

Final Report

The World of Child 6 Billion  
Population Reference Bureau

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The overall purpose of *The World of Child 6 Billion* project was to help Americans better understand and respect issues faced in the developing world. More specifically, our goal was to produce and promote educational materials that increase awareness and appreciation among Americans of international development issues in the context of a world population of 6 billion people.

Educators were to receive resources to help them share information about developing countries in a way that has meaning for the audience. The target audience was to include Returned Peace Corps Volunteers (RPCVs) and educators who are members of PRB or otherwise affiliated with PRB or NPCA. This audience would, in turn, share the information with students and others in classrooms and other forums. Information about the project was to be disseminated through NPCA and PRB publications and Web sites and to participants in Peace Corps World Wise School program. Workshops were to be held to familiarize teachers with the project materials and to demonstrate lesson plans.

This report details how the project's goal was met by achieving the objectives set out in our proposal. The project objectives that led to the accomplishment of these goals are listed below. The diversity of uses that people have made of *The World of Child 6 Billion* materials is noted along with responses from the field to the project. The response has been overwhelmingly positive. The future sustainability of the project and a discussion of lessons learned are included.

## **ACHIEVEMENT OF PROJECT OBJECTIVES**

A) Develop *The World of Child 6 Billion* Discussion Guide and produce 150,000 copies.

By April 1999 PRB and NPCA produced the six-page foldout Discussion Guide titled *The World of Child 6 Billion*. This brochure highlights six basic needs people have wherever they live: the need for clean air, safe water, sound nutrition, health, adequate housing, and education. The Guide includes examples of projects that are helping to meet these needs in Burkina Faso, Indonesia, the Dominican Republic, Botswana, Bolivia, and Laos. Graphs are used to present data on historic world population change. The Discussion Guide includes questions and answers to stimulate debate about resources and how they are used. The piece briefly discusses the importance of U.S. investment in international development. One hundred and fifty thousand copies were printed. See Attachment 1 for the Discussion Guide.

B) Disseminate the Discussion Guide to educators through direct mailings and by mailing copies to educators whom plan to use the guides in classrooms or other presentations.

Around 31,000 copies of the Discussion Guide were distributed through an initial direct mailing. This mailing went to Peace Corps Fellows in Education; teachers participating in the Peace Corps' World Wise Schools Program; additional teachers interested in participating in Peace Corps Day who are not members of World Wise Schools; members

of NPCA's educator network, Global TeachNet; all members of the NPCA and PRB; and secondary school teachers who have indicated to PRB an interest in population issues. Approximately 15,000 of the recipients are educators and about 12,000 are other NPCA members, many of whom are Returned Peace Corps Volunteers (RPCVs) who give presentations in classrooms and at other public or private forums regarding their experience living in a developing country.

Copies of the Discussion Guide were also available to teachers at a workshop on Global Education sponsored by NPCA in August 1999. PRB made *The World of Child 6 Billion* Discussion Guide available to all members of the Preparatory Committee for the Special Session of the UN General Assembly on Progress Since ICPD and at the 1999 meeting of the Population Association of America.

The Discussion Guide was advertised in PRB's publications catalogue. PRB also prepared a News Release on the project that it distributed with the Discussion Guide to the following non-governmental organizations (NGOs): National Council for Geographic Education, National Geographic Society's Geographic Education Outreach program, Committee for the National Institute for the Environment, World Resources Institute, Partners of the Americas, The Mountain Institute, National Council for Agriculture Education, the Audubon Society, World Wildlife Fund, World Affairs Council of the USA, World Affairs Council of Washington, DC, North American Association for Environmental Education, Center on Environmental Information and Statistics, Population Action International, the Worldwatch Institute, and the PVO, the Academy for Educational Development. See Attachment 2 for the PRB catalogue announcement and News Release.

The *World of Child 6 Billion* project has been highlighted in many newsletters and on numerous Web sites including those of:

- the United Nations Population Fund (UNFPA)
- the United Nations Foundation
- the Committee for a National Institute for the Environment
- the Education Resource Information Center
- the Eisenhower National Clearinghouse.

*The World of Child 6 Billion* project also was featured in several educator newsletters including: the Winter/Spring 1999 issue of *Ideas & Information About Development Education* published by the International Development Conference; the June 1999 issue of *Perspective*, published by the National Council for Geographic Education; the May/June and July/August 1999 issues of *International Programs Bulletin* published by International Programs at Washington State University (distribution about 1,400); the September/October 1999 issue of *Energy Education Newsletter*, published by FirstEnergy; the September 1999 issue of the *NSTA Reports!* published by the National Science Teachers Association; and the newsletter of the Vermont Population Alliance.

An additional 77,504 copies of the Discussion Guide were distributed in response to direct requests for the material. Orders were limited to 100 copies of the Discussion

Guide except in the cases where the guides were to be distributed to teachers or other educators. The rationale for this decision was that we wanted to reach as many educators as possible. Another 8,885 copies of the Discussion Guide were distributed by organizations that requested 150 or more of the Discussion Guides. In all, over 117,000 copies of the Discussion Guide were distributed.

In April 1999 the **Communications Consortium Media Center (CCMC)** requested that PRB participate in a mailing they sponsored for The Day of 6 Billion by providing information and resources for K-12 educators and the education media. CCMC promoted the Day of 6 Billion on behalf of many NGOs and the United Nations Population Fund. The organization promoted materials from only three organizations and *The World of Child 6 Billion* Discussion Guide was the only resource the group included in their mailing. CCMC contracted with Douglas Gould and Company to disseminate materials and information. They distributed 1,700 copies of the Discussion Guide to at least 20 conferences of the **National Teacher Trainer Institute** thereby reaching 1,000 teachers.

Through this project *The World of Child 6 Billion* materials were highlighted in the summer and fall “back to school” issues of many educator resource outlets including: *NEA Today*, *New York Teacher*, *Social Education*, *Texas State Teachers Association Newsletter*, *Vermont-NEA Today*, *Arkansas Educator*, *Education Daily (Virginia)*, *Education Today*, *Education Update*, *Maine Educator*, *MTA Today*, *New Hampshire Educator*, and the *Pennsylvania State Educators Journal*.

In April 1999, The **Wisconsin Center for the Environment** sent 400 copies of the Discussion Guide to one teacher in each of 400 schools.

In May 1999 the **New Hampshire Geographic Alliance** mailed 700 copies of the Discussion Guide to social studies teachers and social science advisors. The Alliance plans to use the project materials in a workshop on March 11, 2000. Their Web site includes a link to the project on PRB’s Web site.

In June 1999 the **Sierra Club** distributed 275 copies of the Discussion Guide to grassroots organizers for World Population Day.

**The Episcopal Church Center** in New York, NY disseminated 250 copies of the Discussion Guide to public and private school teachers and Sunday school teachers.

Sixty-five copies of the Discussion Guide were requested by **USAID’s Global Bureau** for a mailing to all USAID missions and for use at child survival meetings.

The **Population and Habitat Coalition of the Leagues of Women Voters** disseminated 3,900 copies of the Discussion Guide in September and October, 1999. Most of the Guides were mailed to their members in a special Population Awareness mailing. The others were distributed to college students on three different campuses. According to Executive Director, Marilyn Hempel, “We have had very positive responses...”

In October, 1999 The Environment Science Program at **Rensselaer Polytechnic Institute** distributed 230 packets of materials around the Day of 6 Billion including *The World of Child 6 Billion* Discussion Guide to schools, churches, libraries, several not-for-profit organizations, and individuals.

People who ordered more than a few copies of *The World of Child 6 Billion* Discussion Guide also received the PRB publication *1999 World Population Data Sheet* free of charge. The *Data Sheet* provides demographic and health information on 200 countries and for major world regions and subregions. These data help audiences of *The World of Child 6 Billion* place information in the Discussion Guide into a larger context by making comparisons to regions or other countries. These data also allow speakers who are Returned Peace Corps Volunteers to update their knowledge about these aspects of the country in which they served.

C) Develop and disseminate curriculum materials to educators to expand the use of the Discussion Guide.

Under the direction of Anne Baker, classroom teachers and education specialists developed a four-page companion Teachers' Guide. It contains four lesson plans (based on national standards) and information on excellent resources. This guide was published in the March-April, 1999 issue of *Global TeachNet* and mailed to 1,700 educators. PRB formatted the Teachers Guide to serve as a stand-alone piece (titled: Lesson Plans) and printed 2,000 copies which were provided to educators upon request (See Attachment 3 for the Teachers Guide). The four subsequent issues of *Global TeachNet* included additional lesson plans and resources for use with *The World of Child 6 Billion* (they are included below with *Global TeachNet* articles).

To further expand classroom use of the Discussion Guide, PRB education consultant and teacher, Martha Sharma, created a lesson plan on population projections that was published in the spring 1999 issue of *UPDATE*, the educator newsletter of the National Geographic Society. Through this publication the lesson was disseminated to approximately 55,000 geography educators. See Attachment 4 for the *UPDATE* lesson plan.

All of the lesson plans were placed on PRB's Web site. Data on the number of times the lessons have been downloaded from the site are only available from September 22, 1999. Through the end of 1999, the lesson plans were downloaded 401 times.

D) Develop Presentation Kit to accompany *The World of Child 6 Billion* Discussion Guide.

The Presentation Kit was developed to provide additional detail on the issues presented in the Discussion Guide and helps to place the country-specific information in the Guide into a larger context by providing data for major world regions. The Kit includes 15 photographic slides, 14 slides showing graphs of data, "talking points", suggestions for discussion and further exploration, two PRB data sheets (*1999 World Population Data*

*Sheet* and *Population & Environment Dynamics*), and a list of additional resources. The Kit was piloted at the biannual national convention of NPCA in July 1999 and modified. See separate binder for the Presentation Kit.

Two hundred and eighty copies of the Kit were produced. In the fall, 1999 two copies of the Kit were distributed to each of the affiliate groups of NPCA. A description of the Kit and an invitation to use it for presentations was sent to a select group of 124 educators who have worked closely with PRB in the past.

- E) Produce and disseminate other auxiliary materials including articles related to *The World of Child 6 Billion* theme in the publications of PRB and the partner organization NPCA.

NPCA published 19 articles highlighting *The World of Child 6 Billion* project in their publications *3/1/61* (NPCA membership newsletter), *Group Leaders Digest*, (newsletter for NPCA affiliate group leaders) and *Global TeachNet* (newsletter of NPCA's network for teachers and others interested in Global Education). The April 1999 issue of PRB's newsletter *Population Today* included an article on the project. The publication *3/1/61* reaches an audience of 14,500; *Group Leaders Digest*, 800; *Global TeachNet*, 2,100; and *Population Today*, 4,000. Finally, the winter 2000 issue of NPCA's publication *WorldView* features an article on the plight of children in Israel. *WorldView* is devoted to developing-world news and commentary. It has a circulation of approximately 13,000 including all NPCA members, all members of Congress, CEOs of Washington, D.C.-based NGOs, and media representatives. This article compliments *The World of Child 6 Billion* project by providing a vivid description of the lives of children in several settings in the camp of Dheisheh. See Attachment 5 for copies of these articles.

The Discussion Guide; Teachers Guide and subsequent lesson plans; and Presentation Kit, with the exception of the 15 photographic slides (which are copyright protected), are featured on PRB's Web site and accessible via NPCA's Web site. This availability has greatly expanded the potential audience for these materials. The Discussion Guide was reformatted to print on the standard 8.5 by 11 inch paper used by printers (whereas the original design was printed on paper approximately 11 by 26 inches). The original Teachers Guide is formatted in pdf to retain the format of the original design. The subsequent lesson plans and teacher resources and the Discussion Guide are formatted in html allowing them to be viewed more readily. The Presentation Kit is also formatted in html although the graphs are formatted in pdf so that they can be printed full page for use as over-head transparencies. See Attachment 6 for a print version of the materials that are on the Web.

- F) Train educators and RPCVs to use *The World of Child 6 Billion* materials by conducting eight workshops and eight to ten virtual workshops.

As a result of the change in project staffing that occurred with Ms. Crew's departure from PRB it was necessary to change the workshop component of the project. Rather than conduct "virtual" training sessions via the Internet and speakerphone, NPCA and PRB

staff conducted only face-to-face training at workshops for RPCVs and educators. NPCA and PRB staff conducted a total of eight workshops, six of which were held at national conferences

### Workshops

The annual conference of the **Association for Supervision and Curriculum Development** was held in San Francisco March 6-8, 1999. The conference was titled: "Building Dynamic Relationships: Our Bridge to the Future". Anne Baker, NPCA, conducted a workshop on March 7 titled: "A Global Network for Bringing the World to the Classroom". There were 15 participants--all educators at a mix of levels--including Returned Peace Corps Volunteers. While the session covered many aspects of the *Global TeachNet* network, considerable time was spent on "*The World of Child 6 Billion*", which was just being released. The teachers provided very positive comments on the format of the Discussion Guide and the usefulness of the Teachers Guide and expressed interest in getting further copies for their classroom use.

*The World of Child 6 Billion* was highlighted in two workshops at the membership meeting of the **National Peace Corps Association** held August 13-15, 1999 at the University of St. Thomas, St. Paul, MN. The conference title was: Celebrating Peace. About 75 people participated in the workshop: *The World of Child 6 Billion* on Aug. 14. Almost all participants were Returned Peace Corps Volunteers who will be using the Presentation Kit in their classroom presentations. Diana Cornelius, PRB, and Anne Baker previewed an early draft of the kit to obtain feedback. The discussion was very spirited. We had to cut the discussion off on the very first slide we showed (water collection at a pump in Calcutta) after 20 minutes! The level of discussion indicated the high level of interest in covering the issues. It did not take much to get the RPCVs talking and tying in their experiences. This project certainly has sparked RPCV interest in talking about development, whether or not they use the actual Presentation Kit.

At the workshop titled: "The Third Goal at Home", also held on Aug. 14, Returned Peace Corps Volunteers were encouraged to contribute to the third goal of Peace Corps--Bringing the World Back Home--by promoting multi-cultural understanding, global education, and by relaying information on country-specific issues. Participants learned about the resources available through *The World of Child 6 Billion* project to aid in their efforts.

On November 6, 1999, in Cleveland, OH, the Global Issues Resources Center at the **Cuyahoga Community College** and **Cleveland Council on World Affairs** sponsored a conference titled: "Teaching in the Global Neighborhood". The conference included a presentation titled: "*The World of Child 6 Billion*" that attracted 50 participants. Anne Baker led an introduction to the project, followed by a mock classroom presentation on the water issue. The participants (mostly middle school educators in the Cleveland area) shared how they could use the materials and how they could draw the issues into their classes. (One of the more vocal teachers taught science and math.) There were a couple of Returned Peace Corps Volunteers with the local NPCA affiliate group (NORVA -- the Northern Ohio Returned Volunteer Association), who shared how they could tie their

Peace Corps experience in while discussing the topics in the classroom. Most of the teachers had never covered such topics in their classes, yet seemed eager to include them.

At a conference in Athens, OH on November 6, 1999, the **Rural Action Organization of Athens, OH** and **Ohio University's Office of International Visitors** sponsored a conference titled: Encountering the Other. Susan Linyear, NPCA, presented a workshop titled: *The World of Child 6 Billion*. Twenty-six educators participated in the workshop. They were K-16 educators and NGO staff members interested in global education with a focus on environmental issues. Ms. Linyear introduced *The World of Child 6 Billion* Presentation Kit by quizzing the group on population/development statistics and reviewing the slides for each of the 6 resource issues addressed in the kit. Participants quickly identified how the slides could stimulate inquiry-based learning activities; the relationship between the needs of Child 6 Billion and their students; and provided examples of how they have previously used the Discussion Guide in their classes. Many of the teachers were excited about the new access to the Presentation Kit through their local Returned Peace Corps Volunteers affiliate group.

At the 1999 annual meeting of the **National Council for the Social Studies**, held November 19-21 in Orlando, FL and titled "Defining the Common Good", NPCA and PRB presented *The World of Child 6 Billion* at three workshops. Thirty classroom teachers and education coordinators with various NGOs attended the Pre-Conference Clinic on November 18<sup>th</sup>, "Add a Global Dimension to your Classroom!". All were there to learn about materials now available. Anne Baker led the participants in a mock classroom presentation of one of the six issues in the *World of Child 6 Billion* Presentation Kit. All of the teachers were eager to get more copies of the Discussion and Teachers Guides and learn how to access the Presentation Kit. The other education coordinators were interested in our format, which they thought worked very well. Some were interested in seeing how they could tie their work in with ours.

The second workshop, "*Teaching about 'The World of Child 6 Billion'*", was attended by 35 K-16 educators (or students of teacher education). After a brief introduction to the topic and to the pieces of this project, the group broke into smaller groups to discuss the issues and how they would use the project in the classroom. Some teachers shared how they had already used our materials, while others talked about how they could tie this particular piece into discussions they are already having with their students. The teachers who had not already dealt with such issues in the classroom brainstormed on how they could. The results of the lively discussions were shared with all.

At the third presentation, titled: "*The World of Child 6 Billion*" held on November 21, 1999 there were 25 participants--all K-12 educators. During this session, led by Cheryl Stauffer of PRB, participants were introduced to the "*World of Child 6 Billion*" project and an overview of the issues and concerns of world population growth. Utilizing additional PRB materials, participants were divided into 6 groups to further investigate the idea that world population is about "more than just numbers." Participants received various PRB materials and lesson plans. At the conclusion of the workshop, participants

were encouraged to discuss further ideas and how they might use the materials in their classroom. See Attachment 7 for materials created specifically for this workshop.

*The World of Child 6 Billion* project also was the focus of a minimum of six other workshops held during the project period. See Attachment 8 for documentation of these events. Many other presenters featured *The World of Child 6 Billion* materials in their presentations to educators at conferences and educational institutes. At a minimum, 59 workshops were held for U.S. educators during the project period. Details on over 25 of these sessions are available from PRB upon request.

G) Motivate over 1,000 educators to use *The World of Child 6 Billion* Discussion Guides in classrooms and community group presentations.

PRB records indicate that 1,180 people or organizations requested copies of *The World of Child 6 Billion* Discussion Guide. Educators and others planned to conduct at least 3,339 presentations using *The World of Child 6 Billion* material. People who ordered the materials using the order form included in the initial mailing were asked to indicate the number of presentations that they intended to make. Many additional orders were received by electronic mail or telephone for which we did not collect this information. Also not available is the number of presentations planned by the 8,885 people and organizations that received project materials through other groups (as noted above). Nine thousand would represent 11 percent of the requests received. Therefore, the 3,339 planned presentations are a conservative estimate of the number of presentations people planned to make using *The World of Child 6 Billion* materials.

NPCA and PRB created a database containing information on each request for *The World of Child 6 Billion* materials (see Attachment 9). The tables show the state or country of the person who requested project materials, the number of presentations that were planned using the requested materials, the size of the audiences anticipated at those presentations, the product of those two numbers (total audience size), the number of copies of the Discussion Guide requested (limited to 100 unless the audience was identified as educators), and information about the intended audience. These data indicate that audience size was conservatively estimated at 76,344.

#### **DAY OF 6 BILLION DISSEMINATION**

The United Nations sponsored "Day of 6 Billion" offered an opportunity to further promote the public's awareness of the issues involved in international development and their understanding of the benefits of international assistance. For October 12, PRB created a special page "Day of 6 Billion"; on this page we had links to several PRB publications on world population. "*The World of Child 6 Billion*" was one of these publications. Our Web statistics show that October 12 was the highest day of the month in terms of visitors to the site. We also created a special publication, *World Population: More Than Just Numbers*, which we distributed to about 10,000 people (PRB members and customers, members of Congress, NGOs, and about 120 journalists.) See Attachment

10 for a print copy of the information on PRB's Day of 6 Billion Web page and *World Population: More Than Just Numbers*.

### **DIVERSITY OF USES**

*The World of Child 6 Billion* materials were designed for high school audiences but are being used in many different forums apart from private and public schools. Examples include:

- A teen health clinic
- Childcare program
- A camp for 11 and 12 year olds
- A federal prison with inmates ages 20 to 60 years of age
- Juvenile detention centers
- Churches for Sunday school classes for adults and children and a talk during a worship service
- A Diocesan convention and an orientation for a Diocese committee
- Classes from kindergarten through graduate school
- An eighth grade English course whose year-long theme is tolerance of diversity/multiculturalism
- Courses in diverse subject areas including: global science, public health, world geography, math, social studies, population, current events, economics, language arts, human relations, biology, world history, consumer science education, political science, international organizations and law, human relations, and multicultural courses.

Teachers in California, Montana, New York, Virginia, and Washington State have used *The World of Child 6 Billion* materials in their English as a second language courses. In Virginia one teacher used the Discussion Guide as the basis for the final course exam. PRB has received requests for Spanish versions of *The World of Child 6 Billion* Discussion Guide.

Although the materials were developed for a domestic audience, many people outside the U.S. have requested copies of the Discussion Guide. Orders have come from Australia, Canada, Austria, the Czech Republic, Ecuador, Sweden, Cote d'Ivoire, the Marshall Islands, Mongolia, and the Philippines, among others. PRB received a request from a private publisher who wishes to publish and distribute 100,000 copies of *The World of Child 6 Billion* to Peace Corps Volunteers currently in the field.

### **FEEDBACK FROM THE FIELD**

While *The World of Child 6 Billion* materials were designed for high school audiences, their content and design proved very popular with teachers at all levels of instruction and other presenters. The comments that follow are a small sample of those received. They are listed by setting: high school, middle school, elementary school, college, workshops, and other forums.

### **High School settings:**

- A teacher at a school for the gifted in Huntington Station, New York: *"In accordance with the New York State curriculum for global history, this will be an excellent resource to teach world problems."*
- A high school ESL teacher in New York whose students are from the Dominican Republic: *"These materials are sure to grab their interest and the graphs and charts will help prepare them for the New York State Regents exam... Thanks!"*
- *"... your pamphlet would be an ideal supplement to add the global perspective that is severely lacking in our schools. Thanks."*
- A geography teacher for ninth and twelve grades, West LaFayette, Indiana: *"Excellent resource, timely, appropriate for adolescents—opened their minds, decisions for the future."*
- A high school teacher in Moorefield, West Virginia: *"I teach seven classes a day and find this resource to be very helpful. I would like to teach this project to my classes and have them instruct our middle and elementary schools on this topic... Thank you for having such an eye appealing handout."*
- A high school teacher in Maryland: *"...after distributing the materials I have been collecting on the Child 6 Billion project to my grade level who have all bought the idea to use it as an interdisciplinary project, I received an e-mail message from an English teacher who thanked me for the information, which she had had for all of one afternoon, and said that what she had read so far was staggering and fascinating and was going to make her think more globally (a word I had not used anywhere in my discussion) from now on. Success!"*
- A high school in Mesa, Arizona: *"Our science department will use it with all Biology sections. Thanks you!"*
- A high school teacher in Los Angeles: *"This material will be used in world history classes. It will be used as introduction to 'unresolved issues' in the world today and universality of issues."*
- *"...there is no more important issue for a social studies teacher to discuss and get his/her students to be thinking about AND doing something about. Your guides will help prompt action!"*
- Geography teacher in Indiana: *"I would use this information in our early discussion of the 5 themes of Geography. This would put a human face to the challenges we all face in the early 21<sup>st</sup> Century."*
- *"The World of Child 6 Billion will be presented to high school students in our in school suspension program. The goal of the program is to stimulate students to*

*develop greater social responsibility. Thank you for the thought provoking materials!"*

- A current world studies teacher in Iowa: *"This material was used in 'current world studies' class discussing the topic of interdependence and using population data to help inform students of the importance of managing our worldwide resources to help our populations."*
- A high school global studies teacher in Selden, New York: *"...your discussion guide is 1) highly informative, 2) visually appealing, 3) current as to information and statistics, and 4) succinctly explains what the kids need to know. We will re-use the guides year after year... so they will get a lot of use. Thank you for an excellent teaching aid."*
- Global Studies teacher in Flushing, New York: *"Your discussion guide will be the perfect ending to the curriculum. It will give my students a lot to think about. Thank you."*

#### **Middle School settings:**

- A middle school teacher in Ketchikan, Alaska: *"These excellent resource materials will be utilized in our social studies classes. Thank you for your effort in producing these. No doubt sharing these with our students who live on this remote island will help them appreciate that they are citizens of a global community."*
- A middle school teacher in Concord, North Carolina: *"... a plan of action for our community will follow the brochure reading."*
- A teacher of inner city seventh and eighth graders in Ohio: *"... I know my classes will have a better understanding of their world after the lesson."*
- A seventh grade teacher in Pennsylvania: *"... it will be a wonderful addition to our program. Thank you!"*
- A world geography teacher in Alaska: *"This is perfect for me... I'd like to give one to every child [I teach]... I'd like to make this a big classroom event."*
- A seventh grade teacher in South Amboy, New Jersey: *"[The] 7<sup>th</sup> grade classes are working on a problem solving skills in real world current events from politics and foreign affairs to economics and feeding the poor. These materials would be of great value to my class!"*
- A sixth grade world geography teacher: *"Our Social Studies department is planning a Survey 2000 thematic unit for the 1999-2000 academic year for the entire school. These materials will be an excellent extension to the activities planned. Thank you!"*

- A seventh and eighth grade teacher in Perris, California: *“I would use this lesson [in science]... It could also be used in Health when we discuss Nutrition, also. I love it for helping teach multi-cultural understanding, by using it to look at different areas of the world. I will be excited to incorporate ideas from the Teachers Guide.”*

**Elementary School settings:**

- An Enrichment Specialist who works with fifth graders for a New York public school district: *“The fifth grade social studies curriculum is generally about the United States. The [World of Child 6 Billion] pamphlet will provide an opportunity for students to see the U.S. in a more global sense.”*
- Teacher of upper elementary class in Lansing, Michigan: *“Accurate, factual, relevant information is always appreciated! Thank You!!”*
- Fifth grade teacher in Baltimore: *“I intend to develop a performance based activity centered around the six topics featured in the discussion guide. All of the sixth grade classes will participate. Hopefully the lessons will help prepare my students for the MSPAP test required of all Maryland students, but more importantly make them aware and informed about world citizens.”*
- A second grade teacher: *“... As a school, we integrate global concepts in our curriculum as much as possible... We are comparing/contrasting values, cultures, communities on a 'global' level and this information would greatly improve/aid in our goal and [pursuit] of our commitment.”*
- A social science teacher for gifted children in Chicago: *“I presented this material to fourth and fifth grade classes... In addition to Geography, Culture, and History, my main focus with my students is Global Understanding and Appreciation. Your material is terrific.”*
- English teacher in Ohio: *“I plan to use this as a supplemental reading assignment in my English class. It is informative and utilizes graphs. It also aids with geography. I will also use it to provide topics for research or writing assignments. The questions will be quite useful for brainstorming activities.”*
- Teacher of third and fourth graders: *“This material will be used for social studies and religion classes. I intend to use your information to familiarize our children with world geography, customs, and religious practices of the people of the world, and instill in our students a sense of ‘world community’. I hope to enlighten our students with the responsibilities of the world citizenry.”*
- Teacher of fourth and fifth grade social studies in a regional gifted center in Chicago: *“We focus on world cultures, and this fits in beautifully. Thanks.”*
- Elementary school teacher in Tampa, Florida: *“Super Idea!”*

- Fourth and fifth grade teacher in Tuscaloosa, Alabama: *"Thanks! This is Wonderful!"*
- Fifth and sixth grade teacher in Oreland, Pennsylvania: *"I will keep the copies to use next year and in the future. I think it will enhance understanding of pressing global problems. Thank you for sharing it with us and for offering us free teaching materials that can be used immediately used in the classroom."*
- An Enrichment teacher in Neshanic Station, New Jersey: *"This sounds like a wonderful new topic to make the students aware of world population. I can't wait to teach this topic..."*
- A fifth grade teacher in Olympia, Washington: *"... it will go well with comparisons between the beginning of our country and how it's going to be in the [21<sup>st</sup>] century—and what we as human beings need for our existence..."*

#### **College settings:**

- The Director of the Environmental Science Program at Rensselaer Polytechnic Institute wrote that he was stimulated by *The World of Child 6 Billion* Discussion Guide to undertake a major population education program in the fall of 1999. In addition to distributing packets of information, as noted above, an educational fair "Year 6 Billion" was organized by several dozen people. The fair, held on October 30<sup>th</sup>, included a diversity of exhibits, posters, and other materials, and seven classrooms with workshops and videos for six hours.
- Professor at a state university in Arizona: *"I plan to use these materials in teacher training - in an ESL methodology course and an ESL curriculum development course. Graduate students in both classes will develop instructional units, using the materials you send me as a springboard for language and content learning. Hopefully my students will then use their extended instructional units with their own students... I'm hoping that the multiplier effect will 'spread the message' from my students - while they are studying with me and in future teaching assignments - and the ESL students they instruct..."*
- A geography professor in Pennsylvania: *"I plan to use the discussion guide as an introduction to children's health issues in the medical geography course I teach to nurses. Thank you for the opportunity to use this resource."*
- A teacher and colleagues teaching freshman humanities course in Irmo, South Carolina: *"We are amazed by this teaching tool..."*
- *"This will be used with..., a college class required for entrance into nursing and dental hygiene programs in Arizona. Many of the students are Hispanic immigrants and Native American tribal members who have themselves experienced great poverty. I ask them to plan how they can improve public health conditions."*

- The instructor of a reading course for pre-service teachers that teaches about reading methods for students in the third grade and above: *"I used the material as a basis for a demonstration lesson on teaching informational texts... Thank you again for the excellent materials."*
- A professor in Kentucky: *"[I will] train teachers in using this information to improve their teaching and to teach the data itself. The aim is to improve awareness of what today's children must prepare for."*
- A geography professor in Rock Island, Illinois: *"Thank you for making this excellent guide available."*
- A teacher of the Audubon Expedition Institute who teaches in Maine: *"This discussion guide will prove to be a useful resource for students who are interested in population issues where they impact both society and the natural world."*
- The chair of an education department: *"...we'll use [the Discussion Guide] in the Human Relations seminar required of all graduating seniors."*

#### **Institutes and Workshops:**

- A teacher consultant for the New York Geographic Alliance: *"... The World of Child 6 Billion pamphlet was the culminating piece that brought all of the other parts of the workshop together. It offers a global perspective to students and teachers alike and raises issues that all people need to address as we enter the new millennium."*
- Presenter at Pennsylvania Train the Trainers Institute: *"I was at the Tennessee Alliance Institute and saw The World of Child 6 Billion there. I want to use it at our Institute. This year's topic is 'The Natural World and Population'"*.
- Presenter at Mississippi Geography Institute and Mississippi Geographic Alliance Pre-service Conference: *Thank you for the wonderful teaching materials published by [PRB]. I was able to use it not only in my own Advanced Geography classes, but also in several institutes and workshops."*
- Chair, International Division of the American Association of Family and Consumer Sciences who presented at the annual meeting: *"Thank you so much for ... providing me with a set of the discussion guides for the 'World of Child 6 Billion'. It was warmly received by members in attendance at our educational session ..."*
- Outreach Coordinator, Center for International Studies, University of Wisconsin-Milwaukee: *"I believe that copies of 'The World of Child 6 Billion' guides would be an extremely useful resource for the participants of this summer's Institute."*
- Legacy Incorporated, a not-for-profit environment education program: *"We'll demonstrate at least one of the lessons at our five summer workshops."*

- A presenter at a National Geographic Society Summer Institute in Texas who wrote to request materials for another workshop: *“The teachers really appreciated the [World of Child 6 Billion] materials that I presented at the San Marcos Institute.”*
- Presenter at an in-service training for Global Studies teachers and at a pre-service workshop: *“This should create a lot of interest since teachers [want] practical and up-to-date materials...”*

#### **Other Forums:**

- A member of the USAID Cairo Mission: *“I will distribute to our population group who hosts numerous workshops and conferences in Egypt. In Addition, I interface with PVOs, NGOs, and others that may use the tine awareness tool you’ve produced.”*
- Heifer Project International: *“We have many volunteers around the United States who speak in churches and lead study groups [and] Heifer Project International Learning Centers host at least 30,000 visitors... We will plan to use this discussion guide to educate our staff in a one day seminar of about 50 people. We plan to share this discussion guide with our staff world wide in 27 countries.”*
- President of a Washington-based NGO that seeks to reduce population through the advancement of human rights: *“We are working with the UNFPA on many many NGO and related speaking opportunities. This guide seems to be an excellent resource.”*
- Heart to Heart International, a humanitarian aid organization: *“Your discussion guide is an excellent resource aid to inform our audiences about the people we serve in developing countries around the world...”*
- A program officer at a Washington, D.C.-based operating foundation that promotes peace: *“... how do we order quantities of the wonderful and fantastic World of Child 6 Billion?”*
- Sunday school teacher for pre-school and kindergarten aged children in Farmingham, Maine: *“[I] used this on a ‘tree’ unit—all of the categories covered in the discussion guide (air, water, health, etc...) relate to our need for trees. This was very well received. Thanks!”*
- A geography professor: *“...If I have any copies left, I would share them with my co-workers on the World Hunger Committee of the Northern Illinois Synod of the Evangelical Lutheran Church of America which regularly considers the relationship between food and population.”*
- High school teacher: *“I plan to use this guide with the Office of Catholic Schools and principals in the Diocese of Salt Lake City, Ut.”*

- A Returned Peace Corps Volunteer who, along with five other RPCVs, presented material from *The World of Child 6 Billion* to an affiliate group of the NPCA: “I’m telling you, it turned out to be a very lively and interesting discussion ... It was indeed, a very worthwhile endeavor and thanks to your office, it made our quarterly ethnic dinner not only a gourmet and social delight but a very stimulating and educational evening. What’s the next topic?”

## **PROJECT SUSTAINABILITY**

Based on the comments of many people, who received the project materials, they will continue to be used for some time; many teachers in particular indicated that they would reuse the Discussion Guides with future classes. World population is projected to reach 7 billion in about 14 years, according to the latest United Nations medium scenario projections. *The World of Child 6 Billion* will continue to be relevant for several years. Moreover, materials produced by PRB titled *Child 5 Billion* remained popular for a number of years.

PRB is receiving orders for *The World of Child 6 Billion* materials daily and will continue to fill such orders until supplies are exhausted. NPCA will continue to make copies available to teachers and other public speakers at workshops and conferences. Having the materials on the Web means that the information will still be available even after all paper copies are distributed.

In the January/ February 2000 issue of *Global TeachNet*, members of NPCA’s teacher network were encouraged to borrow *The World of Child 6 Billion* Presentation Kit from NPCA affiliate groups.

## **LESSONS LEARNED**

- The importance of utilizing an interdisciplinary team in product development was evident. Specialists in education, communication, population, and development worked together to craft the content of the Discussion Guide. Judging from user response, this combination worked.
- Early audience involvement proved helpful in the project. Prior to product development, project staff met with people we hoped would use those products to discuss what formats would be of most use to them. This early meeting also helped generate growing interest in the project. This interest was maintained with regular updates on the project through NPCA’s newsletters and listserve to Global TeachNet members available on the Web.
- Having an educator intimately involved in every step of product development was essential to the project’s success with teachers. The Director of NPCA’s Global TeachNet, Anne Baker, provided this guidance. The importance of involving teachers in lesson development was crucial to create lessons that teachers could use with a

minimum of preparation time. The lesson plans for this project were created by classroom teachers or curriculum specialists who understand the time constraints faced by teachers. In addition to Ms. Baker's involvement in the writing and editing of the Discussion Guide, PRB's education consultant reviewed it.

- Tying lesson plans to national standards that students are tested on provided additional incentive for teachers to use these materials in their classes.
- The seven-subject focus of the project (population, air quality, water safety and accessibility, nutrition, health, housing, and education) meant that the materials were appropriate for many subject areas greatly expanding the prospective audience. In addition, the multi-topic focus provided educators with a resource to make connections across subject areas. Many teachers wrote of the value of this opportunity.
- The value of field-testing was borne out with the development of the Presentation Kit. Substantial revisions were made following the Kit's debut at the NPCA convention in July. Participants at the workshop were very happy to tell us their concerns about the original format and content. The participants did not present a unified front as to the changes they desired but they did provide us with a lot of very constructive ideas that greatly improved the final product.
- PRB's reputation for producing high quality educational resources containing objective data and interpretation was mentioned by many people who ordered materials. This reliability and objectivity is highly valued by educators.
- The importance of the visual appeal of the products we produced was stressed by many that wrote us and commented favorably on this aspect of the materials.
- The timeliness of the topic was very important. Linking the project to an event, world population reaching six billion, which garnered an enormous amount of media attention provided *The World of Child 6 Billion* with a great deal of free promotion. Organizations were eager to help spread the word about the project. Major news magazines and television programs, as well as special television programming such as the Public Broadcast Service documentary, *Six Billion and Beyond*, generated additional interest in the topic.

## Budget Spreadsheet

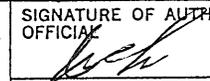
# FINANCIAL STATUS REPORT

(Follow instructions on the back)

1. FEDERAL AGENCY AND ORGANIZATIONAL ELEMENT TO WHICH REPORT IS SUBMITTED <b>USAID</b>	2. FEDERAL GRANT OR OTHER IDENTIFYING NUMBER <b>HRN-A-00-98-00001</b>	OMB Approved No: 80-RO180	PAGE OF <b>1</b> OF <b>1</b> PAGES
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3. RECIPIENT ORGANIZATION (Name and complete address, including ZIP code) <b>POPULATION REFERENCE BUREAU 1875 Connecticut Ave., NW # 520 Washington, DC 20009</b>	4. EMPLOYER IDENTIFICATION NUMBER <b>53-0214030</b>	5. RECIPIENT ACCOUNT NUMBER OR IDENTIFYING NUMBER	6. FINAL REPORT <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	7. BASIS <input type="checkbox"/> CASH <input checked="" type="checkbox"/> ACCRUAL
8. PROJECT/GRANT PERIOD (See instructions)		9. PERIOD COVERED BY THIS REPORT		
FROM (Month, day, year) <b>9/1/99</b>		TO (Month, day, year) <b>12/31/99</b>		FROM (Month, day, year) <b>9/1/99</b>
				TO (Month, day, year) <b>12/31/99</b>

PROGRAMS/FUNCTIONS/ACTIVITIES ▶	STATUS OF FUNDS						TOTAL (g)
	(a)	(b)	(c)	(d)	(e)	(f)	
a. Net outlays previously reported	<b>Child Six Billion</b> \$ 91,283	\$	\$	\$	\$	\$	\$ 91,283
b. Total outlays this report period	195,233						195,233
c. Less: Program Income credits							
d. Net outlays this report period (Line b minus line c)	195,233						195,233
e. Net outlays to date (Line a plus line d)	286,516						286,516
f. Less: Non-Federal share of outlays	182,482						182,482
g. Total Federal share of outlays (Line e minus line f)	104,034						104,034
h. Total unliquidated obligations							
i. Less: Non-Federal share of unliquidated obligations shown on line h							
j. Federal share of unliquidated obligations							
k. Total Federal share of outlays and unliquidated obligations							
l. Total cumulative amount of Federal funds authorized	104,034						104,034
m. Unobligated balance of Federal funds	-0-						

11. INDIRECT EXPENSE	a. TYPE OF RATE (Place "X" in appropriate box) <input checked="" type="checkbox"/> PROVISIONAL <input type="checkbox"/> PREDETERMINED <input type="checkbox"/> FINAL <input type="checkbox"/> FIXED				13. CERTIFICATION I certify to the best of my knowledge and belief that this report is correct and complete and that all outlays and unliquidated obligations are for the purposes set forth in the award documents.	SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL 	DATE REPORT SUBMITTED <b>1/31/00</b>
	b. RATE <b>.95</b>	c. BASE <b>Dir Sals</b>	d. TOTAL AMOUNT <b>755</b>	e. FEDERAL SHARE <b>755</b>			
12. REMARKS: Attach any explanations deemed necessary or information required by Federal sponsoring agency in compliance with governing legislation.							

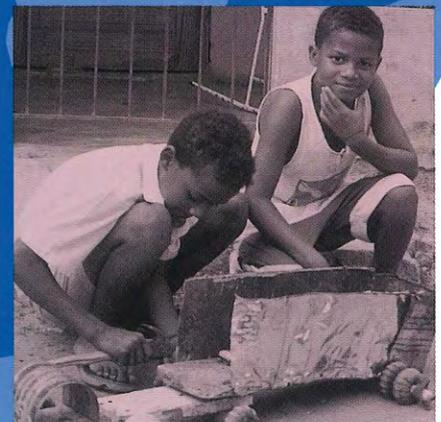
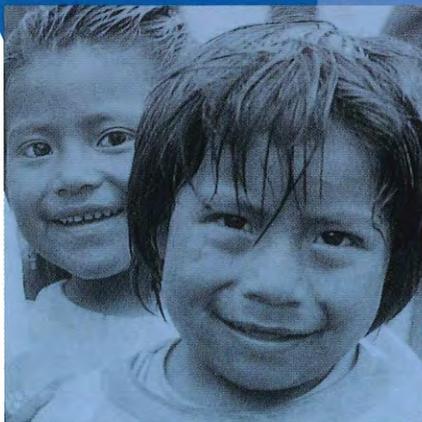
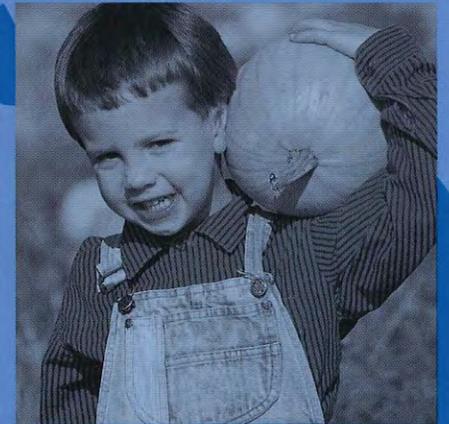
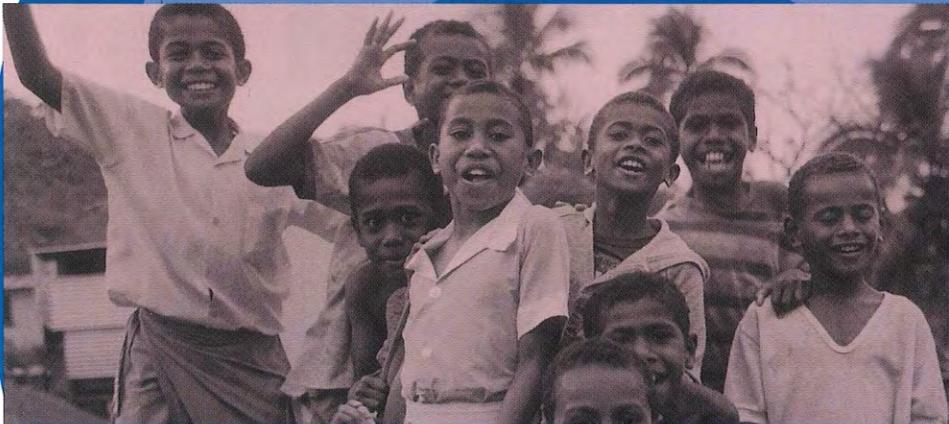
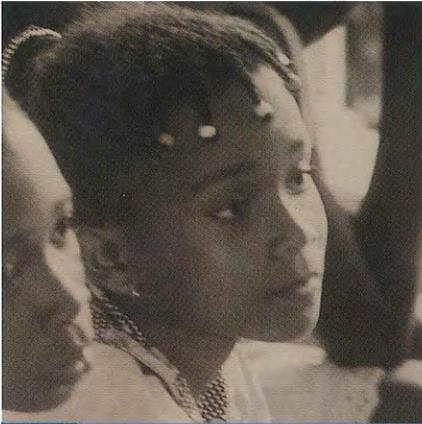
## List of Attachments

1. *The World of Child 6 Billion* Discussion Guide
2. PRB catalogue (project advertisement on p. 13) and News Release for *The World of Child 6 Billion*
3. *The World of Child 6 Billion* Teachers Guide
4. *UPDATE* lesson plan
5. Project articles in NPCA and PRB publications: *3/1/61*, *Group Leaders Digest*, *Global TeachNet*, *Population Today*, and *WorldView*.
6. Web versions of project material
7. Materials developed for the workshop titled “*The World of Child 6 Billion*” held at the National Council for the Social Sciences conference
8. Documentation of workshops using *The World of Child 6 Billion*
9. Database documentation of presentations planned utilizing project materials
  - Table 1 Classroom Uses
  - Table 2 Workshops for Teachers
  - Table 3 Other Audiences
  - Table 4 Audience Not Identified
10. PRB’s Day of Six Billion Web page and *World Population: More Than Just Numbers*

*The World of Child 6 Billion* Presentation Kit is provided in a separate binder.

World population will reach **6 billion** people in 1999.  
The six-billionth child could be born in **your neighborhood** or halfway around the world.  
What concerns will Child 6 Billion's generation face?

# THE WORLD OF CHILD 6 BILLION

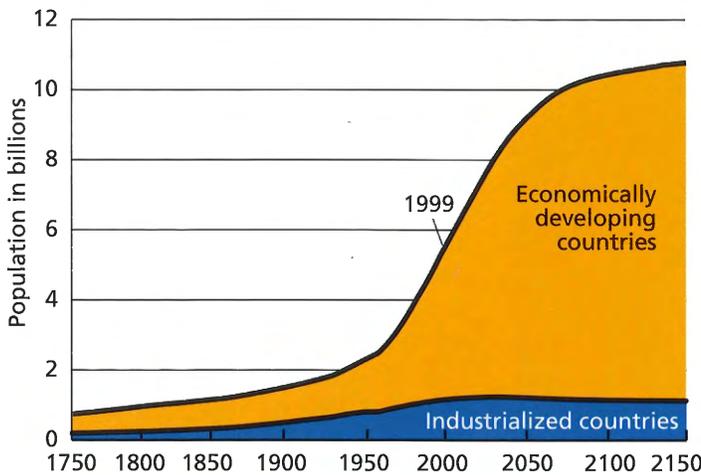


# Child 6 Billion

may be born in the U.S. or another economically advanced country. But because 98 percent of world growth is now occurring in countries that are economically developing, chances are Child 6 Billion will be born in one of these countries.

The United States spends less than one-half of 1 percent of its federal budget on foreign aid. Still, our investment in international development yields important benefits. When people's needs are met there are fewer conflicts. Putting money toward development makes the world, including the U.S., more safe and secure. Investing in other countries is also good economics for the U.S.; expanding markets abroad creates export markets for the U.S. Also, helping people simply reflects basic human values. A healthy community—in this case, the world community—fosters well-being and prosperity for all.

## World Population Growth, 1750-2150

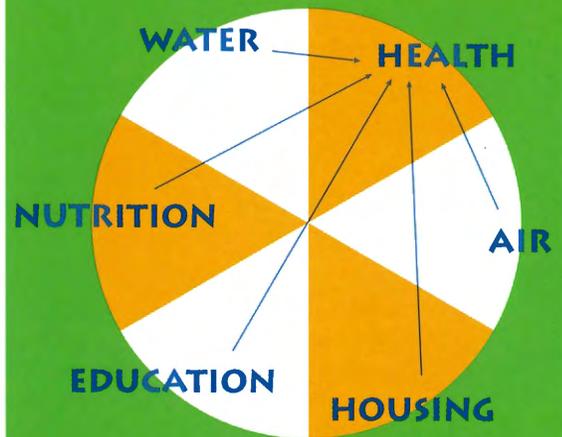


Source: 1750 to 1949, PRB; 1950 to 2150, United Nations, *World Population Projections to 2150* (February 1998).

Child 6 Billion is 49 times more likely to be born in an economically developing country than an economically developed one. The term "economically developing countries" refers to the countries that the United Nations considers to be located in "less developed regions." These regions include all regions of Africa, Asia (except Japan), Latin America and the Caribbean, and Oceania (except Australia and New Zealand). Industrialized, or more economically developed, countries include Australia, New Zealand, Japan, Canada, the U.S., and all the countries of Europe, including the former Soviet republics.

## Everyone needs the basics

—food, water, and shelter. But having other needs met, like clean air, solid education, and good health, allows people to flourish, not merely survive. Although these six issues are presented separately, they are interdependent. For example, Child 6 Billion's health will depend on having safe water, clean air, adequate housing, sufficient food, and a basic education. What additional connections can you make?



## Number of years to add each additional billion to world population

1st billion  
(all of human history)

1800



The **six topics** discussed here reflect issues Child 6 Billion will face wherever he or she is born.

# AIR

**Do you think** about air quality when you turn on a light switch? Energy production is one of the largest sources of air pollutants in the world. When fossil fuels—the world's major source of energy—are burned, they add gases to the atmosphere. These gases threaten people's health, create acid rain, and may contribute to global warming. Air pollution may damage Child 6 Billion's lungs and heart.

Increasing the absorption of carbon through soils, vegetation, wetlands, and oceans can decrease the amount of pollution, like carbon dioxide (CO<sub>2</sub>), in the atmosphere. When forests are saved or regenerated, the carbon they absorb through photosynthesis can offset the carbon released from burning fossil fuels. Organizations, industries, and governments have joined forces to protect forests as a new approach to combating air pollution.



**Q:** What steps can we take to clean up the air?

The Nature Conservancy, Friends of Nature Foundation of Bolivia, the Bolivian government, and three U.S.-based energy companies are working together to protect tropical forest and other ecosystems in Bolivia. The project purchased logging rights to over 3,000 square miles of government-owned land and expanded the Noel Kempff Mercado National Park into these areas. Park guards were hired and trained to reduce logging and poaching.

To help ensure future conservation, the project is seeking to establish new means of economic development such as beekeeping and small nurseries.

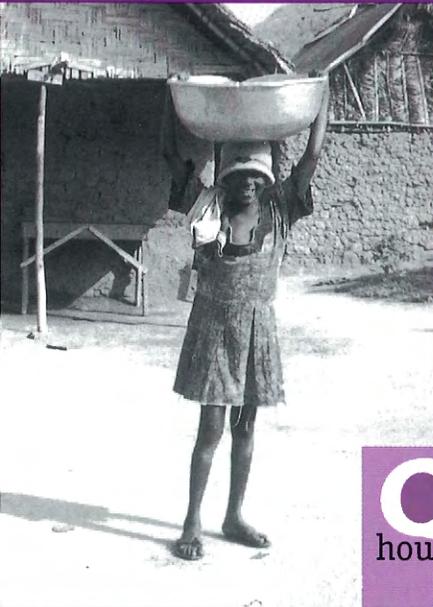
**Air pollution does not recognize international boundaries—it is truly both a local and a global problem.**

# NUTR

**As the number** grows each year, the challenge nutritional needs grows too. more than 800 million people enough to eat. Between 199 world's children under the age Will Child 6 Billion go hungry

In many places crops do are exported instead. Both for subsistence and those who grow their land so frequently that nutrients. This overuse hurts the long run. Some farmers use and pesticides to yield bigger some of these chemicals can damage people's health and harm the environment.

Cornell University's Integrated Pest Management (IPM) work keep their land healthy. IPM prefers natives to chemicals for controlling diseases. For example, some IP predator bugs. In Indonesia, C farmers manage insects. Farmers can have healthy crops and harvest



# WATER

**Viewed from space,** Earth's vast water supply appears limitless. But the amount of freshwater on the planet is finite, and many of the world's people live without adequate water. Less than 3 percent of the world's water is freshwater fit for human consumption, irrigation, and most industrial uses. Nearly 70 percent of this freshwater is locked in glaciers and permanent snow cover. People in 31 countries, making up about

**Q:** How could we reduce our household demand for freshwater?

8 percent of the world's population, face chronic shortages of freshwater that threaten their health and standard of living. Child 6 Billion

has a one in 13 chance of being one of them. Some Persian Gulf countries desalinate salt water, but for most countries this process is too costly. Because agriculture is the largest user of water, increasing the efficiency of irrigation holds the most potential for water conservation.

**Changing the amount of water we demand is a surer path to water security than striving to meet higher demand.**

In Burkina Faso, Oxfam, an international development agency, built small water catchments—sloped areas that collect rainwater. The water supported the growth of trees for fuelwood in a very deforested area. Local farmers soon adapted the technique to grow trees that produced food and fodder. The project evolved as farmers began using the water for traditional runoff farming of grain crops. They placed long lines of stones along the contours of sloping ground to slow runoff and spread water evenly over large areas. The water seeps slowly through the stone banks, making farmers' water use more efficient. The technique quickly spread through northern Burkina Faso, into neighboring Mali, and has been introduced in Mauritania. This practice reduces the amount of water needed by using water more efficiently.

# ITION

of people in the world  
e of meeting the world's  
farmers try to keep up. Yet  
worldwide do not get  
and 1997, one-third of the  
e of 5 were underweight.

t feed local families; they  
farmers who grow crops for  
ow for profit often plant  
the soil cannot replenish its  
the soil and crop yields in  
so use chemical fertilizers  
crops with fewer losses. But

**One child younger than 5 years old dies from hunger and related causes every 2.7 seconds.**

group works with farmers to  
grams help farmers find alter-  
ing insects, weeds, and crop  
farmers control weeds with  
nell's program helps cabbage  
who limit their chemical use  
y land.



**Q:** Why might crops not be used to feed local families?

# HOUSING

**Promises of job** opportunities and a better life draw people to cities. Yet the dream of a better life isn't realized for many people, and they must make their homes on city streets or in makeshift settlements. It's hard to estimate the number of homeless people, but if you walk the streets of almost any city in the world, the reality of homelessness is clear.

Habitat for Humanity is one organization helping people get quality, affordable housing. While Habitat for

# HEALTH

**By the time** you finish reading this paragraph one child younger than 5 years old will have died from one of five preventable diseases (pneumonia, diarrhea, measles, malaria, and malnutrition). One of these diseases, malaria, is easily spread by a common pest—the *Anopheles* mosquito. Malaria has been a serious health problem throughout history. According to the World Health Organization (WHO), its threat is still serious today and continues to spread. Malaria affects millions of people every year, causing untold suffering and death in almost every region of the world. Malaria kills more than twice as many people each year as does AIDS. Several outbreaks of the disease have even occurred in the United States since the mid-1980s. Malaria is the second-largest cause of illness in the world.

Fighting malaria is a global challenge: 1) Mosquitoes build resistance to insecticides. 2) The most severe form of the disease has developed resistance to cheap drugs. 3) Malaria is a complex disease, which makes developing a vaccine difficult. While treatment is difficult, simple prevention techniques can help: 1) Reduce standing water to decrease mosquitoes' breeding ground. 2) Offer zinc and vitamin A supplements to prevent or lessen the severity of the disease. 3) Surround beds with nets to prevent mosquitoes from reaching people.

At a workshop sponsored by the United Nations Children's Fund (UNICEF) in Laos, women learned how people get malaria and how to use bed nets to reduce mosquito bites. UNICEF donated a supply of bed nets for the women to distribute in their village. Efforts such as this combined to reduce malaria cases in remote districts of the country by 25 percent in just four years.

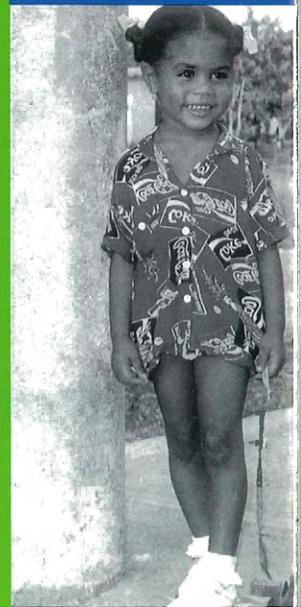
Through their "Roll Back Malaria" campaign, UNICEF and WHO hope to cut the incidence of malaria in half between late 1998 and 2010.

**Infectious and parasitic diseases cause one-quarter of all deaths in the world.**

**Q:** Worldwide, what percent of children have access to health services?



**Basic education for sustained economic development and ending poverty, preserving environment, and equality.**



Humanity is based in the U.S., people overseas do much of its work. So far Habitat for Humanity has helped build homes for over 300,000 people in 59 countries. In Botswana, the homes are simple, with compressed soil walls and roofs of concrete tile or corrugated iron. They're a welcome shelter for many people living with less protection from the elements.

Homelessness and poor-quality housing exist in the U.S., too. Researchers estimate that 13.5 million people in the U.S. have been homeless at some point in their lives. This number represents 5 percent of the country's current population. Habitat for Humanity has built houses in all 50 states to help remedy homelessness.



**Q:** What are the chances that Child 6 Billion will be born in an urban area?

Housing is most sorely needed and most difficult to find in areas that have urbanized quickly.

# EDUCATION

**Because you are** reading this right now, you are most likely literate. You can read a newspaper, figure your change at a store, and follow simple written directions. In industrialized countries, including the U.S., 98 percent of men and 96 percent of women are literate. In less economically developed countries, these figures are only 79 percent and 62 percent, respectively. These figures are even lower—60 percent and 38 percent—in the world's least economically developed countries.\*

The Dominican Republic's literacy rate of 82 percent for men and women is considered relatively high. Yet the country is faced with major educational problems: scarce classroom materials, poorly trained and paid teachers, and overcrowded classrooms. For every 100 children entering primary school, only 58 finish fifth grade and only 22 complete high school in 13 years or less. People age 25 and older average only five years of schooling.

In response, the Ministry of Education, individual school districts, and Peace Corps Volunteers are working together on community education projects. Volunteers work to improve the quality and accessibility of education by holding teacher training programs and establishing resource centers for educational materials. Other Volunteers teach skills that are necessary to plan, implement, and evaluate community education projects. Peace Corps Volunteers also help construct and shore up school buildings.

**Q:** The literacy figures quoted here show differences between men and women. Why do many organizations focus on expanding girls' education?

# ANSWERS

**AIR** 1) Use energy more efficiently. 2) Use public transportation, ride a bike, or walk instead of relying on private automobiles for all transportation. 3) Use cleaner fuels such as natural gas instead of coal and oil. 4) Improve the health of vegetation, soils, oceans, and wetlands, which offset carbon release. 5) Switch to renewable energy sources such as wind and solar power that don't pollute. 6) Market cleaner technologies at affordable costs.

**NUTRITION** Many farmers choose to sell their crops to multinational corporations who pay better prices than local families. When farmers grow for export, crops often lack the variety needed to meet people's nutritional needs. Also, some export crops, like tobacco and coffee, can't be eaten.

**HOUSING** Forty-five percent of the world is urbanized, giving Child 6 Billion almost an even chance of living in an urban area. If Child 6 Billion is born in an economically developed country, the chances will be greater; such countries are 77 percent urban while less economically developed countries average 37 percent urban.

**WATER** 1) Take short showers instead of baths. 2) Turn water off while brushing teeth and washing hands. 3) Convert to low-water toilets. 4) Water lawns during lower-evaporation hours—nighttime, early morning, and evening. 5) Choose less thirsty native plants for landscaping.

**HEALTH** Eighty percent. In the world's least economically developed countries\* less than half the population has access to health services.

**EDUCATION** Closing the gender gap in education and making school more accessible to everyone can increase child survival and enhance economic development. Research shows that, on average, for every additional year of schooling a girl receives, her chance of having a baby die is reduced by 10 percent and her expected income rises by 10 percent to 20 percent.

## PHOTO CREDITS

All photos except USA provided by Returned Peace Corps Volunteers

This page:

**Air** (Bolivia) Ron Edwards; **Water** (Liberia) Tom Burwell; **Nutrition** (Indonesia) Joseph Connors; **Health** (Laos) Shanta Swezy; **Housing** (Botswana) Charlie Hamilton; **Education** (Dominican Republic) Mary Akers

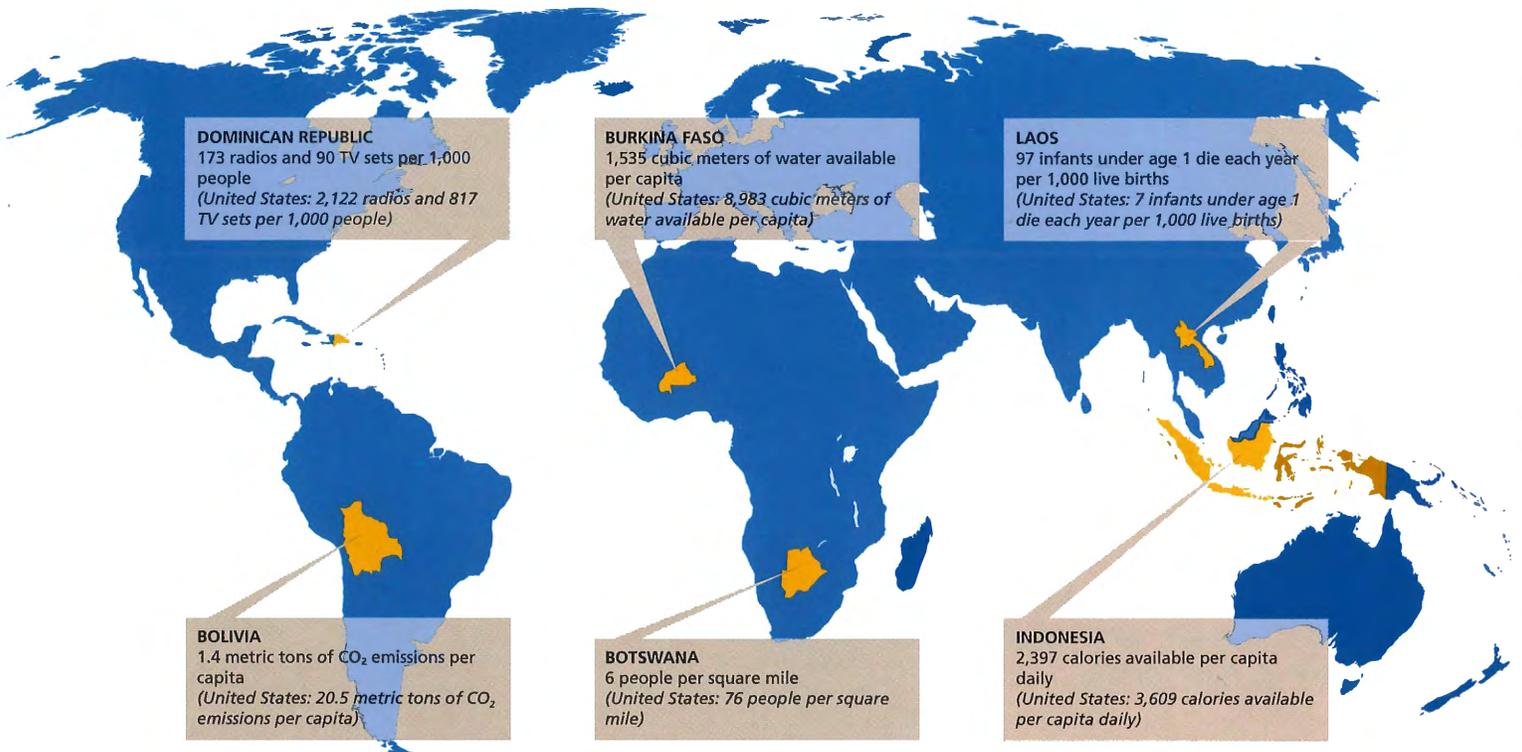
Cover photos:

(Clockwise from upper left) courtesy Peace Corps/WID; Joseph Connors (Indonesia); Joseph Connors (Morocco); Definitive Stock (USA); Mary Akers (Dominican Republic); Joseph Connors (India); Carol Surrency Sutton (Ecuador); Anne Baker (Fiji)

\* The United Nations includes 48 countries in its "least developed" category. These countries are a subset of the economically developing countries defined on the following page.

Statistically Child 6 Billion is more likely to be a boy than a girl because more boys are born than girls; worldwide about 106 boys are born for every 100 girls.

# The World of Child 6 Billion



## Sources:

Cornell University. Access online at <http://ciifad-iap.cornell.edu/html/i-ipm.htm>.

Robert Engleman and Pamela LeRoy, *Sustaining Water* (Washington, DC: Population Action International, 1993).

Habitat for Humanity. Access online at <http://www.habitat.org/int/profiles/Bostwana.html>.

Carl Haub and Diana Cornelius, *1998 World Population Data Sheet* (Washington DC: Population Reference Bureau, 1998).

Don Hinrichsen, Bryant Robey, and Ushma Upadhyay, "Solutions for a Water Short World," *Population Reports Series M*, No. 14 (Baltimore: Johns Hopkins Press, 1998).

Bruce Link, "Life-time and five-year prevalence of homelessness in the United States," *American Journal of Public Health*, Vol. 84, No. 12, December, 1994.

Malaria Foundation International. Access online at <http://www.malaria.org>.

Natural Resource Defense Council. Access online at <http://www.nrdc.org/article/rcequal.html>.

The Nature Conservancy, Noel Kempff Climate Action Project, brochure (Arlington, Va.: The Nature Conservancy, 1999).

S. Jay Olshansky, Bruce Carnes, Richard G. Rogers, and Len Smith, "Infectious Diseases—New and Ancient Threats to World Health," *Population Bulletin* 52, no. 2 (Washington, DC: Population Reference Bureau, 1997).

United Nations Centre for Human Settlements (HABITAT), *An Urbanizing World* (New York: United Nations, 1996).

United Nations Children's Fund (UNICEF), *The Progress of Nations 1998* (New York: United Nations, 1998).

UNICEF, *The State of the World's Children 1997* (New York: United Nations, 1997).

UNICEF, *The State of the World's Children 1998* (New York: United Nations, 1998).

United Nations Food and Agriculture Organization (FAO), *The Sixth World Food Survey* (New York: United Nations, 1996).

United States Agency for International Development (USAID). Access online at <http://www.info.usaid.gov>; [http://www.info.usaid.gov/economic\\_growth/abel2/](http://www.info.usaid.gov/economic_growth/abel2/).

World Health Organization. Access online at <http://www.who.int/aboutwho/en/preventing/malaria.htm>; [http://www.who.int/chd/pub/imci/pr\\_66.htm](http://www.who.int/chd/pub/imci/pr_66.htm).

World Resources Institute, *World Resources 1998-99* (Washington, DC: World Resources Institute, 1998).

This project is funded by the U.S. Agency for International Development under the Development Education Program. PRB and the National Peace Corps Association (NPCA) acknowledge the contribution of teacher reviewers who are members of NPCA's Global TeachNet.

See the World of Child 6 Billion on the Web:

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

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

Population Reference Bureau, 1875 Connecticut Ave., NW, Suite 520, Washington, DC 20009; phone: (202) 483-1100; fax: (202) 328-3937; e-mail: [popref@prb.org](mailto:popref@prb.org).

National Peace Corps Association, 1900 L St., NW, Suite 205, Washington, DC 20036; phone: (202) 293-7728; fax: (202) 293-7554; e-mail: [gloaled@rpcv.org](mailto:gloaled@rpcv.org).

2nd billion  
(130 years)

1930

3rd billion  
(30 years)

1960

4th billion  
(15 years)

1975

5th billion  
(12 years)

1987

6th billion  
(12 years)

1999

# 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 adoption 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. These data provide 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 at left with statistics on population, infant mortality rate (IMR), and life expectancy from selected countries. Ask students to study the chart and definitions.

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/)

From main page, click on "Curriculum Corner."

**Health:** Provides facts about global health and 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:** Cities curriculum provides material on housing, including an interactive

program that gives an overview of urbanization; an interactive online quiz, "the urban fact game," 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 an index of links to other sites where information of relevance to hunger can be found. The Education and Training 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)

This site has information on hunger and what the World Bank is doing to help solve the problem worldwide.

### THE LORAX

by Dr. Suess

This 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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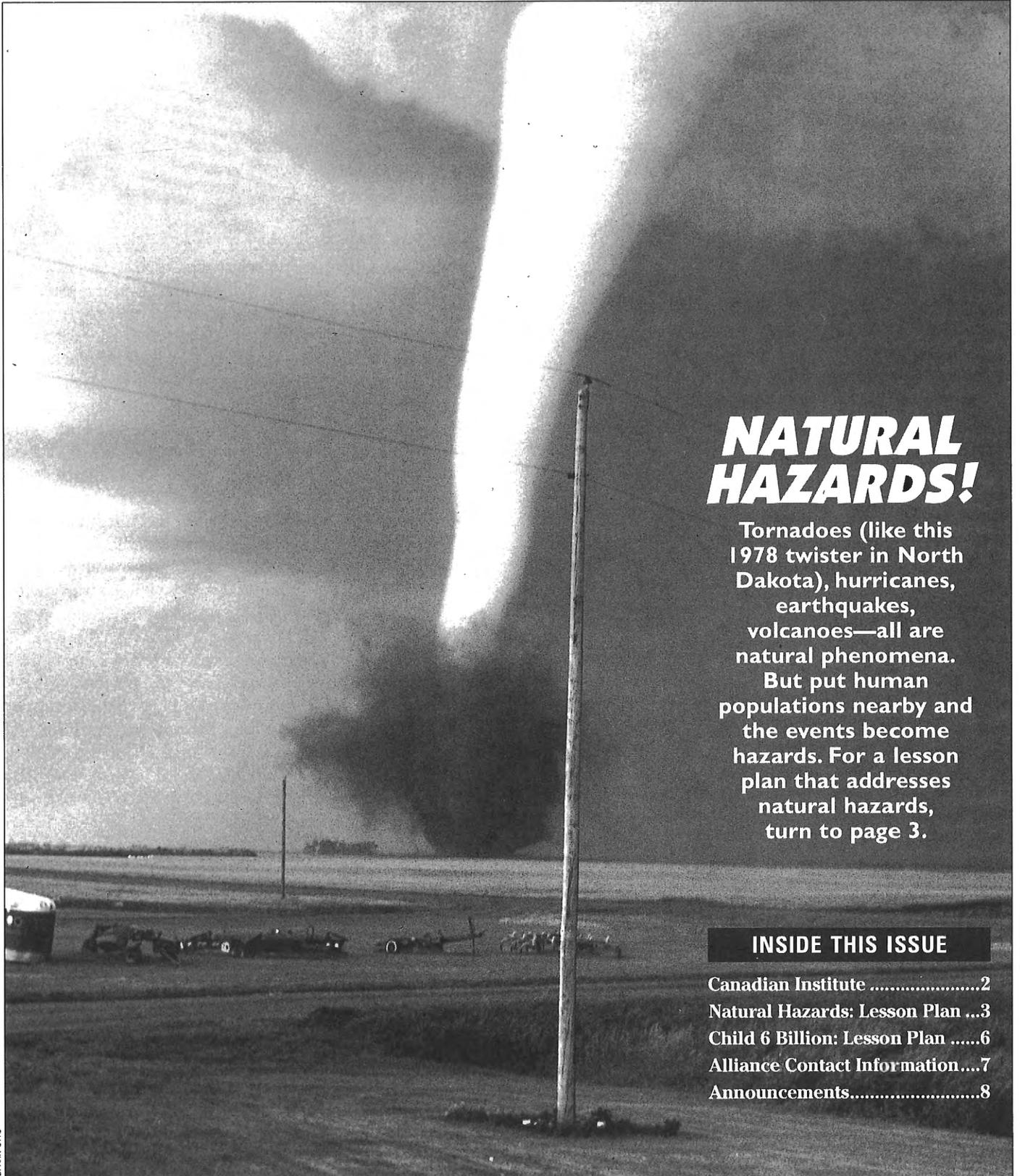
See *The World of Child 6 Billion* on the Web:

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

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

The Development Education Program of the U.S. Agency for International Development funds this project.

This Teacher's Guide was edited by Anne Baker, Billie Day, Susan Neyer, and Angene Wilson.



## **NATURAL HAZARDS!**

Tornadoes (like this 1978 twister in North Dakota), hurricanes, earthquakes, volcanoes—all are natural phenomena.

But put human populations nearby and the events become hazards. For a lesson plan that addresses natural hazards, turn to page 3.

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## DIRECTOR'S DESK

The National Geographic Society is proud to be launching a brand new magazine in April. The premiere issue of National Geographic ADVENTURE will be on newsstands by the time you read this. Moving us from armchairs to the ultimate in adventure travel, ADVENTURE promises excellence in writing and photography, with a dynamic layout as well.

I'm sure that many of you who are geography, social studies, or science teachers will be pleased to find coverage, within the pages of

NATIONAL GEOGRAPHIC  
**ADVENTURE**

the first issue, of marine scientist Sylvia Earle, longtime champion of the ocean environment, and deep-sea explorer Robert Ballard, discoverer of S.S. *Titanic*, the German battleship *Bismarck*, and U.S.S. *Yorktown*. You're probably already familiar with Sylvia Earle's new "Sustainable Seas" initiative to study and protect marine sanctuaries in the United States, and Bob Ballard's nationwide interactive JASON Project, an annual visit by tens of thousands of schoolchildren via "telepresence" to scientists working in exciting locales around the world. (You can find out more about both programs and obtain contact information for them through the National Geographic Web site: <[www.nationalgeographic.com](http://www.nationalgeographic.com)>.)

—Lanny Proffer

Dale Petroskey, *Senior Vice President, Mission Programs*

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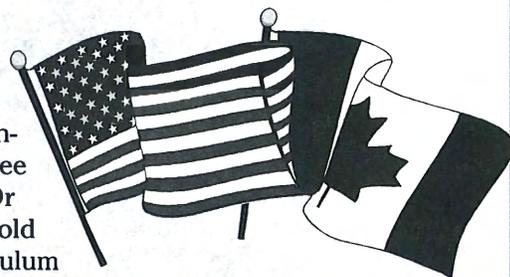
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# Eyes North: Canada's Teacher Institute Offers Rich Rewards

by Dick Mansfield

Do you want to see your northern neighbors as they see themselves? Or take home a gold mine of curriculum



materials and teaching resources on Canadian geography and history? Or get hands-on experience with new technology applications in geography, e.g., GIS and GPS? Or take field trips through the English-French core of Canada with expert guides? Or see what became of the Loyalists who left the U.S. after the War of Independence? Or work with other elementary and secondary school geography and social studies teachers from across Canada and the U.S.? Or obtain, as an option, a continuing education credit from a top-rated university in Canada?

If so, there is an institute to fill the bill this summer for teachers in state geographic alliances. Scheduled from June 30 to July 18, the program is offered by the Canadian geography alliance, known as the Canadian Council for Geographic Education (CCGE), at Queen's University, in Kingston, Ontario. Kingston is on Lake Ontario within three hours' drive from Toronto; from Ottawa, the nation's capital; from Montreal; and from Syracuse, New York. For program details and an application, contact your state geographic alliance (see page 7), or the CCGE national office at (613) 533-6000, ext. 77430; fax (613) 533-6584; or e-mail [mansfield@educ.queensu.ca](mailto:mansfield@educ.queensu.ca). Application deadline: May 1, 1999.

Registrants receive a single room at Queen's—15 nights; a single or double room on field trips—3 nights; most meals, for 18 days; snacks at breaks; rich instruction; handout materials. The cost is US\$1,200 a person (about \$67 a day), plus travel costs to and from the institute site. Check with your state geography alliance to see if financial support is available.

For further details and description, see UPDATE #36, from winter 1997–98. 🌐

*Dick Mansfield chairs the Canadian Council for Geographic Education.*

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## LESSON PLAN

# NATURAL HAZARDS!

by Jann Clouse

*Note: We are grateful to Dr. Joseph Golden of the National Oceanic and Atmospheric Administration (NOAA) for arranging NOAA's sponsorship of this lesson plan and the distribution of the map supplements. —Editor*

### Overview

Volcanoes, earthquakes, hurricanes—all are forces of nature that excite students' curiosity and imagination. These phenomena, and many more, feature in the July 1998 NATIONAL GEOGRAPHIC map supplement, "Natural Hazards of North America." The supplement contains a wealth of information you can use with your students to reveal where and how these natural phenomena wreak havoc across North America. The supplement will stimulate student discussion and analysis of how these dynamic forces affect our lives and shape our planet. (If the supplement is not included in this issue of UPDATE, call [202] 482-8360, the Public Affairs Office of NOAA, for a free copy.)

### Grade Level

Grades 5–8; adaptable to lower or higher levels

### Curriculum Connections

Geography, history, science, language arts

### Geography Standards

1. Using maps to acquire, process, and report information; 2. Mental maps and spatial context; 3. Analyzing spatial organization; 5. Using regions to interpret Earth's complexity; 7. Physical processes shape patterns of Earth's surface;

17. Applying geography to interpret the past; 18. Applying geography to interpret the present and plan for the future.

### Materials

NATIONAL GEOGRAPHIC map supplement "Natural Hazards of North America"; an outline map of North America on paper for each student; an overhead transparency of the same outline map of North America for every 3 to 4 students; watercolor markers

### Starting Out

Ask students to describe beautiful places they know—a lush forest, a productive wheat field, a wind-chiseled mesa, a spectacular coastline. Do these features attract people to settle nearby? Ask students to suggest factors other than beauty that attract people to settle, e.g., convenience, climate, job opportunities.

Does nature present any hazards in your immediate environment? Is there a creek prone to jumping its banks in the spring? Do students' families practice earthquake drills? Do students have tornado shelters?

Discuss what other types of natural hazards occur in North America and list students' ideas on the board. What forces of nature do people deal with along the Atlantic Seaboard? (Recall notable weather events of the last year.) What hazards do residents of the West Coast face? (Earthquakes, tsunamis, volcanoes, hailstorms, mudslides, drought, wildfires.)

### Examining the Natural Hazards Earthquakes and Tsunamis

Give students a blank outline map

of North America. Ask them to mark an *E*, in pencil, for earthquake, in the areas of the continent where they think the greatest earthquake hazards exist. They may discuss their placement with a neighbor and adjust their responses.

Now fold the map supplement, showing only the Earthquake map. Show students the map and ask them to check their predictions. (Also prepare an overhead transparency map of North America with earthquake areas.) Discuss why this hazard exists, particularly along the Pacific Rim. (As great slabs of rock in Earth's crust shift, huge amounts of energy are released, sending shock waves through the Earth.)

Movement of the ocean floor can create tsunamis, waves that travel up to 500 miles (800 km) an hour. When these waves enter shallow water along coastlines, they may batter the shore with waves as high as 100 feet (30 m). Show the students the large North America map on the reverse side of the supplement. Ask them where most tsunamis occur—and why.

### Volcanoes

As the subducting Pacific Plate sinks into Earth's mantle, the rock in and above the plate begins to melt. The melted rock gradually rises through fissures in the Earth's surface, where it erupts and forms volcanoes and cinder cones. Ask students now to predict on their outline maps where areas of volcanic activity are likely to be found, marking (Continued on next page)

*Jann Clouse teaches fifth grade in Missoula, Montana.*

## LESSON PLAN

(Continued from previous page)  
them in pencil with the letter *V*. Allow the students time to discuss their ideas with a classmate and adjust their maps.

Now fold the supplement to show the maps of Earthquakes and of Volcanoes. Ask students to check their predictions as you mark your overhead map with volcanic zones. Ask the students to explain why the patterns of earthquakes and volcanoes overlap along the West Coast of North America. Where else do volcanoes and earthquakes occur in the U.S.? (Hawaii, Yellowstone National Park.) The volcanic activity in these areas is produced by mantle plumes (called hot spots) that rise from deep within the Earth's interior. Hot spots are not related to plate subduction, but can be either under continents (Yellowstone) or under the ocean (Hawaii). They are not found along coasts. Ask why there is no volcanic activity on the Atlantic coast, even though there are some earthquakes. Ask students what they think makes the East Coast different from both the West Coast, and Hawaii and Yellowstone.

### Hurricanes and Tornadoes

Refer to the students' list of hazards. Circle any that students think are caused by, or are affected by, wind storms. (They may suggest hurricanes, hailstorms, tornadoes, wildfires, and blizzards.)

Ask how hurricanes and tornadoes are alike. (They both have high winds, swirl in a counterclockwise direction in the Northern Hemisphere, are destructive, and can travel long distances.) Where do hurricanes occur? And where do tornadoes occur? Ask students to mark their North America maps in pencil with an *H* for hurricane and a *T* for tornado in the areas they think are most at risk. Let them discuss their ideas and make adjustments.

Now fold the supplement to

show the maps for Hurricanes and Tornadoes. As the students check their responses, ask why hurricanes form at sea and tornadoes occur over land. (A hurricane is a low pressure region formed over oceans from warm, moist air currents in tropical areas. Tornadoes usually form along weather fronts where dry, cool air from the north and west meets more humid, warm air from the Gulf of Mexico. The mass of warm, humid air is rapidly lifted, and more warm air rushes in to replace it. As this air rises rapidly, it may begin to rotate; this twisting mass of air may form funnel clouds, which can extend down and touch the Earth.)

Ask students to point out the tropical areas of ocean prone to hurricanes and shade them light blue on their maps. Have students shade areas prone to tornadoes light orange. Hurricanes can create the conditions necessary to spawn tornadoes over land. Ask what other hazards hurricanes can pose upon landfall. (Wind damage, torrential rain, flooding, landslides, loss of beachfront.)

### Hailstorms and Drought

Look at the maps of Hailstorms and Drought. For most of the population in North America, these hazards appear to be unavoidable. Hailstorms are rarely deadly to people, but they are costly in terms of crop loss and livestock casualties. Damage to property is increasing in hail belts as the population in those areas grows.

And drought is hardly less threatening. Costs from a prolonged heat wave and dry spell in 1988 mounted to nearly 40 billion dollars, making this the most expensive natural disaster the United States has weathered. A drought may leave withering fields, starving livestock, lower water tables, threat of forest fires. Discuss how a prolonged dry spell in the Midwest could affect several other areas of the country, e.g., climbing prices of wheat, corn, and beef.

### Human Settlement and Natural Hazards

Now fold the map supplement to show the Population map. Ask the students to make generalizations about population density patterns they see. Provide each group of 3 to 4 students with an overhead transparency map of North America. Ask them to simplify the population data and shade their overhead with population patterns. You may want them to use only three colors: red for high density (250/sq mi and above), orange for medium density (25–249/sq mi), yellow for low density (24/sq mi and below). It might help to prepare a simplified sample ahead of time as an example.

Ask students to lay the completed transparency over the North America outline map on which they have already mapped hazards. Are there any correlations between population distribution and natural hazards? Read students the quote from NOAA meteorologist Joe Golden: "A hazard only becomes a disaster when it occurs where people live." Do students agree? Why, or why not? Discuss why people choose to live and build along unstable coastlines, on barrier islands, on river floodplains, on volcanic debris, and along unstable fault lines. Why are we such risk-takers?

### Researching Major Disasters: Nature in Full Force

Show students some examples of major disasters on the reverse side of the supplement. Give the students the opportunity to skim the descriptions to whet their appetite for inquiry about such historic calamities. Now divide the class into small groups, and assign each to investigate one of the disasters. Their task is to present to the class particular details about one of the following events:

- Winter storms—the "Storm of the Century," 1993
- Hailstorms—Denver, 1990; Wichita, Kan., Dallas, Tex., and Orlando, Fla., 1992

## LESSON PLAN

- Tornadoes—Great Tri-State Outbreak, March 18, 1925; Super Outbreak (13 states and Canada), 1974
- Floods—Mississippi and Missouri Rivers, 1993
- Volcanoes—Hawaii's Kilauea, 1790; Mexico's Parícutín, 1943; Washington's Mount St. Helens, 1980; Mexico's El Chichón, 1982
- Earthquakes—San Francisco Quake, 1906; New Madrid Quake, Missouri, 1811–12
- Landslides and Avalanches—Turtle Mountain, near Frank, Alberta, April 29, 1903; Wellington, Washington, March 1, 1910

### Playing Different Roles: A City Council Meeting

**Objective:** Students will understand different points of view regarding land-use issues in your city.

**Time:** 45–60 minutes

**Materials:** 25–30 role-play cards, one per student. Create the roles to represent taxpayers in your community, e.g., industry, local agencies, local businesses, concerned citizens. Include three city council officials.

**Scenario:** Land developers have made an offer to purchase from the city one of the last open areas in town. Are the risks worth the benefits of building a hotel on a hurricane-prone waterfront? A condominium in an earthquake shaken valley? A shopping mall on a river floodplain? (Choose one.) A community meeting will be held to decide how to best use this open space within your city.

**Procedure:** Assign groups of students to represent differing points of view. Ask them to read their role card and think of how this proposed land sale might affect them. Will it be good for their concrete/lumber/roofing business? Will it impact the community water/utility/fire protection services? Is it an environmentally sound idea? What are the inherent risks in building in such an area?

When students have had an opportunity to prepare their argu-

ments, convene the meeting. City council members announce their intentions to gather public input on the sale proposal and ask for comments from the audience. Some community members will feel that natural hazards make the area too risky to build such a project. Others will argue the project would provide such an economic boost—bringing in jobs, increasing the tax base, providing sorely needed business—that the community cannot afford to pass up the opportunity.

Council members take notes on the commentary, ask questions to clarify points, and consider the costs of any proposals. Ultimately, it is their decision to go ahead with the sale or recommend further study.

Hold a debriefing session after the council's decision is announced. Allow students to air their feelings

and frustrations about this democratic process.

### Disaster Response Plans

Research your own community's disaster response plan. Contact officials in charge of local emergency preparedness. If your town has no such office, consult the bureau in your state capital that handles these affairs, or visit the Web site of the Federal Emergency Management Agency (FEMA) for local contacts: <[www.fema.gov/about/regoff.htm](http://www.fema.gov/about/regoff.htm)>.

Students may examine their own families' preparedness for emergencies. Does their family have an emergency response plan? Do they practice fire drills? Earthquake drills? Do they have a well-supplied safety kit? If not, what should go into one? (Flashlight, radio, batteries, canned food, can opener, first-aid kit, fresh drinking water, tools.) 🌐

### References:

- "Earthquakes—A Teachers' Package for K–6 (FEMA 159)," produced by the National Science Teachers Association for FEMA. For a free copy, call FEMA Publications, at (800) 480-2520.
- Parfit, Michael, "Living With Natural Hazards," NATIONAL GEOGRAPHIC, vol. 194, no.1 July 1998.

### Web Sites:

- Extreme Weather Sourcebook: <[http://www.dir.ucar.edu/esig/HP\\_roger/sourcebook](http://www.dir.ucar.edu/esig/HP_roger/sourcebook)>
- Federal Emergency Management Agency: <[www.fema.gov](http://www.fema.gov)>
- National Geographic Society: <[www.nationalgeographic.com](http://www.nationalgeographic.com)>
- National Oceanic and Atmospheric Administration (NOAA):
  - Atlantic Oceanographic and Meteorological Laboratory: <[www.aoml.noaa.gov/hrd/](http://www.aoml.noaa.gov/hrd/)>
  - National Climatic Data Center: <<http://www.ncdc.noaa.gov/ol/climate/climateresearch.html>>
  - National Environmental Satellite, Data, and Information Service: <[http://ns.noaa.gov/NESDIS/NESDIS\\_Home.html](http://ns.noaa.gov/NESDIS/NESDIS_Home.html)>
  - National Hurricane Center: <[www.nhc.noaa.gov](http://www.nhc.noaa.gov)>
  - National Severe Storms Laboratory: <[www.nssl.noaa.gov](http://www.nssl.noaa.gov)>
  - National Weather Service: <[www.nws.noaa.gov](http://www.nws.noaa.gov)>
  - Storm Prediction Center: <[www.spc.noaa.gov](http://www.spc.noaa.gov)>
- Natural Hazards Center: <<http://www.colorado.edu/hazards>>
- Scholastic Network: <[www.scholasticnetwork.com](http://www.scholasticnetwork.com)>
- USGS Earth Science Information Center: <[www.usgs.gov/education/](http://www.usgs.gov/education/)>
- Useful weather information: <<http://blueskies.spri.umich.edu>>

## LESSON PLAN

# The World of Child 6 Billion

by Martha B. Sharma

**Overview:** In July of 1998, the United Nations projected that the world's population would reach six billion on June 16, 1999. But the UN soon revised the date by four months to October 12, 1999. How do demographers arrive at these numbers? What do we do with population projections? Why do they matter?

Projections determine what the population of an area would be if the major demographic variables follow certain patterns. Population projections are derived from mathematical analyses of trends in the number of births, the number of deaths, and the distribution of people. War, natural disaster, and sudden epidemics are not included because they cannot be predicted. However, AIDS is factored in for certain African countries that are heavily affected by it. (Projections are driven primarily by assumptions about fertility [the average number of births per woman], because, today, life expectancy in most areas has risen to a point where improvement in mortality rates produces less change than reduction in fertility rates.)

The world population is currently growing at a rate of 1.3 percent annually, down from a historic peak of 2 percent in the late 1960s. It is projected that the annual growth rate will continue to decline to 0.3 percent in 2050. Although fertility varies widely, it is declining in all regions of the world. Couples in many countries are having just enough children to replace themselves, but the population will continue to grow as a consequence of the large number of young people who were born under higher levels of fertility.

The dark side of the 1998 projec-

tions is the devastating impact of AIDS, especially in hard-hit African countries where life expectancies are retreating from earlier expected levels. Despite the impact of AIDS, however, the populations of these countries will continue to grow.

Worldwide, 30 percent of all persons are under 15 years of age. The current median age is 26.1. It is projected that, as a result of declining fertility combined with increasing life expectancy, by 2050, the elderly (60 and older) will outnumber children worldwide, and the median age will reach 37.8 years.

In this lesson, students will consider patterns and implications of future population growth. They will evaluate the role and usefulness of population projections in planning for the future. They will develop case studies of selected countries based on varying assumptions about future population growth.

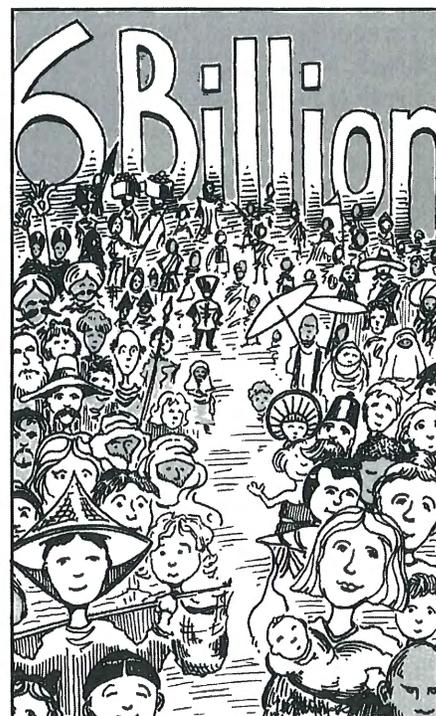
**Grades:** 7–12

**Materials:** Copies of the October 1998 NATIONAL GEOGRAPHIC, including the supplement titled "Population: Millennium in Maps"; almanacs and atlases; graph paper.

**Curriculum Connections:** Geography, social studies, math, language arts

### 1. Getting Started

Initiate class discussion by pointing out the UN's decision to change the date for the birth of Child 6 Billion. Write "population projection" on the chalkboard. Use information from the lesson overview to help students understand projections and the assumptions used by the UN in



developing its biennial projections. Call students' attention to the three-dimensional graph on the "Population: Millennium" map supplement. Explain that the variations in the graph reflect different sets of assumptions about future population growth. Ask students to suggest and discuss why it is important to have projections of population growth (see #3, Planning for the Future, at right).

### 2. Examining the Assumptions

In the 1998 projections, the assumptions about fertility were considered the driving force for future growth. Divide the class into groups of 4 or 5 students each and distribute copies of the October 1998 NATIONAL GEOGRAPHIC. Ask each group to examine the map on pages 42 and 43. (Explain that population figures for 2050 for each country do not reflect the very latest projections.) Have each group, working cooperatively, construct a bar graph showing the fertility rates of the 22 countries identified on the map. Have them also calculate the projected annual average rate of increase in population for each country over the 52-year period shown, and then note

## LESSON PLAN

those figures on the bar graph for each country. *Here's how to calculate the projected average annual rate of increase for a country:*

(1) Subtract the 1998 figure from the 2050 figure to get the population gain (or decline); (2) Divide the figure for population change by the 1998 population and multiply the decimal answer by 100 to get the percent change; (3) Divide the percent change by 52 to get the average annual percent change. Example, using the U.S.: (1) 393.9 million - 270 million = 123.9 million. (2) (123.9 million ÷ 270 million) x 100 = 45.8%. (3) 45.8% ÷ 52 = .88%. The projected average annual rate of increase for the U.S. is .88 percent.

What is the relationship between fertility rate and average annual rate of increase in the countries graphed? What is the long-term effect of high or low fertility rates?

Have students compare their graphs with the "Population and Growth" cartogram on the magazine supplement. What patterns do they observe? Which regions are experiencing the greatest growth? The lowest growth? Further inferences can be made by examining the "Life Expectancy" map on the supplement.

### 3. Planning for the Future

Population projections by country help create an understanding of the number of people in different age groups who will need such things as health-care services, schooling, new jobs, housing. Such projections are part of the information base that informs public policy. Regroup students into eight groups and assign each group one of the following countries: Australia, Bangladesh, Botswana, Brazil, Italy, Mali, Nicaragua, Saudi Arabia. Ask the groups to prepare a long-range policy recommendation for presentation to the government of their assigned country. They should address topics such as health and nutrition, environment, housing, education, and employment. They should draw

information from the demographic maps on the "Population: Millennium in Maps" supplement, the regional resource data on side 2 of the supplement, and almanacs or atlases. The "1998 World Population Data Sheet" (see Resources, below) would also be useful.

What will be the areas of critical need? What services will be required? Students should identify the assumptions upon which their recommendations are based. Each assumption should include a rationale and supporting data that may be presented in a chart, graph, or map. Each group should present its recommendations to the class, who will act as the governing body, raising questions or challenging assumptions.

**Extension:** Agencies other than the UN make projections for planning purposes. Students can visit the U.S. Census Bureau Web site (<[www.census.gov](http://www.census.gov)>) to learn about population projections for their state. Or they might contact the city or county planning commission to find out how population projections affect decision-making at the local scale.

### Resources

- "1998 World Population Data Sheet" (available from the Population Reference Bureau: Tel.: [202] 483-1100; e-mail: [popref@prb.org](mailto:popref@prb.org))
- "World Population Prospects: The 1998 Revision," UN Population Division <<http://www.popin.org/pop1998/>>

*Martha B. Sharma is an education consultant for the Population Reference Bureau.*

The Population Reference Bureau's (PRB) project "The World of Child 6 Billion" examines issues that will face the hypothetical child who brings world population to 6 billion. For information, visit PRB at <[www.prb.org](http://www.prb.org)> and see Education Materials. 

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## ANNOUNCEMENTS

### Geography Awareness Week: Nov. 14–20, 1999

Join thousands of K–12 educators and their students in celebrating Geography Awareness Week this fall, from November 14 to 20. In



support of this year's theme — "Geography and Technology: Think the *World of Your Community*" — National Geographic is publishing a teacher's packet containing a poster, activities, and other offerings to help teachers get the message to their students and the community about the importance of geography. During the week, students will examine how modern technologies such as e-mail, fax machines, and cellular telephones have altered the concept of community so that, today, "community" may mean anything from the

people immediately surrounding one to people anywhere on Earth. Packets will be available in June. Teachers who do not usually obtain their packets through their alliance may write for a free packet, while supplies last, to  
National Geographic Society  
P.O. Box 98190  
Washington, DC 20090-8190

### National Geography Bee: National Championship

The top levels of the eleventh National Geography Bee, sponsored by the National Geographic Society and Bank One, will be held in Washington, D.C., in May. The final rounds, moderated by *Jeopardy!* host Alex Trebek, will be held at Society headquarters on May 26, and will air on PBS.



Check local television listings for the exact date and time.

### Be Boston Bound For NCGE, in November

The 84th annual meeting of the National Council for Geographic Education takes place in Boston November 3–6, 1999, at the Boston Park Plaza Hotel. You can register for the meeting online at the NCGE Web site: <[www.ncge.org](http://www.ncge.org)>. The theme for the meeting is "Advancing the Geographic Revolution."

### NCSS Meeting To Be Held in Orlando

The National Council for the Social Studies is holding its 79th annual conference in Orlando, Florida, November 19–21, 1999. The theme is "Defining the Common Good: A Challenge for the 21st Century." For details, see <[www.ncss.org](http://www.ncss.org)>. 

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## The World of Child 6 Billion: The Story is Different Depending on Where You Live

**Overview:** As the century comes to an end, world population will have exceeded 6 billion people. The United Nations designated October 12, 1999 as the day world population reached 6 billion people. The child born at this momentous occasion was born into a world of unprecedented population size. At no time in history has there ever been as many people on Earth. We entered the 20<sup>th</sup> century with a population of less than 2 billion people. Since then, world population has experienced exponential growth.

The story of world population is about more than just numbers; it is about people and the quality of their lives. Population change is linked to economic development, education, the environment, the status of women, epidemics and other health threats. Many of these factors are intricately interconnected and interact with the lives of every human being.

These series of activities allows students to explore how the quality of life for child 6 billion will depend on where child 6 billion was born. The activities center around the population stories beyond the numbers: *There have never been as many people on Earth as there are now. People are living longer than ever before. There have never been so many young people. Women's lives are changing dramatically. People are increasingly on the move. More people have more of an impact on the environment.* They can be conducted as short lessons or the class can be divided into six groups, each taking a piece and reporting back to the whole. The culmination of the lesson will be a case study of how the story is different depending on where you live.

**Grades:** Grades 4-12

**Materials:** *The World of Child 6 Billion*  
*The World of Child 6 Billion Data Sheet*  
*World Population Data Sheet*  
*World Population and the Environment Data Sheet*  
*World Population: More Than Just Numbers*  
*US in the World: Overview Fact Sheet*  
Almanacs or other sources of socioeconomic and environmental data  
Worksheets and blank world map  
Blank paper and markers

**Topics:** Geography, social studies, math, and language arts

### Geography Standards:

4. The physical and human characteristics of places
9. The characteristics, distribution, and migration of human populations on Earth's surface
14. How human actions modify the physical environment
18. How to use geography to interpret the past and plan for the future

## Introduction:

Show students *The World of Child 6 Billion* discussion guide. Child 6 Billion may be born in the U.S. or another economically advanced country. But because 98 percent of world growth is now occurring in countries that are economically developing, chances are Child 6 Billion will be born there. Have students reflect on the issues that Child 6 Billion will face wherever she or he is born. Separate students into six groups to brainstorm about the issues addressed in the guide. How does each topic relate to Child 6 Billion's quality of life? How might these issues be measured and evaluated?

Everyone needs the basics – food, water, and shelter. But having other needs met, like clean air, solid education, and good health, allows people to flourish, not merely survive. The 6 issues addressed in *The World of Child 6 Billion* are as follows: air, nutrition, housing, water, health and education. Although presented separately, they are interdependent. For example, Child 6 Billion's health will depend on having safe water, clean air, adequate housing, sufficient food and a basic education. Have students make additional connections.

## Activities:

### 1. There have never been as many people on Earth as there are now.

- The rate of world population growth peaked in the late 1960s and has declined since. At the same time, world population, estimated at 3 billion in 1960, continues to increase, reaching 6 billion in 1999, and could reach 9 billion by 20150, according to United Nations projections. Thus, while the rate of population growth is decline, the absolute number of people continues to grow. Better hygiene and public sanitation, as well as more widely available food supplies and improved nutrition, meant great changes in population growth for Europe and other areas in the 19<sup>th</sup> century. As the 20<sup>th</sup> century began, countries that are now described as “more developed” were entering a new stage of population growth. Have students speculate why population grew during certain periods of history, touching on improved health, increased life expectancy, declining mortality and high birth rates.
- Have students create a graph to show population growth over time by region. Using data from the United Nations *World Population Prospects* found in *More Than Just Numbers*.
- Then have students create a pie chart to show the percentage of population in each region or country as a percentage of the world total.
- Students at higher skill levels can also practice calculating percent change to determine how much the population increased during different time periods. For example, how did population change in 19<sup>th</sup> century (between 1800 and 1900) compare with how much it is projected to change by the end of the 20<sup>th</sup> century (change between 1900 and 2000).

## 2. People are living longer than ever before.

- The 20<sup>th</sup> century was marked with a dramatic decrease in mortality. In 1900, life expectancy at birth was 47 years in the United States and between 45 and 50 years in Europe, Japan and Australia—up slightly from an average of about 40 years during the 19<sup>th</sup> century. Life expectancy reached unimaginably high levels by mid-century. U.S. life expectancy at birth shot up to 56 years by 1930 and to 68 years by 1950. Gains in life expectancy accelerated after 1950. Today, a child born in the U.S. is expected to live to 77 years. Introduce the concept of life expectancy. Explain to students that life expectancy is the age that Child 6 Billion, born today, will be expected to live to.
- Have students examine life expectancy in various regions and countries by using the *World Population Data Sheet*. Ask students to construct a table revealing places with contrasting life expectancies. In what parts of the world is life expectancy the highest? The lowest? Have students speculate what might contribute to these differences. For example, high levels of nutrition and living standards mean higher life expectancy. Read the sections in *The World of Child 6 Billion* guide on nutrition and health.
- Advanced students can explore other sources of information to discover what the level of nutrition and health care is for such countries to test if their hypothesis is true. Have students make connections between life expectancy and other demographic and socioeconomic indicators.

## 3. There have never been so many young people.

- The number of people under age 25 has more than doubled since the 1950s: from 1.3 billion to 2.9 billion in 2000. The UN projects that the number of young people is expected to peak around the year 2030 at over 3 billion. Children under 15 make up one-third of the population in the less developed countries, and even greater proportions in some regions. What is the impact of a “young” population on the productivity of a region and on the generation of capital reserves for future economic growth?
- Explain age-dependency ratios (the number of people under 15 and 65 and over compared to the working ages). Have student speculate on why people under 15 and 65 and over are considered dependents?
- Have students calculate age-dependency ratios for a variety of selected countries using data from the *World Population Data Sheet*. Calculate the percent of population in dependent ages by adding together percent of population under 15 and percent of population 65 and over. Calculate the percent in the working ages by subtracting the dependency sum from 100. The ratio is the number of dependents for every 100 working age persons:  $\text{number of dependents}/\text{number of workers} * 100$
- How do some countries compare with others? In what ways might a government need to respond to a high age-dependency ratio? What are solutions to having too many people and too few resources?
- Extensions could include construction of population pyramids from data found through the United Nations or Census Bureau. By using pyramids students can compare the age and sex distribution over time or between countries.

#### 4. People are increasingly on the move.

- International migration is at an all-time high. About 145 million people lived outside their native countries in the mid-1990s. There is also movement of people within countries, particularly rural to urban migration. The world is becoming increasingly urban. Have students explore the impact of urbanization in terms of the environment and on meeting the needs of a rapidly growing urban population.
- Have students compare the percentage of populations living in urban areas around the world. Students can construct a three dimensional representation of urbanization with data from the *World Population Data Sheet*. Using poker chips, have one poker chip represent 10 percent. Use blue chips for urban and red for rural. Select different countries or regions and stack the appropriate number of chips on a map close to the region/country location.
- For further exploration, students can research the population size among the largest urban areas of the world for different time periods. Repeat the exercise using the chips and discuss urban growth trends over time and their impact on the future.

#### 5. Women's lives are changing.

- Although the education gap between men and women is narrowing in many countries, worldwide more men than women are literate (80 percent compared with 64 percent). Since the 1970s, literacy rates for women have risen from 54 to 64 percent. Continuing social and economic development depends on improving women's lives and on allowing women to participate fully in society. Education is one of the most important sources of opportunity in any society. Have students read the section on education in *The World of Child 6 Billion*.
- Ask students why literacy rates may be different in different countries, why literacy rates may be different (and often lower) for women than men.
- Have students investigate the relationships of literacy to other demographic indicators, such as infant mortality, total fertility rate, and GNP. Students can graph female literacy rates found on *The World of Child 6 Billion* datasheet against some other demographic variable (using *The World of Child 6 Billion* datasheet or the *World Population Data Sheet*). For this exercise, the x-axis (horizontal axis) will be female literacy rates and the y-axis will be the values for the other variable. Discuss with students their findings. What type of conclusions can be made from this data? What are some limitations to such relationships? Why do you think female literacy rates are associated with higher infant mortality, higher total fertility, etc.?
- To gain a better picture of this relationship, choose at least 15 countries from various regions of the world by using female literacy rates found in *The State of the World's Children* (UNICEF).

## 6. More people affect the environment.

- The Earth's resources, natural systems, and human population are inherently connected. The Earth's resources provide energy and raw materials for human activities, and those activities, in turn have an impact on the Earth's resources and systems. The environment helps people fulfill their basic needs. There are situations around the world where people are unable to meet their basic needs or are under stress due to difficulties in meeting basic needs. Human well-being and environmental security have social, economic and political implications, especially when some countries are unable to meet the basic needs of their populations. It may be difficult to visualize the scope of the stress created by unmet basic needs. Students will use measure of human-environmental stress to identify patterns and speculate on factors contributing to different types of stress.
- Using the *World Population and Environmental Data Sheet*, have students select from the following indicators. From the definition of each variable, have students identify a way to measure the countries experiencing stress in the category they chose.  
**Per capita water availability (1990 and 2025):** stress if availability is less than 1,700 more than 1,000 cubic meters; scarcity if availability 1,000 cubic meters or fewer;  
**Per capita cropland availability (1990 and 2025):** minimum amount of arable land required per person for a largely vegetarian diet is 0.07 hectares;  
**Population with access to safe water/sanitation:** map stress for countries with less than 50 percent of population with access to safe water, those with less than 40 percent access to sanitation;  
**Child mortality rate:** a rate of 125 or higher  
**Children suffering from moderate to server underweight:** 35 percent or higher
- Have students locate those countries experiencing stress in a certain category and then shade and label each country on the blank map. Maps should include title (with date) and source.
- Compare the various indicators of stress. Have students address any patterns both within categories and between them. Have them speculate on what might account for these patterns.
- For an extension, have students create similar maps of other characteristics such as population density, rate of natural increase, GNP per capita, and total carbon dioxide emissions.

### Conclusion:

The population story is different depending on where you live. People's quality of life varies between countries and within them. There are stark differences between the more developed and the less developed countries. Have each group report back to class in the form of a short group presentation. If students participated in each activity, have student collect all their information together. Discuss how the activities revealed the differences in the quality of life for people, and Child 6 Billion in particular, depending on where one lives.

The *US in the World* overview piece illustrates linkages between people living in different parts of the world with respect to the environment, demographics, health and socioeconomic factors. This piece may be used as a teaching resource to further discuss the relationships between different parts of the world.

Using the information the students collected during the six activities, have students create their own case studies. Perhaps each group can select a different country representing different world regions. Students can present this information in graphics and text and may choose to do so using a format similar to *US in the World*.

### Further Information:

Similar and related activities can be found in various PRB materials including *The World of Child 6 Billion* Lesson Plans (1999), *Adventures on Earth* (1997), and CONNECTIONS (1991).

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

[www.census.gov](http://www.census.gov) [U.S. Bureau of the Census]

[www.unicef.org](http://www.unicef.org) [UNICEF]

[www.wri.org](http://www.wri.org) [World Resources Institute]

[www.fao.org](http://www.fao.org) [Food and Agriculture Organization of the United Nations]

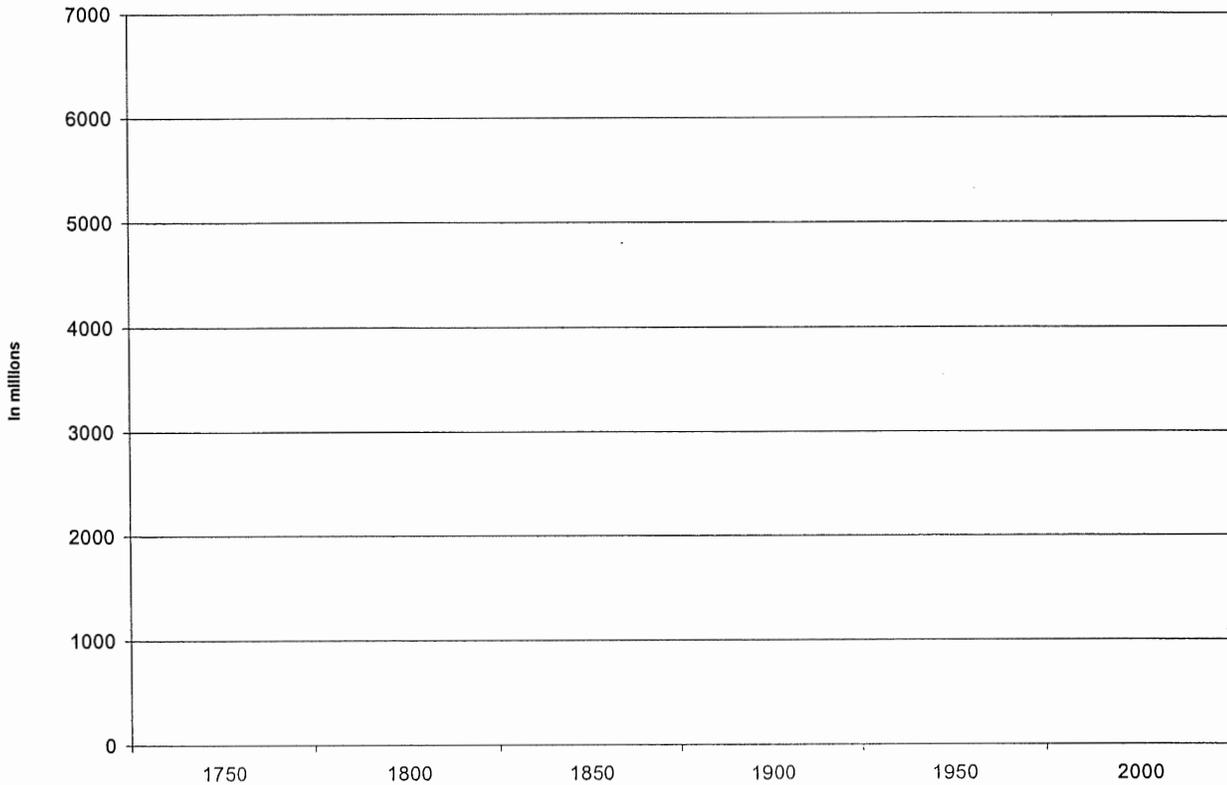
[www.un.org](http://www.un.org) [United Nations]

[www.state.\\*\\*.us](http://www.state.**.us) [\*\* state postal code] example: [www.state.in.us](http://www.state.in.us)

1. There have never been as many people on Earth as there are now.

Create Graph of Population Growth for Major World Regions/Countries.

### World Population Growth



Region/Country	Population in millions				
	1750	1800	1900	1950	2000
<b>World</b>	791	978	1650	2521	6055
<b>More developed</b>	191	236	539	813	1,188
North America	2	7	82	172	310
Europe	163	203	408	547	729
Japan, Australia, and New Zealand	26	26	49	95	149
<b>Less developed</b>	600	742	1,111	1,709	4,867
Africa	106	107	133	221	784
Asia & Oceania	478	611	904	1,321	3,563
Latin America & Caribbean	16	24	74	167	519

#### Group Discussion:

- Why did population grow during certain periods of history?
- How was the population distributed in each region or country as a percentage of the world total?
- How much did the population increased during different time periods?

## 2. People are living longer than ever before.

Life expectancy is the average number of years a newborn can expect to live. Complete the table by identifying areas with contrasting life expectancy. Fill in those countries with a relatively high life expectancy and those with a relatively low life expectancy.

	Highs	Total	Life Expectancy at Birth	
			Male	Female
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

	Lows	Total	Life Expectancy at Birth	
			Male	Female
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

### Group Discussion:

- In what parts of the world is life expectancy the highest? The lowest?
- What might contribute to these differences? For example, high levels of nutrition and living standards mean higher life expectancy? Read the sections in *The World of Child 6 Billion* guide on nutrition and health.
- Using *The World of Child 6 Billion* datasheet, look at the other variables for the case study countries to test if the above hypothesis is true. Make connections between life expectancy and other demographic and socioeconomic indicators.

### 3. There have never been so many young people.

Age-dependency ratios are the number of people under age 15 and 65 and over compared to the number of people in the working ages: 16-64. Calculate age-dependency ratios for various countries, try selecting countries from a variety of regions.

	Country A	Country B	Country C	Country D
1 Percent of Population under 15				
2 Percent of Population over 65				
3 Percent of Population in Dependent Ages (Add 1 and 2)				
4 Percent of Population in Working Ages (Subtract 3 from 100)				
5 Ratio of Dependents for every 100 Workers (2 divided by 3 and multiply by 100)				

#### Group Discussion:

- What is the impact of a “young” population on the productivity of a region and on the generation of capital reserves for future economic growth?
- Looking at the different age-dependency ratios, how do some countries compare with others?
- In what ways might a government need to respond to a high age-dependency ratio?
- What are solutions to having too many people and too few resources?

#### 4. People are increasingly on the move.

Create a three dimensional representation of urbanization using the large world map and data from the *World Population Data Sheet*. Using poker chips, have one poker chip represent 10 percent. Use blue chips for urban and red for rural. Select different countries or regions and stack the appropriate number of chips on a map close to the region/country location.

Country	Percent Urban	Percent Rural (100 – percent urban)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

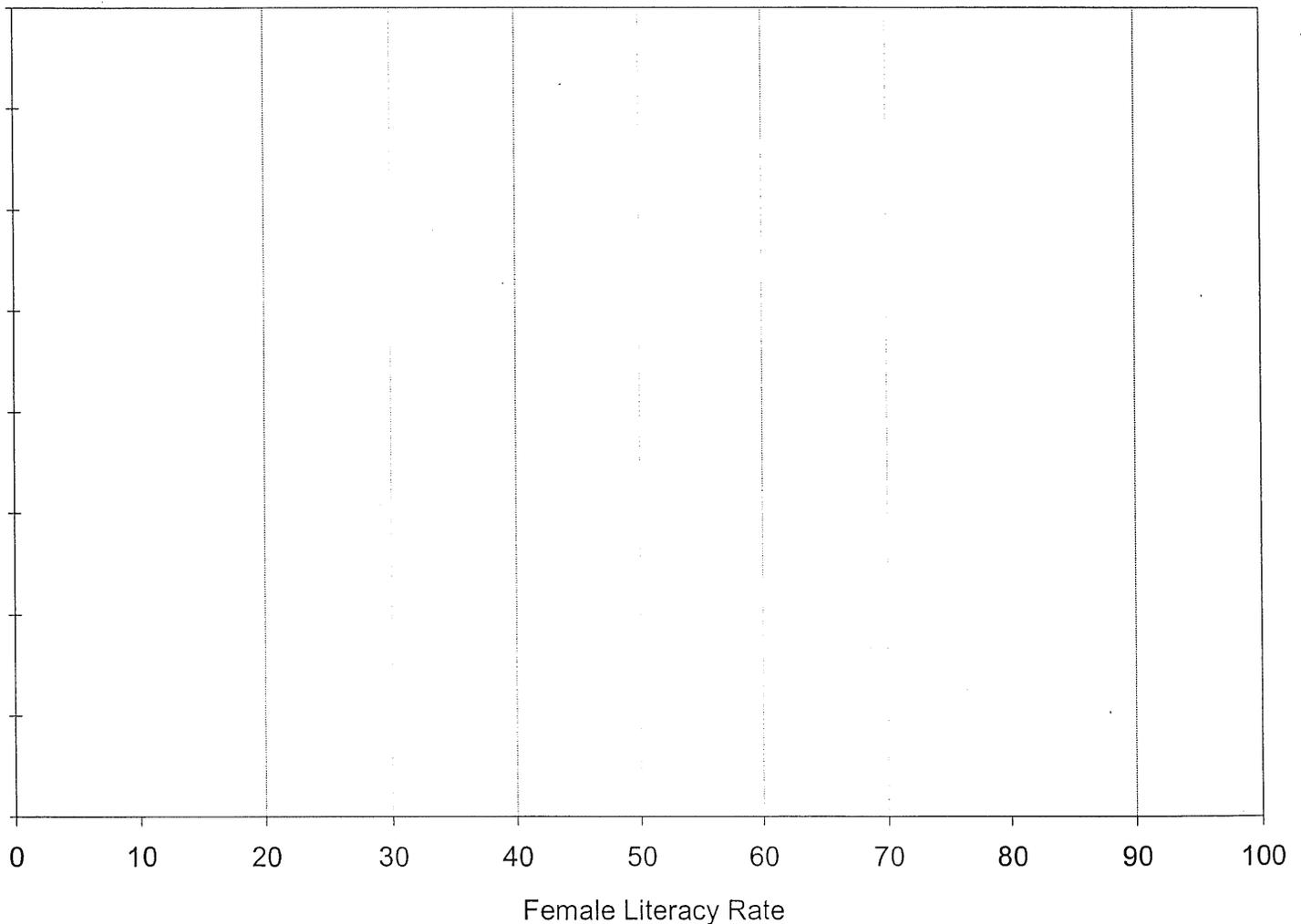
#### Group Discussion:

- What is the impact of urbanization on the environment?
- What issues do governments face in the struggle to meet the needs of a rapidly growing urban population?
- In what parts of the world is urbanization the greatest? Why is this significant?

### 5. Women's lives are changing.

Graph the relationships of literacy to other demographic indicators, such as infant mortality, total fertility rate, and GNP. Graph female literacy rates found on *The World of Child 6 Billion* datasheet against some other demographic variable (using *The World of Child 6 Billion* datasheet or the *World Population Data Sheet*). For this exercise, the x-axis (horizontal axis) will be female literacy rates and the y-axis will be the values for the other variable.

#### Female Literacy and \_\_\_\_\_



#### Group Discussion:

- Why are literacy rates different in different countries?
- Why are literacy rates different (and often lower) for women than men?
- What type of conclusions can be made from this data?
- Why do you think female literacy rates are associated with higher infant mortality, higher total fertility, etc.?

**6. More people affect the environment.**

Using the *World Population and Environmental Data Sheet*, select from the following indicators and identify a way to measure the countries experiencing stress in the category you chose.

**Per capita water availability (1990 and 2025):** stress if availability is less than 1,700 more than 1,000 cubic meters; scarcity if availability 1,000 cubic meters or fewer;

**Per capita cropland availability (1990 and 2025):** minimum amount of arable land required per person for a largely vegetarian diet is 0.07 hectares;

**Population with access to safe water/sanitation:** map stress for countries with less than 50 percent of population with access to safe water, those with less than 40 percent access to sanitation;

**Child mortality rate:** a rate of 125 or higher

**Children suffering from moderate to server underweight:** 35 percent or higher

Locate those countries experiencing stress in a certain category and then shade and label each country on the blank map. Maps should include title (with date) and source.

Category of Stress: \_\_\_\_\_

List of Countries: \_\_\_\_\_

**Group Discussion:**

- Are there any patterns both within categories and between them?
- What might account for these patterns?
- How might these maps be compared to similar maps of other characteristics such as population density, rate of natural increase, GNP per capita, and total carbon dioxide emissions?

