

## Types of Energy Lesson Plan

### Science Standards Addressed

#### ***CDE Standard 1 – Physical Science***

4<sup>th</sup> grade: Outcome a &c:

- a). Identify and describe the variety of energy sources
- c). Describe the energy transformation that takes place in electrical circuits where light, heat, sound, and magnetic effects are produced

#### ***Adams 50 Standards***

2<sup>nd</sup> grade:

**SC.02.41.01.03** Energy comes in many forms such as light, heat, sound, magnetic, chemical, and electrical.

**SC.02.81.02.03** There are different forms of energy and those forms of energy can be changed from one to another - but total energy is conserved

5<sup>th</sup> level:

**SC.05.41.01.03** Energy comes in many forms such as light, heat, sound, magnetic, chemical, and electrical

**SC.05.81.02.03** There are different forms of energy and those forms of energy can be changed from one to another - but total energy is conserved

**Objective:** To introduce the students to the concept of energy, and the idea that there are many different types of energy that can be converted from one to another.

### Materials:

- Power Point, chart paper or lots of white board space
- Energy transformation demo kit (FOSS)
  - Fan
  - Windmill
  - LED/Speaker board
  - Misc. connections

(specifics of the demo may vary, tailor lesson accordingly)

### Procedure:

#### *Preparation:*

1. Set up the energy demo (windmill, fan, etc.), make sure each component is working appropriately, and set it aside. Print out enough diagrams of the system to cover all the small groups you'll be dividing the students into. Leave blanks at each of the conversion steps.
2. On the board, list out all of the different types of energy you will cover in the activity (your discretion). Make sure to include kinetic, electrical & light to match the demo.
3. (Use PowerPoint, chart paper, etc.) Draw (or find pictures of) various everyday objects that are examples of energy being used. Underneath the pictures, provide a multiple choice style "quiz" on the type(s) of energy demonstrated in the pictures.

For example:

*Picture:* A baseball flying

*Energy Options:* 1. Chemical 2. Kinetic 3. Electrical

*Picture:* An iPod

*Energy Options:* 1. Electrical & Kinetic 2. Magnetic & Heat 3. Electrical & Sound

*Picture:* A campfire

*Energy Options:* 1. Magnetic & Kinetic 2. Chemical & Heat 3. Nuclear & Sound

Keep going until you have 8-10 examples. Try to incorporate as many different energy types as possible. (Hint: kids love Xbox and Playstation. Throw some iPads in there too.)

*Activity:*

*(Note: if students are already familiar with the general concept of energy, do a brief review and move on to step 2.)*

1. Introduce students to the concept of energy, and explain that energy is what allows everything around them to happen. Everything that moves, glows, makes noise, etc. is using energy. Have the students suggest things that they see/know of that use energy.
2. Explain that there are many different types of energy. Using the list on the board as a guide, introduce the students to the various forms of energy. Simplify the descriptions as much as possible (when something is moving, it has kinetic energy, when something is making noise, it's using sound energy, etc.).
3. Activate your presentation/pull out the chart paper and ask the kids to identify the object you have drawn (be prepared to be declared the best artist of all time). Walk them through the "energy options" below the picture, and ask them to vote, as a class, on what they think the matching energy type is. Keep going through all of your examples. For the first couple pictures, the students will need a lot of help, but gradually they'll start to get it. Focus on the objects that are using multiple energy types. Explain how in each one, one type of energy is being converted into another. (Campfire is Chemical to Heat, etc.).
4. Introduce the conservation of energy principle, explaining that it is demonstrated by all of the objects that use multiple types of energy.
5. Have the kids get up and explore the classroom. Ask them to find at least three different objects that are using three different types of energy, and write down their findings. Allow about 5-10 minutes for this step. After, ask the students to share their findings.
6. Bring out the energy demo you set up earlier, and activate it in front of the class.
7. Ask the class, as a group to identify all of the energy types being used in the demo, writing down the list as a way of reinforcing the vocabulary, and creating a word bank for the next step.
8. Divide the class into small groups, and ask each group to fill out the energy diagram of the demo with appropriate energy types and energy transformations. Walk around and work with each group, assisting as needed.

9. Reconvene as a class, and create a general energy diagram of the demo. Fill in the gaps as necessary, using guiding questions about each step to help the students reach the conclusions on their own.
10. Ask the students to write down something about what they learned today, and share it with the class.
11. If time allows, watch a Magic School Bus video on energy.