Energy Teaching Ideas and Information

Background Information:

- Energy is the ability to do work
- Our bodies need energy and we need energy to power almost everything that we do.
- Energy can be classified into two main groups: Renewable and Non Renewable
  -Renewable Energy is: Hydroelectric, solar, biomass, wind, geothermal, ocean
  -Non Renewable Energy is: Coal, Petroleum, Natural Gas and nuclear
- There are many sources of energy: *sound, heat, thermal, chemical, light, electrical, magnetic, solar, wind and nuclear to name a few.*
- There are 2 states of energy: Potential (stored energy) and Kinetic (motion energy)
- Fossil Fuels provide us with: plastic, fuel for planes, cars and furnaces and makes electricity.

☞*There is a lot of confusion over the terms used relating to energy. For young learners, it is helpful to use following terms for consistency:*

> 2 groups of energy (renewable and non-renewable)
> 2 states of energy (potential and kinetic)
> Many sources of energy— *electrical, wind, solar, fuel, nuclear, battery etc.*
> The 3 forms of energy are heat, light and sound.

Discussion Questions:

1. Brainstorm everything that moves. Using the list of everything that moves, develop categories of why it moves—natural or man made movements and include everything brainstormed in one of the categories. *(Introduce the term motion as all motion is the result of energy.)*
2. Why is it important to use energy wisely?
3. How can you use energy wisely?
4. Why might energy be scarce?
5. How do animals use energy? *(Like humans, need food to grow).*
6. Brainstorm all the things we need and use energy for.
7. What time of day do you think the most energy is used? Why?
8. List everything we use light for.
9. List everything we use heat for.
10. List everything we use sound for.
11. How many electrical appliances can you list?
12. List everything you use energy for in a day from the time you get up until you go to bed.
13. Look through ads/newspapers, magazines and create a collage of everything that uses energy.
14. The way humans move is called mechanical energy. Brainstorm all the ways that humans move.

Energy Discussion Questions Continued….

15. Why is it important to use electricity safely? *(Keep electrical away from water and metal as they are good conductors of electricity and will cause shocks and potential death. Never touch switches on the end or put anything in outlets, never stick anything in toaster—especially metal, do not overload sockets, do not fly kites near overhead wires...)*
16. Discuss how you can use electricity safely in each room of the house and in the classroom.
17. Brainstorm what like would be like without electricity.
18. Look online to show the students the new solar cars that are being developed.
19. Discuss wind turbines, find out where they are and how they work and learn about where the wind farms are. Have students make their own wind mills with the pattern.
20. Classify the sources of energy into solids, liquids and gases to tie states of matter in with energy. (*Solids—coal, wood, uranium….Liquids—gases, oil, water—-Gases—-Solar, wind…)*
21. Discuss all the ways we conserve energy. *(Water (eliminating drips, shorter showers, minimal grass watering, saving rainwater), Heat (insulation, caulking, dress warmer, hang clothes to dry, efficient furnaces, better windows), Light (economical light bulbs, use more natural light, turn off what isn't in use)*
22. Have students design a poster/flyer about energy conservation.
23. Invite the school custodian/janitor in to explain how the school tries to save/conserve energy.
24. A lot of research today is focusing on harnessing energy from water, wind and solar. Why might this be?
25. Brainstorm all the ways the sun's heat and light energy help us.
26. Brainstorm where your humans, animals and plants get energy from.
27. Energy causes movement—go on a scavenger hunt and identify all things that move. Then classify what caused the movement.
28. Make a graph using a show of hands to see what room students think uses the most energy at their house.
29. Make a graph showing what type of energy cools or heats students homes.
30. Develop checklists to save energy.