: Apprenticeship in Africa and America," and "Young, Muslim, and Eager to Learn: Education in the Arab World."

Nutrition: FACES Magazine: January 1994 - "Bread: Staff of Life" and May 1996 - "Rice."

### UN CYBERSCHOOLBUS:

[www.un.org/Pubs/CyberSchoolBus/](http://www.un.org/Pubs/CyberSchoolBus/)

Health: Provides facts about global health, infectious diseases. The section on Fighting Disease: Health At The End Of The Millennium contains basic questions of global importance, such as:

- What will world health look like at the end of the millennium?
- What is the relation between poverty and disease?
- What are infectious diseases anyway?
- What are viruses and bacteria?
- How do we defend against them?

Also on this site: a good introduction to Immunization for grades 5-7, a colorful quiz for all levels, and a link to the Web site of the Pan American Health Organization.

Housing: Provides a lot of material on housing, including an interactive program that gives an overview of urbanization; an

interactive online quiz about cities around the world; a collection of 21 profiles of some of the world's largest cities; and excerpts from the "Global Report on Human Settlements," released in March 1996 by the United Nations Centre for Human Settlements (Habitat).

### ENVIRONMENTAL PROTECTION AGENCY (EPA):

[www.epa.gov/teachers/curriculum\\_resources.htm](http://www.epa.gov/teachers/curriculum_resources.htm)

Air Quality: Project A.I.R.E (Air Information Resources for Educators) was developed by EPA to focus the attention of elementary, junior high, and high school students on air pollution issues. The units in this package encourage students to think more critically and creatively about air pollution problems and the alternatives for resolving them. Topics include air quality, rainforests, radon, the creation of environmental laws, the greenhouse effect, and ozone.

Water: Lesson activity plans for elementary students on the Web site include groundwater as a resource (helping students recognize that there is a lot of water in the world, but not much of it can be used for drinking); evaporation and the water cycle; how ground water interacts with surface water; where drinking water comes from and where wastewater goes; and water conservation in the home.

### BROWN UNIVERSITY WORLD HUNGER PROGRAM:

[www.brown.edu/Departments/World\\_Hunger\\_Program/](http://www.brown.edu/Departments/World_Hunger_Program/)

This site seeks to help prevent and eradicate hunger by facilitating the free exchange of ideas and information regarding the causes of, and solutions to, hunger. It includes a simple introduction to issues of hunger and malnutrition. This site also has links to other sites where information of relevance to hunger can be found. The education link has a section for middle and high school level. Topics include research, field work, nongovernmental organizations (NGOs), United Nations agencies' situation updates and reference materials, advocacy and policy, and training materials for hunger education at all levels.

### THE WORLD BANK

[www.worldbank.org/html/extdr/hunger/informat.htm](http://www.worldbank.org/html/extdr/hunger/informat.htm)

has information on hunger and what they are doing to help solve the problem worldwide.

### THE LORAX

by Dr. Suess

is a good book that gives elementary school students an introduction to air pollution.

### ABOUT THE WORLD OF CHILD 6 BILLION

*The World of Child 6 Billion* is a joint project of the National Peace Corps Association and the Population Reference Bureau.

In 1999, a child will be born who will bring the world's population to 6 billion. *The World of Child 6 Billion* project provides information for classrooms and adult audiences about the world that child will inhabit. The project includes a colorful 6-page discussion guide, lesson plans and other resources for teachers, and a presentation guide for speakers in other forums. The discussion guide focuses on 6 countries and explores 6 issues—air, nutrition, housing, water, health, and education.

To learn more about this project or to order discussion guides for your class, contact:

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See the World of Child 6 Billion on the Web:

**National Peace Corps Association**  
[www.tpcv.org](http://www.tpcv.org)

**Population Reference Bureau**  
[www.prb.org](http://www.prb.org)

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