

Energy

1. What does the word energy mean to you?
2. What are some issues surrounding energy in our world today?
3. What does energy in the *real world* look like?

1. What does the word energy mean to you?

- ability to do something like running/sleeping
- not being tired
- Source of power - power plants
(windmills, dams)
- source of life
- nuclear energy
- electricity

2. What are some issues surrounding energy in our world today?

- lack of access to electricity
- high energy consumption
- climate change
- clean energy sources
- production of energy

3. What does energy in the *real world* look like?

- the sun
- cars
- planes
- phones
- lights
- fire
- boats
- TVs
- technology
- solar panels
- running, movement



Energy

In science, energy has a very precise definition:

Energy is the ability to do work.

So...what is work?

Five Experiments

	Work?	
	Yes	No
1) Holding the textbook - not moving	25	0 
2) Lifting the textbook	25	0  ←
3) Walking at constant speed holding textbook	24	1
4) Pushing wall - not moving	17	8
5) Swinging mass in a circle	13	12

For work to be done, 3 things are required

- 1) A force needs to be applied
- 2) An object needs to move
- 3) At least a part of the force must be in the direction of motion.

Types of Energy

Potential Energy

(stored energy)

gravitational potential
(higher = more energy)

nuclear energy (sun, fission, fusion,
bombs)

chemical energy (batteries, combustion,
fuels, food)

electromagnetic (batteries, static electricity,
magnets)

elastic energy (springs, anything
that can be stretched or compressed)

Kinetic Energy

(energy of motion)

wind energy

rotational energy

light

heat

electrical (current)

⋮

anything that moves

Questions for discussion:

1. With the knowledge of the scientific meaning of energy, does this change the answers to your questions at the start of class?
2. How can we recognize energy in the world around us?
3. Which energies are possible to harness to help make society more sustainable?
4. What type of energy production would you like to know more about?