

Topic

The discovery and uses of oil since ancient times.

Objective

Students will discover the importance of oil to the world from ancient times through today.

Materials

- *Oil and Natural Gas* book
- Copies of the following for each student provided at the end of the lesson plan:
 - Exit Exam
 - Grading Rubric
 - Student Scoring Rubric
 - Useful Web sites

National Science Education Standards

Science as Inquiry Content Standard A

- Abilities necessary to do scientific inquiry
- Understandings about scientific inquiry

Earth and Space Science Content Standard D

- Structure of the Earth system

Science and Technology Content Standard E

- Abilities of technological design
- Understandings about science and technology

Science in Personal and Social Perspectives Content Standard F

- Risks and benefits
- Science and technology in society

History and Nature of Science Content Standard G

- Science as a human endeavor
- Nature of science
- History of science

Reading topics are also included.

Engagement

Why do people say, "the world is ruled by oil?" The first reported use of oil was 4500 BC. How do you think it might have been used? What other ways do you think oil was used in ancient times?

Present pages 8 and 9 of the *Oil and Natural Gas* book. Have students split into 8 groups of 3 or 4 (depending upon the number of students in classroom). Assign each group one of the following sections on pages 8 and 9. Each group reads their paragraph, summarizes it, and shares their findings with the class.

- | | |
|-----------------------|-------------------|
| *Ancient oil | *Flaming arrows |
| *The first oil drills | *Black mummies |
| *Leak stoppers | *Carthage burning |
| *Babylon bitumen | *Warm welcome |

Exploration

What was considered the "Dawn of the Oil Age?"

Form teams of 4 or 5 students to work on the following research and presentations. Teams will collaborate to complete this project. Students will begin their research in the *Oil and Natural Gas* book with the page numbers following the topics listed below. There is also a list of useful web sites on page 71 of *Oil and Natural Gas* that has also been reproduced at the end of the lesson.

- The Modern Oil Age - Between the years of 1853-1900 (p.12-13)
- The Oil Bonanza - Between the years of 1900-1950 (p.14-15)
- Oil's Wide uses of Energy (p.44-45)
- Global Oil share the "Rags to Riches" stories oil has brought to individuals, companies, and countries. (p.50-51)
- Why is Oil "Power"? (p.52-53)

Student research should include the following:

- 3-page typed research paper that includes the LA guidelines (You may want to have a certain number of required sources to be cited, bibliography, etc. There is a list of helpful web sites at the end of the lesson).
- A PowerPoint presentation that explains your research (Hand out the grading rubric.)
- A poster illustrating the main findings of your research

Each teammate should contribute equally to each part of the assignment. The project will be partially graded on teamwork and each member's contribution to the team. Share the Student Scoring Rubric at this time.

Explanation

It is recommended that each team elect, or teacher selects, one member to be the Project Manager of the group. It is the job of the project manager to oversee the project and keep everyone on track. The project manager may decide to split responsibilities by having one team member do the research, one produce the PowerPoint, one prepare the poster, and one give the presentation. Or they may choose to split the research, PowerPoint and poster equally, then have one presenter or everyone present their portion of the research. Groups have the flexibility to split the work in whatever way they choose, as long as all members contribute equally.

Evaluation

The evaluation will be based upon the research paper, the PowerPoint presentation, and the poster. Evaluate individual and group work according to your own expectations and the following Exit Exam questions:

1. What was meant by the term "Boom Towns"?
2. What event in history transformed the oil industry in the U.S. in the 1920's?
3. Name three things oil production is used for.
4. Name three of the world's largest oil and gas producers.
5. Write a paragraph on why oil is so powerful.

Elaboration

Shine Your Light

For millions of years, the only light in the long darkness of night came from flickering fires or burning sticks. Trace the history of oil used for light from ancient times. You can choose any medium you would like to present your report. For example a poster, collage, book, drawing, poem, or whatever you choose to go with your findings.



Grading Rubric for Presentation Project

Grade	Content	Organization	Originality	Workload
4	Project covers the topic in-depth with many details and examples. Subject knowledge is excellent.	Content is very well organized and presented in a logical sequence.	Project shows original thought. Ideas are creative and inventive.	The workload is divided and shared equally by all members of the group
3	Project includes essential information about the topic. Subject knowledge is good.	Content is logically organized.	Project shows some original thought. Work shows new ideas and insights.	The workload is divided and shared somewhat equally by all group members, but workloads may vary.
2	Project includes essential information about the topic, but there are one or two factual errors.	Content is logically organized with a few confusing points.	Project provides essential information, but there is little evidence of original thinking.	The workload is divided, but one person in the group is viewed as not doing a fair share of the work.
1	Project includes minimal information and there are several factual errors.	There is no clear organizational structure, just a compilation of facts.	Project provides some essential information, but no original thought.	The workload is not divided, or several members are not doing their fair share of work.

Name: _____

Questions

1. What was meant by the term "Boom Towns"?
2. What event in history transformed the oil industry in the U.S. in the 1920's?
3. Name three things oil production is used for.
4. Name three of the world's largest oil and gas producers.
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Student Scoring Rubric for Team Members

Name: _____

Name of report: _____

Score for group members:

- 4 = This member completed all of their workload
- 3 = This member completed the majority of their workload
- 2 = This member completed some of their workload
- 1 = This member did not do their work, thereby creating extra work for other members

List all members of your group below. Put a score by each member's name that you feel they deserve. Be sure to include your name and the score for yourself. Feel free to add any comments you think will be helpful.

Useful Websites

Energy4me - Essential Energy Education provided by the Society of Petroleum Engineers
www.energy4me.org

The US's National Institute of Environmental Health Sciences site on recycling and reducing waste
www.niehs.nih.gov/kids/recycle.htm

Society of Petroleum Engineers
www.spe.org

All about fuel cells, Smithsonian Institute
americanhistory.si.edu/fuelcells/basics.htm

Captain Offshore Platform Virtual Tour
<http://resources.schoolscience.co.uk/SPE/index.html>

The Alliance to Save Energy's kids site
www.ase.org/section/_audience/consumers/kids

A child's visit to an offshore oil rig
www.mms.gov/mmskids/explore/explore.htm

Plenty of links on the topic "Recycle, Reduce, Reuse"
42explore.com/recycle.htm

EnergyZone, provided by UK's Energy Institute
<http://www.energyzone.net/>

How Oil Drilling Works
www.Howstuffworks.com/oil-drilling

Facts, games, and activities about energy, plus links
www.eia.doe.gov/kids/index.html

The Outlook for Energy - A View to 2030 ExxonMobil
www.exxonmobil.com/Corporate/energy_outlook.aspx

A US Department of Energy site about fossil fuels
www.fossil.energy.gov/education/index.html

Energize Your Future Shell
<http://www.shell.com/us/energizeyourfuture>

A comprehensive guide to oil refining
www.howstuffworks.com/oil-refining.htm

Students' page from American Geological Institute
www.earthsciweek.org/forstudents/index.html

Shell's Energy Minds for students
http://www.shell.us/views/energy_minds.html

EIA Report on Demand
US Energy Information Administration
www.eia.doe.gov/oiaf/ieo/oil.html

Basic geology, how oil forms, and how it is found
www.priweb.org/ed/pgws/index.html