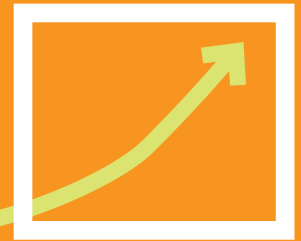# Quick Trip to 8 Billion: Report Card for the Planet

INTRODUCTION

Since humans have inhabited the planet, people have been altering the world in order to make communication and transport easier, food more plentiful, water more accessible, and lives healthier and happier. Due to advances in all of these areas, we've grown to a global family of over 8 billion members. We've come a long way in our ability to live longer, produce more, and travel the globe, but with the world getting ever more crowded, it's important to think critically about the progress we've made. Are we all equally benefiting? Do our successes have any drawbacks? How can we continue to make changes to our world in a sustainable way? As we answer these questions, we can make a plan to move forward that considers equity and justice for all, and accounts for the impacts of our collective actions.

MATERIALS

- *A Quick Trip to 8 Billion* poster or e-poster
- Student tablets or computers with Internet access
- Student Worksheet
- Reporting Cards (provided)

PROCEDURE

1. Before class, print and cut out a set of Reporting Cards for each student.

2. Direct students to the *Quick Trip to 8 Billion* poster or e-poster.

3. Distribute a copy of the Student Worksheet to each student. Tell students that they will be using the information on the State of the Global Family side of the poster to decide whether the environmental and quality of life indicators listed on the Worksheet have increased or decreased since 1800.

4. In the "Increase/Decrease" column, students should write an ↑ for indicators that show an increase and a ↓ for indicators that show a decrease. Remind students to think about each indicator on a global scale.

CONCEPT

Global indicators of environmental and human health have shown great improvement over the past two centuries but are not felt equitably around the globe.

OBJECTIVES

Students will be able to:
- Analyze graphs and charts of demographic, environmental, health, and food statistics to identify trends.
- Evaluate environmental, social, and economic trends over the past two centuries.
- Discuss how population trends are related to other global trends.
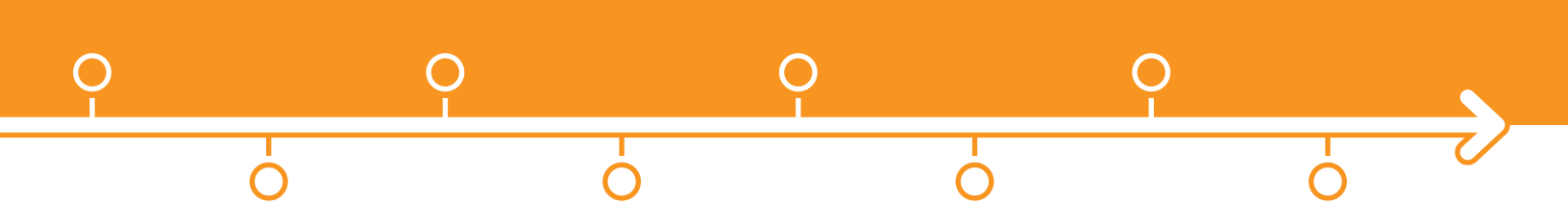
SUBJECTS

Environmental Science (General and AP), Geography, AP Human Geography, Health, World History

SKILLS

Critical thinking, interpreting graphs and charts, identifying trends, defending a position

METHOD

Students use the poster, *A Quick Trip to 8 Billion*, to determine whether progress has been made in key indicators of human well-being and environmental health over the past two centuries and then evaluate what these changes mean.

5. Distribute a set of Reporting Cards to each student and use the following steps for each indicator on the Student Worksheet:

    a. Read the indicator aloud.

    b. From the "Increase/Decrease" column on the Worksheet, ask students to use their pointer fingers to show whether that indicator went up or down. Share the correct answer and discuss if needed.

    c. Ask students to simultaneously hold up the Reporting Card that they feel reflects what this trend means for the overall well-being of people around the world: plus sign (+) if it indicates a positive impact, minus sign (-) if it indicates a negative impact, or the combination sign (+/-) if it is a mixture of positives and negatives.

    d. Ask students to explain their reasoning for their report card choice. (See the Teacher Notes provided in the Answer Key for helpful information you may wish to share with students.)

Answers to Student Worksheet

See Answer Key

DISCUSSION QUESTIONS

1. Why do you think the population growth rate has slowed overall but remains high in less developed countries?

    Over the past 200 years, the death rate has decreased in most places around the world. More developed countries have also seen the birth rate decrease and as such, population growth has slowed or stabilized. In less developed countries, the birth rate has not seen the same amount of decrease due to relatively high death and infant mortality rates, less access to education, and less economic opportunity – all factors leading to high birth rates and population growth.

2. What indicators do you think might be affected as the economies of less developed countries grow?

    Answers may include: higher consumption of meat, more cars, more CO_2 in the air due to increased industry and higher consumption rates, improved access to water and sanitation, higher average years of school, a decrease in the global wealth gap.

3. The median age in more developed countries is higher than in less developed countries. Why might this be? What problems do you think a country with a large elderly population might face?

    People in more developed countries typically have better access to health care and doctors, as well as better infrastructure and access to sanitation and improved water sources. Thus, they tend to be healthier, are able to combat disease and illness easier, and live longer lives. Countries that have a larger elderly population than working population face the challenge of supporting their retired population as they age. They also need to grow or maintain their economies with a smaller percentage of individuals in the workforce.

4. Are there any indicators on the Student Worksheet that correlate to each other either positively (as one goes up, so does the other) or inversely (as one goes up, the other goes down)?

    Positive correlation examples: life expectancy and median age; CO_2 emissions and production of energy and meat

    Inverse correlation examples: access to clean water and improved sanitation and child mortality rates; average years of education and total fertility rate

ASSESSMENT

As an exit ticket, students choose one factor they reported as "mixed" positive and negative, explain why it can be viewed both ways, and how growing population may impact it.

FOLLOW-UP ACTIVITIES

1. Have students choose one indicator from the Student Worksheet and do a research project to investigate the global developments in this area over the past two centuries.

2. Have students choose one (or more) indicators reported as negative (-). Instruct them to work with a partner to brainstorm steps that could be taken (globally, locally, or individually) to help combat the problem.

3. Students create a report card for themselves, their family, the school, or the community using indicators to critique their environmental impact on the planet.
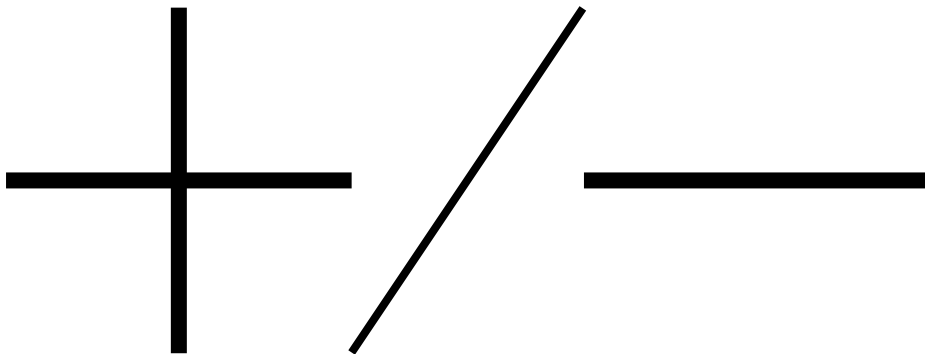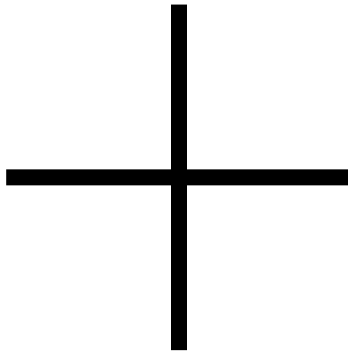
Student Worksheet

Name: _____ Date: _____

Use the infographics on the *Quick Trip to 8 Billion* poster to decide whether each indicator has increased (↑) or decreased (↓) over the past two centuries. Be sure to consider each from a global perspective. Write the appropriate arrow in the "Increase/Decrease" column.

Indicator	Increase/Decrease	Indicator	Increase/Decrease
Life Expectancy	↑	Ecological Footprint	
Total Fertility Rate	↓	Use of Renewable Energy	
Child Mortality Rate		Average Years of School	
Population Growth Rate		Internet Use	
International Migration		Mobile Cell Phone Users	
Urban Population		Lifetime Risk of Maternal Death	
Median Age		Access to Clean Water and Basic Sanitation	
Carbon Emissions		Prevalence of Undernutrition	
Atmospheric Concentration of CO_2		Prevalence of Water Stress	
Number of Cars in the World		Size of Global Middle Class	
Meat Production		Plastics Production	
Biodiversity		Resource Extraction	
Size of Coral Reef Cover		Women in Political Leadership	

Reporting Cards

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Student Worksheet Answer Key

Indicator	↑/↓	Report	Teacher Notes
Life Expectancy	↑	Positive	Has improved worldwide but is still lower in less developed countries
Total Fertility Rate	↓	Positive	Fertility rates all over the world have decreased but still range from 6.7 in Niger to 0.8 in South Korea
Child Mortality Rate	↓	Positive	Has improved worldwide but remains high in less developed countries
Population Growth Rate	↓	Positive	Has slowed but remains high in developing countries; the global population continues to grow
International Migration	↑	Negative	More people are on the move, often displaced by war, civil strife, and environmental disasters
Urban Population	↑	Mixed	Cities provide more infrastructure and services but unchecked sprawl uses up valuable land; cities that grow too quickly can lack adequate resources and informal settlements with low living conditions can arise
Median Age	↑	Positive	On average, people are living longer; as birth and death rates decline, populations grow older
Carbon Emissions	↑	Negative	Continues to go up as industrialization increases worldwide
Atmospheric Concentration of CO_2	↑	Negative	Continues to rise steadily leading to warmer worldwide temperatures, ice melt, more extreme weather, etc.
Number of Cars in the World	↑	Mixed	Fuel combustion contributes to climate change so more cars are not desirable; however, it is also an indication of development in emerging economies
Meat Production	↑	Mixed	More land for grazing instead of growing crops and forests; high meat diet can cause health problems; in poorer countries, more meat consumption may provide needed protein
Biodiversity	↓	Negative	Losing the great variety of animals and plants on the planet has unimaginable consequences to ecosystems and human well-being
Size of Coral Reef Cover	↓	Negative	Loss of reef biodiversity and habitat for a large percentage of marine life
Ecological Footprint	↑	Negative	Unsustainable use of land and resources
Use of Renewable Energy	↑	Positive	Renewable energy can replace fossil fuel use in electricity generation, thus reducing CO_2 emissions

Indicator	↑/↓	Report	Teacher Notes
Average Years of School	↑	Positive	Though an overall increase, there is still a gender disparity in girls' schooling relative to boys' schooling
Internet Use	↑	Positive	More global communication and networking
Mobile Cell Phone Users	↑	Positive	More global connections
Lifetime Risk of Maternal Death	↓	Positive	Gains have not been uniform around the world and there is still a long way to go in least developed countries
Access to Clean Water and Basic Sanitation	↑	Positive	There have been modest gains in recent years, yet 2 billion people lack easy access to safely managed drinking water and 2.4 billion lack improved sanitation
Prevalence of Undernutrition	↓	Mixed	Globally, 700-800 million people still experience chronic hunger. It had been trending downward, but ticked back up in recent years
Prevalence of Water Stress	↑	Negative	Water demand is increasing due to agriculture, industry, and household use. At the same time, climate change creates drought conditions in many areas, and water pollution contaminates water supplies
Global Middle Class	↑	Positive	Affluence is growing around the world, enabling more people to have a decent standard of living
Plastics Production	↑	Negative	Single use plastics, such as bags and water bottles, are difficult to recycle and create waste that pollutes the ocean and other waterways
Resource Extraction	↑	Mixed	Mining can cause damage to surrounding ecosystems, contaminate water, and risk the health and safety of miners. A greater demand for products that rely on extraction (fossil fuels, minerals, metals, etc.) can indicate growing global affluence
Women in Political Leadership	↑	Positive	Increase is very small relative to the number of male lawmakers; some countries have quotas to increase female participation, but most do not