



Title: Research and Debate			
Author: Kathy Rusert Acorn High School Mena			
Course: Environmental Science, Earth Science Language Arts, Economics, Biology			Duration: 3 to 4 Class periods
Grade: 9-12			
Objective: Students will learn about the benefits and disadvantages of drilling for oil			
Summary of Lesson: Students will research oil drilling in national wildlife areas and debate the pros and cons.			
Arkansas State Standards:			
SUBJECT:	GRADE LEVELS:	CODE:	STANDARD:
Environmental Science	9-12	EVS-ESS3-4	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
		EVS-LS2-7	Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.
Earth Science	9-12	ES-ESS3-4	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
Economics	9-12	EDM.1.E.1	Evaluate the roles of scarcity, incentives, trade-offs, and opportunity cost in decision making (e.g., PACED decision making model, cost/benefit analysis, employment choices)
Biology	9-12	BI-ESS2-2	Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.
Language Arts	9-12	RI.9-10.2 RI.11-12.2	Examine a grade-appropriate informational text. <ul style="list-style-type: none"> • Provide an objective summary of the text. • Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details.
		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.



		W.9-10.7 W.11-12.7	Conduct short as well as more sustained research projects to answer a question, including a self-generated question, or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
		W.9-10.9 W.11-12.9	Draw evidence from literary and/or informational texts to support analysis, reflection, research, and synthesis.
		SL.9-10.1 SL.11-12.1	Initiate and participate effectively in a range of collaborative discussions <ul style="list-style-type: none"> ● one-on-one ● in groups ● teacher-led with diverse partners on Grades 9-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively
		SL.9-10.2 SL.11-12.2	Integrate multiple sources of information that is gained by means other than reading (e.g., texts read aloud; oral presentations of charts, graphs, diagrams; speeches), evaluating the credibility and accuracy of each source.
		SL.9-10.4 SL.11-12.4	Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.
Teacher Excellence Support System (TESS): 3b: Using questioning/prompts and discussion, 3d: Using assessment in instruction			
Instructional Strategies and Practices Cues, Questions, Advance Organizers, Discussion, Problem-Based Instruction, Reciprocal Teaching and Cooperative Learning, Role Plays, Technology			
Bloom's Level: Highest Level Only Creating			
Materials and Resources: <ul style="list-style-type: none"> ● Computers with internet access 			
Formative Assessment: Panel discussion of research, Exit Slip			
Notes to Teacher: Prepare several questions in advance that will encourage students to clarify their position—pro or con.			



Student Activity

1. The U.S. Fish and Wildlife Service states that their primary goal is “to protect the wildlife and habitats ...for the benefit of people now and in the future.”

Based on this goal students will research the current status of oil exploration and drilling projects in wildlife areas in the United States.

2. Divide the class into two teams and assign one team to address the short-term and long-term advantages and one team to address the short-term and long-term consequences for drilling for natural gas and oil on these public lands.
3. Each group will designate a spokesperson to represent it on a panel, and a “specialist” to sit on a panel to answer questions or clarify information.
4. When deciding about environmental issues, students should use the following steps:
 - gather information
 - consider values
 - explore consequences
 - make an informed decision
5. Provide class time for groups to develop the research.
6. A panel made up of a spokesperson and specialist from each group will present the research and respond to questions from the “audience.” Encourage students to ask probing questions that challenge both sides of the debate.
7. Exit Slip: Ask each student to respond to the following questions and be prepared to share their responses the following class period. These will be turned in after the discussion.

**Student Handout
Research and Debate
Exit Slip**

In your evaluation, did you consider short-term or long-term advantages or consequences to be most important?

What influenced your decision the most?

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