

Lesson Plan: The Great Energy Hunt

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Classes: 7th Honors

Unit / Lesson: Energy

Key Concept / Essential Question: Where can we find the 8 different types of energy around the classroom?

Standards:

- 7.PS.8 Investigate a process in which energy is transferred from one form to another and provide evidence that the total amount of energy does not change during the transfer when the system is closed (Law of Conservation of energy).

Materials: fan, toaster, toaster oven, blender, mixer, food, microwave, hot plate, hot water (or tea, coffee, etc), rubber bands, basketball, dipping bird, radio anything that can illustrate one of the 8 types of energy. Many of these things may already be in the classroom.

Objective: Students will...

- Identify objects around the room that display one or more of the 8 types of energy (kinetic, potential, mechanical, nuclear, thermal, chemical, electrical, and electromagnetic).
- Determine the transfers of energy that are taking place in the system.

Grouping: 3-5

Bell Ringer: (~10 minutes) Prompt students to trace the energy transfers that take place between the sun and a piece of toast (and no, the sun did not toast the bread). (5 min for student work, 5 min for class discussion and explanation of process.

Engage: (~10 minutes) Bell ringer that points out the connections of all energy to the sun

Teacher support: Big help from teacher here in leading discussion. "Where does that energy come from?" will be a repeated question. For instance, the toaster made heat. Okay, where did the toaster get the energy it needed to make heat? The outlet. Where does the energy in the outlet come from? The power plant. Where does the power plant get its energy from? Probably coal. What is coal? Dead decomposed plants. Where do plants get their energy from? The sun.

Explore: (10 minutes or fewer) Pass out lab sheet and explain that they'll be filling out the front table with places where they can find that type of energy in the classroom. Allow students time to walk around and place sticky notes on objects that they think displays a certain type of energy, and record on their sheet where they placed the note. They must find at least 2 objects for each of the 8 types of energy, and can do more as time allows.

Teacher support: Ask guiding questions if necessary. If a student asks if something would be thermal energy, ask if it's warm, or if they ask about electrical energy, ask if you plug it in or put batteries in it.

Explain: (~10 minutes or fewer) Come back together as a class to discuss which items were identified as which types of energy and why.

Teacher Support: Lead discussion with many questions, keep it brief (maybe 2-3 minutes?)

Extend: (Remainder of class time, ~15 minutes) Now the students are prompted to connect three of their energy examples to the sun (maybe specify that they should have three different types of energy that they talk about.) What isn't done in class is homework, there will be a short discussion on these questions the next day.

Teacher support: Helping to make connections, similar support as was given during the bell ringer discussion.

Reflection: This lab went great! I think they were really surprised that all of the energy can be traced back to the sun, and the act of tracing it back helped them to see the transformations of energy that take place. One of the common hiccups or sources of confusion was nuclear energy. The only thing in the room that could display nuclear energy was the sun, but many students also thought the microwave was nuclear energy and some thought this about batteries. With a focused discussion on that, however, I think we clarified that a little.

Name: _____ Date: _____

LAB: The Great Energy Hunt

Today you'll be going on a hunt through the classroom for as many sources of energy as you can find! There are 8 types of energy, and you should be able to find at least one example for each of them.

You will be given a stack of sticky notes with a types of energy written on the backs of the notes, and you'll have to place them around the room on or near appropriate examples of that energy. Once you've placed all the sticky notes with energy types already written on them, you have some blank notes to fill out with whatever types you want; place those around as well!

As you place your sticky notes, record the places you're leaving them in the spaces below, and don't forget to answer the questions on the back!

Kinetic energy	Potential energy
Mechanical energy	Electrical energy
Nuclear energy	Electromagnetic energy
Thermal energy	Chemical energy

Select one of your examples for chemical energy and, like we did for bell ringer, connect it to the sun.

Select one of your examples for kinetic energy and, like we did for bell ringer, connect it to the sun.

Select one of your examples for an energy type of your choice (not chemical or kinetic) and, like we did for bell ringer, connect it to the sun.