

Energy Kid's Page

Energy Information Administration

Extension activities for using EIA's energy website.



Grade Level
Primary -
Secondary

Subject Areas
Math
Language Arts
Performing Arts



Teacher Guide

Goal

To incorporate technology into learning about energy. To make students familiar with a web resource for energy topics.

Introduction

The U.S. Department of Energy, Energy Information Administration (EIA) hosts a student-friendly website with a variety of information and activities about energy (www.eia.doe.gov/kids). NEED assists EIA with web content. The Energy Kid's Page consists of several main categories: Energy Facts, Fun and Games, Energy History, Classroom Activities, Related Links, and a Glossary. This teacher guide provides extension activities for using the Energy Kid's Page as a resource to incorporate technology use in your classroom.

Grade Level

Each activity has suggested age levels, from Primary to Secondary students.

Materials

Each activity has its own material requirements, but the majority simply require the students to have time using computers with internet access.

Procedure

- Review the Energy Kid's Page at www.eia.doe.gov/kids. Ensure that your school's computers have access to the site.
- Determine which activities your students are going to complete and prepare any additional materials needed.
- Secure computer lab time if needed.

Energy Facts

Comparing Fuel Consumption

Elementary, Intermediate

Assign students to the following groups: coal, electricity, natural gas, petroleum (crude oil), gasoline, and heating oil. After spending time researching how each fuel is used in the United States, have each group determine how their fuel's consumption is measured. Post use and measurement information on a chart. Have students predict which fuel contributes the most to U.S. energy consumption.

Pose this question to the students: How can we compare the consumption for each fuel when they are measured differently? Allow time for discussion. Using the **Energy Calculators** under the **Science of Energy** section of the website, work through conversion problems on the website as a group. Discuss the following questions:

1. What is a Btu?
2. How can it be used to compare fuels that are measured differently, such as a cubic foot of natural gas compared to a barrel of crude oil?

Have students use the **Energy Calculators** to convert their fuel consumption into Btus and include this information on the chart. Allow students time to research annual fuel consumption, post this on the chart, and graph the yearly consumption of the fuels in Btus. Have students review their predictions and discuss reasons why some fuels are used more than others.

Energy Statistics

Elementary, Intermediate

Have students compare the energy consumption and production information available under **Uses of Energy, Recent Statistics**. Have students create various graphs to highlight the statistics that answer the following questions:

1. Which fuel is consumed the most in the U.S.?
2. Which fuels are used for both home heating and electricity generation? Are they used to the same degree for both?
3. Is there a connection between energy consumption and CO₂ emissions?

Energy Commercials

Elementary, Intermediate, Secondary

Discuss as a class what makes a commercial memorable. Be sure to include such discussion topics as celebrity spokespeople, jingles and humor. Divide the students into groups. Assign each group to an energy source. Have the groups research their source under the **Sources of Energy** section of the website. Have each group write, design and produce a television or radio commercial with the goal of convincing the audience to use their source. Record the commercials for other classes to see and determine which source they would use. Put the commercials on local cable or radio stations.

Energy Source Presentations

Elementary, Intermediate, Secondary

Divide the students into groups and assign each to a renewable or nonrenewable energy source. Have each group research their energy source on the website under **Sources of Energy** and prepare a short presentation that conveys the following information:

1. How is the energy source formed? From where does it come?
2. How is the energy source used in our daily lives?
3. What are the advantages and disadvantages of using this energy source?

For more information, use the *Energy Source Expo* or *Transparent Energy* booklets from NEED.

Energy Facts, continued

Personal or School Energy Use

Elementary, Intermediate, Secondary

Have students gather data about their household energy use for a week. Include electricity, natural gas or heating oil and gasoline. Have students determine how much energy they consumed, using only one unit of measurement for all fuels. Gather the same information for the school and have students compare. Use the **Energy Calculators** under the **Science of Energy** section of the website.

Solid Waste and Energy

Elementary, Intermediate, Secondary

Have students explore the relationship between trash and energy. Assign students to groups to create presentation boards on the following topics: solid waste, ways to reduce waste, energy in landfills, waste-to-energy plants, recycling metal, recycling paper and glass, and recycling plastic. Allow time for each group to research their topic under **Saving Energy**. Have each group generate three questions for the class to answer at the end of their presentation. Allow time for each group to present to the class. As an additional resource, use the *Museum of Solid Waste and Energy* booklet from NEED.

Careers in Energy

Intermediate, Secondary

Divide the students into four groups, one for each of the major energy consumer sectors of the economy: residential, commercial, industrial and manufacturing, and transportation. Duplicate cooperative groups as necessary to maintain appropriate group size. Have each group research their sector using the **Uses of Energy** section of the website. Allow time for each group to brainstorm possible careers in that sector. Each group member should research a career and write a short synopsis of how that career influences the energy use in their sector. The Bureau of Labor Statistic's website can be used as an additional web resource (www.bls.gov). Have each group prepare a PowerPoint presentation about the use of energy and career opportunities in their sector.

Energy and Economic Sectors

Intermediate, Secondary

Using the **Uses of Energy** section and the **Energy Efficiency** section under **Saving Energy**, have student groups research the four major economic sectors: residential, commercial, industrial and manufacturing, and transportation. Have each group prepare a written or oral presentation about how the sector uses energy and ways to reduce energy use for that sector.

Persuasive Writing

Intermediate, Secondary

Assign persuasive writing or speeches addressing city council, convincing them to purchase or not purchase an energy source for use in your community. Have students consider what your community would use this source of energy for—producing electricity, heating and cooling, manufacturing, etc. Have students prepare a list of facts supporting why an energy source should or should not be used, then complete the persuasive speech or essay. Students may research the **Sources of Energy** on the website and use NEED's *Energy Infobooks* found at www.need.org.

Fun and Games

Coloring Pages

Primary, Elementary, Intermediate, Secondary

After coloring or reviewing the pictures available in the **Coloring Book**, have students create energy line drawings by hand or with a computer program. Photocopy and have a coloring contest. Older students can create an energy coloring book for younger students.

Energy Slogan

Primary, Elementary, Intermediate, Secondary

Have students create an energy slogan for their school. Have each student illustrate their slogan and write a short essay about why it was chosen and how it emulates the school. Hold a contest to choose the slogan for the school.

Creative Writing: Riddles

Elementary

Have students read the energy **Riddles** and then create their own riddles or jokes. Have students write a short paragraph with information to clarify or support the riddle or joke.

Creative Writing: Short Story

Elementary, Intermediate

Have students write a short story about a humorous misunderstanding involving **Energy Slang**.

Energy Field Trips

Elementary, Intermediate

Have each student choose a **Field Trip**. After reviewing Energy Ant's account, have students find additional information about the field trip site, research more about the source or use of energy, or research possible careers available at the site. Have students prepare a mock interview of Energy Ant about his field trip, including the additional information they gathered.

Nonfiction Writing

Elementary, Intermediate

Have students participate in a "Flat Antley" project (similar to Flat Stanley-visit www.flatstanley.com for more information). First, have students research a local energy **Field Trip** location, and visit it if possible. Research the energy source being used, and how the energy is used at the site. Start a journal about energy, including how Energy Ant has been a part of learning. Have students research additional field trip locations, contact them to see if they will participate and send your Flat Antley with the journal to them. Request that Flat Antley be returned with the journal complete with information about the location, any interesting experiences he may have had while on location and what he learned about energy. Have students create their own Flat Antleys, or to request a Flat Antley picture, contact info@need.org.

Energy Puzzles

Intermediate, Secondary

Have each student design by hand, or use a computer program, to create a word search, crossword puzzle or sudoku game. Students should select and use at least ten words from the website. Photocopy the puzzles, and randomly distribute to students as a quick activity whenever extra time allows.

Energy History

Energy Timeline

Elementary

Assign a comparative timeline activity. Have each student draw a timeline of their own family history, including the years parents, grandparents and great-grandparents were born as well as the year the community was founded and the school was built. Have students determine if any other significant dates should be included. Have students compare their personal timeline with the **Electricity** or **Transportation Timeline**. Have students write a few paragraphs describing how electricity or transportation has changed life over time. Have students include stories from their parents, grandparents or great-grandparents about how they used electricity or their transportation choices when they were the same age as the students.

Creative Writing: New Energy Inventions

Elementary, Intermediate

Working alone or in small groups, have students choose two or three **Famous People in Energy**. Ask the students to consider the following questions:

1. What would it have been like if these people were classmates?
2. What kind of invention might they have created?

Remind each group that the invention might be totally outrageous or extremely helpful—it is up to the group to decide. Have each group write a short description about the energy invention as well as draw an illustration by hand or with a computer program. Each group should write a paragraph predicting how this invention would have changed the history of energy.

Creative Writing: Short Stories

Elementary, Intermediate

Have students research **Famous People in Energy**. Have students create short energy stories or plays using characters from the list of famous people.

Energy Milestones

Elementary, Intermediate

Divide the General Energy Timeline (**Energy Timelines, General Milestones**) into blocks of time that have roughly equal amounts of milestones. Divide the students into working groups equal to the divisions of the timeline. Using the website and other resources, have students research the energy milestones. Have the students explain to the class how the energy milestones impacted the energy timeline.

Oral Presentations

Elementary, Intermediate, Secondary

Have students research **Famous People in Energy**. Conduct an Energy Hall of Fame Day. Have students prepare oral presentations sharing the energy contributions of the famous person. Allow students to dress the part and act as the famous person for dramatic emphasis. Invite other classrooms or parents to attend. Videotape the presentations and share with other classes or schools. Present awards for the best dressed, most energetic, most informative, etc.

Energy Predictions

Intermediate

Have students use the website to learn about a fuel used for energy and then review the **Energy Timeline** for that fuel. Have students predict what additions will be made to the timeline in the next 10, 25 and 50 years.

Classroom Activities

Energy Stories

Primary, Elementary

Use the **Energy Tales**, found under **Teachers and Students**, to introduce students to sources of energy. Put primary students into small groups. Pair with small groups of elementary students, who will serve as readers, creative directors and choreographers. Each group will perform one of the Energy Tales. Allow groups several class sessions to create props and practice dramatic interpretations to the tales. Perform for both classes during an Energy Tales Party.

Science Fair

Primary, Elementary, Intermediate, Secondary

Review the **Science Fair Activities** to generate ideas about possible energy science fair experiments. Have student brainstorm additional experiments and then conduct them.

Website Scavenger Hunt

Elementary

Use the **Energy Scavenger Hunt** under **Teachers and Students** to introduce students to the EIA website. The Scavenger Hunt asks questions about nonrenewable and renewable energy sources, forms of energy, the uses of energy, energy efficiency and electricity. Once completed, students can print off energy expert certificates.

Energy News

Elementary, Intermediate

Have students read some of the articles under **Energy News**. Then have students bring in newspaper, magazine or internet articles related to energy. Share the articles as a class. Have each student keep an energy news journal for a week, month or the year.

Energy Careers

Intermediate, Secondary

Allow students time to explore the career possibilities found at **Career Corner** under **Teachers and Students**. Have each student prepare a short essay on which career they are most interested in and why.

Global Oil Economy

Secondary

Oil Market Basics, found under **Teachers and Students**, is a web-based activity focused on fostering student understanding about the global oil economy and different segments of the oil market, specifically supply, demand, trade, refining, and stocks. A webquest quiz is included. Use this activity to answer these questions:

1. What are the processes and aspects of the global oil market?
2. How are these processes connected?
3. What are the variables in each of the processes?
4. How do these variables affect oil market prices?
5. What areas and countries are the biggest suppliers of oil?
6. What countries consume the most oil?
7. How much oil does the United States use?
8. How much oil does the United States import and from what countries?

Glossary

Energy Memory

Primary, Elementary, Intermediate, Secondary

Using words from the **Glossary**, have students create an energy memory card game. Have students design three cards for each word—one with the word, one with the definition, and one with a picture. For younger students, use only the word and picture. Once the cards are made, use them to play a memory game by mixing them and turning them face side down on the table. Have students compete to see who can clear the cards in the fastest time or compete against each other to see who can collect the greater number of sets.

Energy Name Game

Elementary

Using the **Glossary**, have students play the Energy Name Game. Stand in a circle and have each student say their name and an energy last name, such as Peter Petroleum or Sally Semiconductor, adding an action to their name that correlates to the energy word. The group repeats the name after the student. For more information, use the *Games and Icebreakers* booklet from NEED.

Energy Bingo

Elementary, Intermediate

Have students create Energy Bingo boards using words from the **Glossary**. Use the boards to play bingo in class where students must be able to define any of the words used to have a correct bingo.

Energy Vocabulary Game

Elementary, Intermediate, Secondary

Using words from the **Glossary**, have students develop a question and answer “Jeopardy” style game. Allow time to play in class, awarding winners with prizes.

Enriched Vocabulary

Elementary, Intermediate, Secondary

Have small groups of students choose an energy play from *Energy on Stage* (available from NEED). Add enriched vocabulary using the **Glossary**. Allow students time to practice the revised play, adding a way to emphasize the new vocabulary words (such as ringing a bell when they are spoken). Have the students perform the revised plays in class.

Energy Puzzles

Intermediate, Secondary

Have each student design by hand, or use a computer program, to create a word search, crossword puzzle or other word game. Students should select and use at least ten words from the **Glossary**. Photocopy the puzzles, and randomly distribute to students as a quick activity whenever extra time allows.