

How much energy do I need?

Energy Literacy Essential Principle 6: The amount of energy used by human society depends on many factors.

C3 Framework for Social Studies Focus Indicators

- D1:** Identify the disciplinary concepts and ideas associated with a supporting question that are open to interpretation. (D1.3.3-5)
- D2:** Compare the benefits and costs of individual choices. (D2.Eco.1.3-5)
- D3:** Use evidence to develop claims in response to compelling questions. (D3.4.3-5)
- D4:** Present a summary of arguments and explanations to others outside the classroom using print and oral technologies (e.g., posters, essays, letters, debates, speeches, and reports and digital technologies (e.g., Internet, social media, and digital documentary). (D4.3.3-5)

Grade Level: 9-12. **Time Required:** 3-4 class periods.

Connection to Energy Literacy

The amount of energy used can be calculated and monitored (Energy Literacy 6.8). In this activity, students consider the core economic concept of needs and wants. Students categorize common possessions as those they need and those they want. Then, they assess the “embedded energy” of those items.

Activity Outline

- Show to your students images of possessions common to families from different places. The family portraits presented in Peter Menzel’s *Material World* are an excellent resource for this purpose. Additionally, there are many images available online.
- Ask students to categorize items in each image as those that are needs and those that are wants. Ask students to rank the items according to the amount of energy that was used to create and deliver them, i.e. which items might require more energy to manufacture and transport and which might require less.
- Read *The Hard-Times Jar* by Ethel Footman Smothers to students. If the book is not available, you can show a video reading of the book (see link in the Resources section). Afterwards, discuss with your students what the main character from the story, Emma, was trying to obtain and what she had to do to reach her goal. Ask students whether the book that Emma was trying to get was a need or a want. Be sure students explain their ideas.

- As a class, define the following terms needs and wants. Ask students to support the definitions with examples.
 - Resource – a supply, especially one that can be drawn upon when needed.*
 - Needs – necessary for you to function and live.*
 - Wants – something you would like to have, but is not absolutely necessary.*
- Put a selection of small items in a basket. These might include pencils, stickers, or candy. Be sure there are enough items for each student to select two.
- Ask individual students to select any two items from the basket.
- Have each student identify each item as either a need or a want. Ask students to explain their ideas.
- Explain to students that another class will be doing the same activity and they do not have any items for this purpose. Point out to students that the resources for the activity are limited. Therefore, each student must return one of their items for the other class. Ask students to select one item and return it to you.
- Discuss the following with students:
 - Why did you choose to keep the one item?*
 - Is the item being returned a need or a want?*
 - Can you describe another time when you had to choose between two or more items?*
 - Why did you have to choose?*
- Ask students to work individually or in groups to create a collage that categorizes items that are needs and those that are wants. Provide magazines, scissors, glue, and construction paper for this purpose. Have students present their collages to the class.
- Ask students to write a passage. Provide the following prompt:
 - Identify an item that you would like for your next birthday. Describe how that item will make your life better or more enjoyable. Explain what you would be willing to give up in exchange for that item.*
- Show students the NPR video *Planet Money Makes a T-Shirt*. Discuss with students the main point of the video segment (a simple t-shirt is made through a complicated process). Explain to them that energy is used to produce all manufactured goods, from cars, to furniture, to toys. And, energy is used at every stage of production and distribution – to extract raw materials, to process them into finished goods and to package and ship them around the planet.
- Ask students to think more deeply about each of their birthday items. More specifically, have them consider the energy that was used to create and transport each item. Discuss with them where that energy may have come from. Ask them how much energy was needed to manufacture and transport the item. Have students think about the materials in the item, such as plastic or metal, and the energy required to manufacture those different materials. Finally, ask students how the energy associated with the manufacture and transport of the item might affect its cost.

- Have students create posters or other visual displays for their birthday items. Their displays can include their writing pieces as well as information about the energy that may have been used to manufacture and transport each item.
- Discuss with students the following: Are there options for fulfilling their wants that use less (or more sustainable) energy?

Suggested resources include:

- Peter Menzel's *Material World* http://www.amazon.com/gp/product/0871564300?ie=UTF8&n=283155&redirect=true&ref_=dp_proddesc_0&showDetailProductDesc=1#iframe-wrapper
- Ethel Footman Smothers's *The Hard Times Jar* <http://www.amazon.com/The-Hard-Times-Ethel-Footman-Smothers/dp/0374328528>
- *The Hard Times Jar* YouTube reading <https://www.youtube.com/watch?v=pbyoh8X4hOw>
- NPR "Planet Money Makes a T-Shirt" <http://apps.npr.org/tshirt/#/title>