

LESSON PLAN: Pioneers of Energy

Michigan Curriculum Framework

Middle School

- **Benchmark SCI.II.1.MS.6** – Recognize the contributions made in science by cultures and individuals of diverse backgrounds.
- **Benchmark ELA.11.MS.2** – Explain and use resources that are most appropriate and readily available for investigating a particular question or topic.

High School

- **Benchmark SCI.II.1.HS.4** – Discuss the historical development of key scientific concepts and principles.
- **Benchmark ELA.11.HS.2** – Determine, evaluate and use resources that are most appropriate and readily available for investigating a particular question or topic.

Lesson Outcome

The student will research and present information on an important scientist or inventor who has made contributions to energy-related science.

Rationale/Purpose for Lesson

The discoveries of many scientists have led us to enjoy the everyday benefits of energy. This activity is designed to introduce students to many of the scientists and inventors that have contributed to energy-related developments. Students also may be exposed to developments being made in technology and uses of renewable energy.

Resources/Materials Required

- Teacher information guide (below)
- Access to research and reference materials such as encyclopedias, biographies and the Internet
- Copies of “Student Instruction Sheet”
- Copies of “Verbal Presentation Rubric”

Introduction

- Ask students to name 10 or 15 inventions that directly impact their daily life. Review the list to see if any are energy-related inventions (such as the light bulb).

- Have the students brainstorm some inventions that have impact on how they are able to use energy (such as having access to power from electric and gas sources).
- Using the “Teacher Information Guide” and the “Student Instruction Sheet,” introduce the research project, which will allow students to learn even more about these important scientific discoveries.

Procedures

- Distribute the “Student Instruction Sheet” and “Verbal Presentation Rubric.” Review the procedures for the research project and verbal presentation.
- Allow students to conduct research and compile presentation information over several days.
- Have students give verbal presentations in chronological order, highlighting how one discovery helped lead to later discoveries by other scientists.

Closure

After all of the presentations have been given, ask students what they learned about scientists, energy or inventions. Ask students what current technology and energy uses scientists may be developing today.

Teacher Information Guide

Suggested Scientists/Inventors

- Benjamin Franklin, 1706
- James Watt, 1736
- Alessandro Volta, 1745
- John Dalton, 1766
- Hans Oersted, 1777
- Georg Simon Ohm, 1787
- Michael Faraday, 1791
- James Prescott Joule, 1818
- Edwin Laurentine Drake, 1819
- James Clerk Maxwell, 1831
- Thomas Edison, 1847
- Lewis Latimer, 1848
- Nikola Tesla, 1856
- William Stanley, 1858
- Frederick M. Jones, 1892
- Other:
 - ⇒ Have students select an inventor listed on the “Famous People in Energy” Web page found at <http://www.eia.doe.gov/kids/history/people/pioneers.html> or the “Super Scientist” Web page found at <http://www.energyquest.ca.gov/scientists/index.html>.
 - ⇒ Have students research an inventor of newer technology including scientists and engineers working with alternative energy or energy efficiency.

Suggested Research Web Sites

- <http://www.eia.doe.gov/kids/history/people/pioneers.html>
- <http://www.energyquest.ca.gov/scientists/index.html>
- <http://www.ideafinder.com/history/category/energy.htm>
- <http://scienceworld.wolfram.com/biography>
- <http://www.pbs.org/wgbh/amex/edison/index.html> (Edison)
- <http://sln.fi.edu/franklin/scientst/faraday.html> (Faraday)
- <http://sln.fi.edu/franklin/scientst/scientst.html> (Franklin)

Pioneers of Energy Verbal Presentation

Student Instruction Sheet

1. Select a scientist or inventor that has made contributions to the field of energy. Your teacher may provide a list of suggested scientists to you. If you choose a scientist that is not on the list, make sure to have your selected scientist approved by your teacher.
2. Conduct research on the scientist you selected. Look for historical information on the person's life and scientific discoveries. Complete research will include information on:
 - Date and location of birth
 - Pertinent information on upbringing, such as family life or early schooling
 - How the scientist became interested in science or started working in the science field (include jobs held by the scientist)
 - Important scientific discoveries or inventions and their impacts
 - Other information you consider important in understanding the scientist's life or scientific contributions
3. Prepare a five-minute to 10-minute verbal presentation to present the findings of your research. Your presentation should include visual support such as a computer slideshow, a display board, pictures, brochures, etc. Presentations will be graded using the "Verbal Presentation Rubric."

Verbal Presentation Rubric: Pioneers of Energy

Student Name: _____

CATEGORY	4	3	2	1
Conducted Research	All historical information appeared to be accurate and in chronological order.	Almost all historical information appeared to be accurate and in chronological order.	Most of the historical information was accurate and in chronological order.	Very little of the historical information was accurate and/or in chronological order.
Presentation Content	Shows a full understanding of the topic, including all required historical elements.	Shows a good understanding of the topic, including required historical elements.	Shows a good understanding of parts of the topic, including some of the required historical elements.	Does not seem to understand the topic very well.
Preparedness	Student is completely prepared and has obviously rehearsed.	Student seems prepared but might have needed a couple more rehearsals.	The student is somewhat prepared, but it is clear that rehearsal was lacking.	Student does not seem at all prepared to present.
Visual Support	Student uses visuals that show considerable work/creativity and which enhanced the presentation.	Student uses one visual that shows considerable work/creativity and which make the presentation better.	Student uses one visual that makes the presentation better.	The student uses no visuals OR the props chosen take away from the presentation.
Sources	All sources (information and graphics) are accurately cited in the desired format.	All sources (information and graphics) are cited, but one or two are not in the desired format.	All sources (information and graphics) are cited, but the majority are not in the desired format.	All sources are cited, but only one in the desired format.
Listens to Others' Presentations	Listens intently. Does not make distracting noises or movements.	Listens intently but has one distracting noise or movement.	Sometimes does not appear to be listening but is not distracting.	Sometimes does not appear to be listening and has distracting noises or movements.