Sustainability

Meeting “the needs of the present without compromising the ability of future generations to meet their own needs.”

World Commission on Environment and Development: Our Common Future, 1987

“Sustainability is about more than just quality of life. It is about understanding the connections between and achieving balance among the social, economic, and environmental pieces of a community.”

American Institute of Architects

http://www.sustainablemeasures.com
Three Components of Sustainability

Healthy Environment
Healthy Economy
Healthy Society

From: http://www.sustainablemeasures.com
Needed: Global Villagers

- Global Environmental Problems
- Global Economics
- Global Interdependence
Three parts of sustainability: *Two Interpretations*

From: http://www.sustainablemeasures.com
Energy Literacy and Citizenship

- US and Global Economy
- National Security
- Global Climate Change

- Science, Math, Social Studies, Language Arts
Fossil Fuels drive our Economy

- Electricity generation
- Transportation fuels
- Raw materials for manufacturing
  - Plastics
  - Fertilizers
  - Asphalt

Human Health & Ecosystem Effects
Supply

Demand

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Source: Energy Information Administration, AER 2007
What is the connection between consumption of fossil fuels and CO$_2$ emissions?
What is the connection between Carbon Dioxide and Global Warming?

Source: Sustainable Energy Ireland (SEI), 2007
Need for Clean Energy

“The era we are heading into will be an era in which our lives, our ecosystems, our economies, and our political choices will be constrained if we do not find a cleaner way to power our future and a better way to protect our natural world.”

- Thomas Friedman
Promoting Energy Awareness among Students

The average person generates 94lbs of \( \text{CO}_2 \) per day.
Activity: Connecting Electrical Consumption to Coal and CO$_2$
Activity:
Investigating your “Carbon Footprint”

20,750 lbs CO$_2$/year
Average emissions per person in the United States (EPA)
Activity: Hidden Energy

- Diagram the materials used to make, market, utilize and dispose of this object.
- Consider the following:
  - Raw materials
  - Manufacturing
  - Packaging, transport, and storage
  - Marketing
  - Use/Lifespan
  - Disposal
Hidden Energy

• Finally, indicate the steps on your diagram that use energy and result in CO$_2$ emissions.
Wrap-Up Activity

• View your object from the perspective of the manufacturer: How can the carbon footprint of your object be reduced?
• View your object from the perspective of the consumer: How can the carbon footprint of your object be reduced?
Students Presenting their analysis of a plastic bottle of OJ
Is it Sustainable?

• In your group, assess the overall sustainability of this product by evaluating its sustainability from an economic, environmental, and social perspective.
These lessons can be downloaded at:
http://www.ie.unc.edu/erp/resources.cfm

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Other Sustainability Curricula

• The Keystone Center
  http://www.keystonecurriculum.org/index.html

• Facing the Future
  http://www.facingthefuture.org/
EPA Life Cycle Posters

http://www.epa.gov/epawaste/education/ordermad-ms.htm