World Population Video

Introduction:

Human population is growing everyday. With the global birth rate at almost 2.5 times the death rate, we are adding roughly 83.6 million people to the planet every year – the equivalent of one Hong Kong a month. And while our numbers keep increasing, the Earth struggles to keep up with our demands.

But this hasn't always been the case. Back in 1 A.D., there were approximately 170 million people on the planet, about half the current population of the U.S and Canada. Today, the Earth is home to 7.6 billion. And while our growth has been mighty, population impact isn't just about flat numbers. It's also about what those numbers are doing – how many resources each of those individual "numbers," or people, are consuming, as well as how much waste they produce. Over the last 2,000 years, population has increased by over 40-fold and our consumption has swelled to record amounts.

World population reached 7 billion in 2011 and is expected reach 8 billion in 2023. Let's explore how we got to this point.

Materials:

World Population (Population Connection, 2015)
Student Worksheet

Procedure:

1. Introduce the idea that human population growth has not been consistent over time. You may want to share with students the following information:

   - In the year 1 A.D., there were approximately 170 million people, about half the current population of the U.S. and Canada.

   - We didn't reach one billion people until 1804.

   - In the year 2018, world population approximately 7.6 billion.

2. Show the film, *World Population.* It can be streamed online at www.WorldPopulationHistory.org.

Concept:

The rate of population growth over time has not been constant because of technological and social factors that influence where, when, and why population size changes.

Objectives:

Students will be able to:
- Recognize where and when population has changed over the past 2,000 years.
- Identify technological and social changes that allowed population to increase at certain points in history.
- Compare current population size to the population size of past events.

Subjects:

Environmental Science, Geography, Health, History, Mathemathics, Science, Social Studies

Skills:

Making cause-and-effect connections, map reading, interpreting visual data

Method:

Students watch *World Population* to see a graphic simulation of human population growth over time and answer questions about why population size has changed, where these changes occurred, and what factors may have contributed to these changes.

3. Pass out the Student Worksheet and give the students a bit of time to read through the questions.

4. Show *World Population* again and allow students to fill out the worksheet while the film is running and afterwards if they need more time.

5. Go over the answers to the worksheet as a class. It may be helpful to start up the video and pause at the different periods being discussed as you go over the questions.

Name: _____   Date:_____

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Student Worksheet

<u>Video Comprehension</u>

1. What is the sound you hear during the video? What does it symbolize?

2. During what years did you see the most drastic population growth?

3. What two areas on the map have the highest density of dots at the beginning of the film? Do those areas still have large populations today?

4. At the beginning of the film, the areas with fairly dense dots are mostly in places where the climate is good and the land is fertile. Often along river banks and near deltas, people have developed forms of agriculture. What is the link between agriculture and population growth?

5. The bubonic plague killed approximately 75 million people. What areas were hit hardest by the plague and why? How might increased population density contribute to a virus's ability to spread?

6. Approximately what year did you begin to notice the most significant population growth? What historical events, scientific and/or technological advances, and social changes were happening at that time? How did these influence population?

7. At the end of the video, were there any areas that remained relatively unpopulated? Why might this be?

8. If current growth rates continue, our population would double to over 15 billion in 64 years. However, the United Nations mid-level estimate is that world population will plateau at just over 11 billion around the turn of the century. What changes could occur between now and 2100 to reduce the rate of growth?

9. Knowing we are currently adding one billion people to the planet roughly every 12-14 years, approximately how many people are we then adding every year? How many every month?

Name: _____   Date:_____

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Student Worksheet

People sometimes believe that our rapid population growth is mitigated by death-causing events (wars, natural disasters, accidents, diseases, etc.) taking place around the world. As devastating as these events are, they often have little impact on overall population growth worldwide.

We are currently adding 229,000 people to the planet each day. In the chart below, you'll find some of the world's worst disasters listed along with an approximate death toll for each. At today's present rate of growth, determine how many days it would take to replace those lost. (Round off to one decimal.)

Past Disasters	Approximate number of deaths	Time it would take, at the present rate of population growth, to replace those lost
Japanese Earthquake/Tsunami (2011)	15,900	
All U.S. accident deaths (2016)	161,374	
Indian Ocean Tsunami (2004)	225,000	
Total American battle deaths in all wars as of 2016	655,000	
Total U.S. automobile deaths through 2016	3,250,000	
Chinese famine (1887-1878)	9,500,000	
Influenza epidemic (1918)	21,000,000	
Total AIDS deaths through 2016	35,000,000	
Black plague (1347-1351)	75,000,000	

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Student Worksheet Answers

Video Comprehension

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

2. *1900 - 2050*

3. *China and India; yes, China is the most populated country in the world, followed by India.*

4. *At this time, agriculture had given people some control over their food supply; a control they had not experienced while dependant on the ups and downs of hunting and gathering. This ability to control the amount of food grown and plan for future needs provided the base for larger families (supplying nourishment for more people). But it also created the need for larger families as more hands became necessary to work in the fields. Additionally, planting crops led to permanent settlements so population density rose.*

5. *Areas of higher population density (Europe and Southeast Asia) were hit hardest by the plague. Increased population density means that people are physically closer together and germs, bacteria, and viruses can easily move from person to person.*

6. *Population started to increase dramatically around the year 1800. This was during the Industrial Revolution when advances in medicine, agriculture/nutrition, sanitation, and transportation were starting to improve people's quality of life. As a result, people started living longer and the death rate decreased. The birth rate, however, stayed high and as a result, we see rapid population growth.*

7. *Yes, there were areas that remained unpopulated. Most of these areas have extremely harsh environments, making them inhospitable for living and challenging, if not impossible, to grow food. These areas include frozen tundra, deserts, and rocky high mountains.*

8. *For our growth to slow, one of two things must happen – the birth rate must decrease or the death rate must increase. Currently, experts expect the former to occur. As developing countries see improvements in sanitation, medical care, economic opportunities, education, etc., women will mostly likely have fewer children.*

9. *Every year, we area adding approximately 83.6 million people to the planet. (1,000,000,000/12 years) Every month, we are adding nearly 7 million. (83,00,000/12 months)*

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Student Worksheet Answers, cont.

Past Disasters	Approximate number of deaths	Time it would take, at the present rate of population growth, to replace those lost
Japanese Earthquake/Tsunami (2011)	15,900	$\frac{15,900}{229,000}$=0.07 days=1.5 hours
All U.S. accident deaths (2016)	161,374	$\frac{161,374}{229,000}$ = .7 days
Indian Ocean Tsunami (2004)	225,000	$\frac{225,000}{229,000}$ = 1 day
Total American battle deaths in all wars as of 2016	655,000	$\frac{655,000}{229,000}$ = 2.8 days
Total U.S. automobile deaths through 2016	3,250,000	$\frac{3,250,000}{229,000}$ = 14.2 days
Chinese famine (1887-1878)	9,500,000	$\frac{9,500,000}{229,000}$ = 41.5 days
Influenza epidemic (1918)	21,000,000	$\frac{21,000,000}{229,000}$ = 91.7 days
Total AIDS deaths through 2016	35,000,000	$\frac{25,000,000}{229,000}$ = 153 days
Black plague (1347-1351)	75,000,000	$\frac{75,000,000}{229,000}$ = 327.5 days

Sources: Casualty figures obtained from National Center for Health Statistics, Center for Disease Control and Prevention; Information Please Almanac, www.infoplease.com; World Health Organization, National Highway and Traffic Safety Administration