



Title: Plentiful Petroleum Products			
Author: Allyson Goodin Wynne High School Wynne			
Course: Earth Science, Environmental Science, World History, Integrated Physical Science, Language Arts		Duration: 1 class period (roughly 45-55 minutes)	
Grade: 9-12			
Objective: Students will evaluate and analyze information to determine the usage of petroleum and the changes in the oil industry.			
Summary of Lesson: Students will evaluate visuals to determine whether the items contain petroleum or use petroleum. This activity will lead into a timeline activity which uses the history of the oil industry.			
Arkansas State Standards			
SUBJECT:	GRADE LEVELS:	CODE:	STANDARD:
Earth Science	9-12	ES-ESS3-1	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
Environmental Science	9-12	EVS-ESS3-1	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
Integrated Physical Science	9-12	PSI4-ETS1-3	Evaluate a solution to a complex real-world problem based on prioritized criteria and tradeoffs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.
World History	9-12	Era7.2.WH.1	Evaluate the development, expansion, and effects of industrialization in Europe, Asia, and the Americas.
		Era8.3.WH.7	Analyze the changes in cultural and social life due to artistic and literary movements and scientific and technological innovations.
Language Arts	9-12	RI.9-10.4 RI.11-12.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and



			technical meanings; analyze the cumulative impact of specific word choices on meaning and tone.
		RI. 9-10.9 RI. 11-12.9	Analyze documents of historical and literary significance, including U.S. documents when appropriate, for their themes, purposes, and rhetorical features.
		RI.9-10.8 RI.11-12.8	Analyze and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.
		RI.9-10.9 RI.11-12.9	Analyze documents of historical and literary significance, including U.S. documents when appropriate, noting how they address related themes and concepts.
		W.9-10.1.C W.11-12.1.C	Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, reasons and evidence, and claim(s) and counterclaims; include commentary for support.

Teacher Excellence Support System (TESS):

1d: Demonstrating Knowledge of Resources, 2c: Managing classroom procedures, 2e: Organizing physical space, 3b: Using questioning/prompts and discussion, 3c: Engaging students in learning

Instructional Strategies and Practices:

Summarizing and Note Taking, Technology, Visuals

Bloom's Level: (Highest Level Only)

Evaluation

Materials and Resources:

- Computer, Internet connection
- Student Handout 1 Plentiful Petroleum Products Activity
- Student Handout 2 Plentiful Petroleum Products Student Research
- Plentiful Petroleum Products Exit Slips
- Web Resources:
 - Arkansas Energy Rocks <http://arkansasenergyrocks.com>
 - Refining Crude Oil video clip- <http://www.youtube.com/watch?v=8fCsJoWHBFg>
 - American Petroleum Institute <http://www.api.org/~media/Files/Oil-and-Natural-Gas/Classroom/LifeInOilandNaturalGas.pdf>
 - Extreme Oil Timeline <https://www.thirteen.org/wnet/extremeoil/history/1850.html>

**Formative Assessment:**

Questions and answers during the student activity, Student Research handout, Exit Slip.

Notes to Teacher:

For this lesson students will need the internet and computers. It may be done with a 1:1 ratio of student to computer or it may be completed in small groups if desired. This 2:1 buddy system would allow stronger readers to work with those who may need assistance.

Student Activity**Procedure:**

1. Select the option for conducting the activity.

OPTIONS:

- Hand out the student worksheet and have students complete it as a paper and pencil activity.
 - The activity could also be done on a Smartboard™. This would allow students to come to the board to physically write on or divide the pictures.
 - If you would like to get the students up and moving you could print each one of the pictures individually and pass these out as the students enter the room. Then ask the students to show their product and STAND if they have used or interacted with this item in the past year. Then have the students move to, the LEFT side of the room if they think that their item contains or uses petroleum. Move to the RIGHT side of the room if they think their item does not contain or use petroleum. Allow students to discuss their items and why they chose that particular side of the room.
2. Distribute **Student Handout 1** or product pictures to students or display handout on the Smartboard™. Conduct selected option.
 3. After students have completed the activity in the handout have the students view the video clip “Refining crude oil: Where is it used? What products and applications” (<http://www.youtube.com/watch?v=8fCsJoWHBFg>) Students will probably be surprised to learn that EVERYTHING on their handout contains or uses petroleum.
(*This clip has the announcer with what seems to be a British accent. □ This will be an interesting variation in language.)
 4. Now distribute **Student Handout 2 research** sheet. The students will view the timeline from the PBS resource and answer the questions after analyzing the timeline.
 5. If there is time remaining in the class period search the internet for a video or animation showing how oil drilling is done.



Student Handouts: See web site for a printable copy at <https://arkansasenergyrocks.com/educators/lesson-plans-9-12/>

Plentiful Petroleum Products Student Handout 1

Name: _____ Date: _____ Class: _____

Student Activity: Examine the following items. How many of these do you interact with or use in a year? (Circle your choices.) Now label the items that you feel contain or use petroleum with the letter "P".



Four-wheeler
Cooler
Fishing Pole
School

Business
Flip Flops
Lipstick
Sleeping Bag

Backpack
Sunglasses
Factory
Tennis Shoes.

Computer
Ceiling Fan
Shotgun Shells.
Volleyball

Car
Kite
Purse
Mower

Umbrella

School bus
Plane
Tape
Fragrance



**Plentiful Petroleum Products
Student Handout 2
Student Research**

Name: _____ Date: _____
_____ Class: _____

Use the internet to research and analyze information in order to answer the following questions.

Go to the website <https://www.thirteen.org/wnet/extremeoil/history/index.html> to view the timeline of oil usage.

1. According to the timeline, how did the Persian military use oil?

2. Before 1815 oil was used for a multiple of health issues. Cite two of these uses from the article and the year on the time line listed:

3. Describe the event that is often cited as a key moment in the birth of the commercial era of petroleum.

4. What invention caused a recession in the oil industry?

5. Describe the impact on the oil industry after Henry Ford incorporated the Ford Motor Company.

6. In 1951 two chemists discovered new plastics. How were these used and what changes did this make for consumers?

7. After examining the entire timeline, determine whether the early events caused the later changes in the oil industry or did they simply just happen by random chance in that order? Cite two specific instances from the timeline that support your ideas. Be sure to write your answer using complete sentences.



Plentiful Petroleum Products

Exit Slip

Name: _____ Date: _____ Class: _____

You have just analyzed a timeline and classified items that contain petroleum. Now write a Tweet about today's lesson that could be used for a class twitter feed in order to inform others about what you learned today. You have 140 characters to inform our Twitter followers. 😊

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