Title: Creating a Model Oil and Natural Gas Reservoir

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Course: Environmental Science
Grade: 9-12
Duration: One 45-minute class period

CLASS	GRADE	SLE	STANDARD
Physical Science	**9-12**	**PSI-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-ESS2-3**	Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection.
Earth Science	**9-12**	**ES1-ETS1-1**	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
Chemistry II	**11-12**	**CII-PS3-2AR**	Construct an explanation of the relationship between energy and the behavior of particles.
Language Arts	**9-12**	**SL.9-10.1 SL.11-12.1**	Initiate and participate effectively in a range of collaborative discussions ● 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

Objective:
Students will understand how some rock formations don't allow permeability or porosity creating a reservoir for oil and natural gas deposits.

Summary of Lesson:
Students will investigate how density plays a role in the placement of oil, natural gas and water.

Teacher Enhancement Support Systems: (TESS)
3b: Using questioning/prompts and discussion, 3d: Using assessment in instruction

Instructional Strategies and Practices:
Brainstorming and Discussion, Experiments, Labs, Models, Visualization and Guided Imagery

Bloom's Level: Highest Level Only
Applying

Materials and Resources:

- Clear plastic cups (one for each lab station)
- 50 mL water tinted with 4 drops of blue food color
- 50 mL vegetable oil to represent the oil deposit
- 50 mL rubbing alcohol tinted with 4 drops red food color to represent natural gas

Formative Assessment:
Students can explain what each layer represents.

Notes to Teacher:
While rubbing alcohol is used in this experiment, students need to be reminded that natural gas is in a gaseous state when found underground.

Student Activity

Procedure:

1. Put water into clear cup.
2. Gently pour oil over water.
3. Gently pour rubbing alcohol over water.
4. Observe how layers separate based on density.
5. Discuss how density plays a role in the location of oil and natural gas formations.