



CLASSROOM ACTIVITY

Energy Engineers

OBJECTIVE

After reviewing the concept of energy, students will investigate the career of a petroleum engineer and participate in a mock internship interview.

MATERIALS

- Two small rubber balls
- Interview Prep handout, one per student
- Devices with Internet access, at least enough for half the class

ENGAGE

Give a ball to two student volunteers. Instruct one student to hold the ball above their head and ask the other to bounce their ball in place. As they do this, quickly review kinetic and potential energy:

- Remind students that potential energy is the energy of an object due to its position. Kinetic energy is the energy of an object due to its motion. Potential energy can be transferred into kinetic energy, and kinetic energy can be transferred into potential energy.
- Ask students to determine which type(s) of energy each ball possesses.

Go on to explain that there are many different types of energy within these two categories. Read out the following energy examples, and ask students to either hold up one still hand to demonstrate an answer of potential energy *or* hold up one waving hand to demonstrate an answer of kinetic energy:

- elastic energy: Energy stored in the tension of an object—such as a stretched rubber band. (Answer: potential energy)
- electrical energy: Energy that is created as electrons move. (Answer: kinetic energy)
- light energy: When an object's atoms heat up and photons are produced, light travels in waves. It is the only form of energy that the human eye can see! (Answer: kinetic energy)
- chemical energy: Energy that is stored in the bonds of atoms and molecules and is released when these bonds break apart. (Answer: potential energy)

EXPLORE

- Tell the class that the world relies on chemical energy—specifically oil and gas—to power our lives. In fact, about two-thirds of the United States's energy consumption comes from these energy sources! The chemical energy within oil and gas can be converted into electricity and heat, and oil can be processed into gasoline for transportation.
- Explain that oil and gas are frequently used because they are reliable, easy to produce, and have a high energy density (which means that just a little bit can create a lot of energy). Beyond energy, petroleum is also used in many common products—from asphalt and plastics to cell phones and cosmetics.
- Go on to explain that oil and gas are also nonrenewable resources, and they can affect the environment when they are drilled for, produced, and used. For this reason, the oil and gas field tries to be on the forefront of environmentally-friendly practices as it works to increase its sustainability. Petroleum engineers are one of the careers that work toward this.
- Tell students that for the rest of the session, they will pretend to prepare for a petroleum engineer internship interview. Pass out the Interview Prep handout and review the instructions provided. Then encourage students to find a partner, grab a device, and work together to prepare for their interview!

APPLY

- Once the students' research is complete, split up the partners and form new student pairs. Explain that each pair will now pretend they are in a mock interview. You will ask the questions, and student pairs will use their Interview Prep handout to formulate an ideal response together. Ask a couple volunteers to share their response before moving on to the following question.
- Interview Questions:
 - There are many different sources of energy. Why is the oil and gas field important?
 - What considerations does this field need to keep in mind as the world continues to use oil and gas?
 - As a petroleum engineer intern, what would you focus on in order to make the petroleum field more sustainable and environmentally friendly?

Source

[eia.gov/energyexplained/us-energy-facts/](https://www.eia.gov/energyexplained/us-energy-facts/)

INTERVIEW PREP

Directions: Use the following websites as a starting point as you learn more about petroleum engineers. Then jot notes to the questions below to prepare for your internship interview!

Background Websites:

- About the career: tinyurl.com/shzk6pc
- About the Oil and Gas Industry and the environment:
 - tinyurl.com/uc6sbkj
 - tinyurl.com/vua49gz

Overall job responsibilities:

Details about the importance of oil and gas:

Considerations to keep in mind about oil and gas:

As a petroleum engineer intern, what could you do to help reduce this field's environmental impact?