Gbus390/Engr390 - Engineering in a Global Context

My Story

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Born Global
Testing your Knowledge

1. In all low-income countries across the world today, how many girls finish primary school?
   A: 20 percent  B: 40 percent  C: 60 percent

2. Where does the majority of the world population live?
   A: Low-income countries  B: Middle-income countries  C: High-income countries

3. In the last 20 years, the proportion of the world population living in extreme poverty has . . .
   A: almost doubled  B: remained more or less the same  C: almost halved

4. What is the life expectancy of the world today?
   A: 50 years  B: 60 years  C: 70 years

5. There are 2 billion children in the world today, aged 0 to 15 years old. How many children will there be in the year 2100, according to the United Nations?
   A: 4 billion  B: 3 billion  C: 2 billion

6. The UN predicts that by 2100 the world population will have increased by another 4 billion people. What is the main reason?
   A: There will be more children (age below 15)  B: There will be more adults (age 15 to 74)  C: There will be more very old people (age 75 and older)

7. How did the number of deaths per year from natural disasters change over the last hundred years?
   A: More than doubled  B: Remained about the same  C: Decreased to less than half

8. There are roughly 7 billion people in the world today, which options more accurately represents where they live?
   A. 1 billion in Europe, 4 billion in Asia, 1 billion in Africa and 1 billion in America.
   B. 1 billion in Europe, 3 billion in Asia, 2 billion in Africa and 1 billion in America
   C. 1 billion in Europe, 3 billion in Asia, 1 billion in Africa and 2 billion in America.
Testing your Knowledge

9. How many of the world's 1-year-old children today have been vaccinated against some disease?
   A: 20 percent  B: 50 percent  C: 80 percent

10. Worldwide, 30-year-old men have spent 10 years in school, on average. How many years have women of the same age spent in school?
    A: 9 years  B: 6 years  C: 3 years

11. In 1996, tigers, giant pandas, and black rhinos were all listed as endangered. How many of these three species are more critically endangered today?
    A: Two of them  B: One of them  C: None of them

12. How many people in the world have some access to electricity?
    A: 20 percent  B: 50 percent  C: 80 percent

13. Global climate experts believe that, over the next 100 years, the average temperature will . . .
    A: get warmer  B: remain the same  C: get colder

16 bad things decreasing

LEGAL SLAVERY
Countries where forced labor is legal or practiced by the state (out of 195)

BATTLE DEATHS
Battle deaths per 100,000 people

CHILD LABOR
Share of children aged 5-14 who work full time under bad conditions

OIL SPILLS
1,000 tons oil spilled from tanker ships

CHILDREN DYING
Percent dying before their fifth birthday

DEATH PENALTY
Countries with death penalty (of 194)

Source: Book Factfulness by Hans Rosling
16 bad things decreasing

DEATHS FROM DISASTER
1,000 deaths/year (10-year averages)

LEADED GASOLINE
Countries allowing lead in gasoline (of 194)

HIV INFECTIONS
New HIV infections per million people

HUNGER
Share of people undernourished

NUCLEAR ARMS
1,000s of nuclear warheads

OZONE DEPLETION
1,000 tons ozone-depleting substances used

PLANE CRASH DEATHS
Deaths per 10 billion passenger miles (5-year averages)

EXPENSIVE SOLAR PANELS
Average price of PV modules ($/Wp)

SMALLPOX
Countries with smallpox cases (of 194)

Source: Factfulness by Hans Rosling
16 good things increasing

**Child Cancer Survival**
- 5-year survival of those diagnosed before age 20, with best treatment
- 58% in 1975
- 80% in 2010

**Mobile Phones**
- Share of people with a cell phone
- 0.0003% in 1980
- 65% in 2017

**Democracy**
- Share of humanity living in democracy
- 1% in 1816
- 56% in 2015

**Electricity Coverage**
- Share of people with some access to electricity
- 72% in 1991
- 85% in 2014

**Girls in School**
- Share of girls of primary school age enrolled
- 65% in 1970
- 90% in 2015

**Harvest**
- Cereal yield (thousand kg per hectare)
- 1.4 in 1961
- 4 in 2014

**Immunization**
- Share of 1-year-olds who got at least one vaccination
- 22% in 1980
- 88% in 2016

**Internet**
- Share of people using the Internet
- 0% in 1980
- 48% in 2017

**Literacy**
- Share of adults (15+) with basic skills to read and write
- 10% in 1880
- 86% in 2016

**New Movies**
- Number of new feature films per year
- 11,000 in 2016

**New Music**
- New music recordings per year
- 6,210,002 in 2015

**Protected Nature**
- Share of Earth's land surface protected as national parks and other reserves
- 0.03% in 1900
- 14.7% in 2016

Source: Factfulness by Hans Rosling
16 good things increasing

- **SCIENCE**: Scholarly articles published per year
  - 1665
  - 1700: 119
  - 1800: 1700
  - 1900: 2,550,000
  - 2000
  - Source: Royal Society of London, Phils. & Trans.

- **SMOKE PARTICLES**: Kg SO₂ particles emitted per person
  - 1970: 38 kg
  - 1980: 14 kg
  - 2000
  - Source: Gapminder[1], F. van Dijk, Goldstein, CEDAC & UN/Pop2[1]

- **MONITORED SPECIES**: Listed species with assessed threat status
  - 1959: 34
  - 1990
  - 2000: 87,967
  - 2017
  - Source: Gapminder[2], based on example: IUCN Red List versions

- **WATER**: Share of people with water from protected source
  - 1980: 38%
  - 1990: 88%
  - 2010
  - Source: WHO[1], UNICEF[1], World Bank[1]

- **WOMEN’S RIGHT TO VOTE**: Countries with equal rights for women and men to vote (out of 194)
  - 1893
  - 1930: 192
  - 1990
  - 2017: 193
  - Source: Gapminder[23]

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**FACTFULNESS**

Ten Myths We’re Wrong About the World—and Why Things Are Better Than You Think

As long as there are plane crashes, preventable child deaths, endangered species, climate change sceptics, male chauvinists, crazy dictators, toxic waste, journalists in prison, and girls not getting an education, we cannot relax. But it is just as ridiculous to look away from the progress that has been made. The consequent loss of hope can be devastating. When people wrongly believe that nothing is improving, they may lose confidence in measures that actually work.

Hans Rosling, *Factfulness*, 2018
Hans Rosling argues that there are four categories to keep in mind. The world’s seven billion people can be mapped across four income levels:

- There are essentially a billion people in extreme poverty, on $1-2 a day.
- The next step up begins at $4 a day, and 3 billion people live at this stage.
- Between $8-$32 a day we have level three, and it is here that people begin to get water on tap and stable enough electricity to run a fridge. Two billion people are at this level.
- Finally, there are a billion people at stage 4, which is likely to include you and I.

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Everyone lives on Dollar Street

- Your house number shows your income per month. Most people live somewhere between the richest and the poorest

https://www.gapminder.org/dollar-street/matrix
How Did Babies per Woman Change in the World?

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- Communication/language challenges
Languages

- Help to define cultures

6,500 living languages listed. Of these, 6,000 have registered population figures. 52% of the 6,000 languages are spoken by less than 10,000 people, and 28% are spoken by less than 1,000 people. 83% of them are limited to single countries.

Culture - two components - Language and Religion

Horror Mistakes

Classifying Cultural Differences

1. Context Approach
2. Cluster Approach
3. Dimension Approach
CONTEXT APPROACH

Context is the background against which interaction takes place.

- In low-context cultures such as those in North American or Western Europe, communication usually taken at face value without much reliance on unspoken conditions or assumptions. “No” means “no.”

- In high-context cultures such as those in Arab and Asian countries, communication relies heavily upon unspoken conditions or assumptions. “No” does not necessarily mean “no.”

Why is Context Important?

- Intercultural Team Experiencing a Culture Clash in the Workplace
- Example of Someone from a Low-Context Culture Giving Feedback
Cultural Differences/Insights

Sensitivity to cultural differences does not guarantee success but can at least avoid blunders.

Cultural Gaffes Beyond Your Borders

• Ethical challenges
The abuse of public power for private benefits usually in the form of bribery, in cash or in kind.

ENGINEERS MUST ACTIVELY FIGHT CORRUPTION

“ZERO TOLERANCE”-DISCUSS

Canadian Prime Minister Justin Trudeau faces election year corruption scandal

• Liability of foreignness and how to overcome it?

The inherent disadvantage foreign firms experience in host countries because of their nonnative status.

Institutional Based View and Resource Based View:
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Institutional Based View and Resource Based View:
You need to take actions deemed legitimate by formal and informal institutions.

• Differences in formal institutions may lead to regulatory risks due to differences in political, economic, and legal systems.

• Informally, numerous differences in cultures, norms, and values create another major source of liability of foreignness.

You have to deploy overwhelming resources and capabilities to offset the liability of foreignness.

Microfinance

• Microfinance involves lending small sums ($50-$300) used to start small businesses with the intention of ultimately lifting the entrepreneurs out of poverty.
Lunch and Learn - GHEE

- Corporate social responsibility (CSR)/Ethical issues abroad
  1. Sweat Shops
  2. Child Labor
  3. Environmental Issues