

Understanding: Electricity

Grade Level: 9-12

Subject: Physical Science

Duration: One or two class periods

Objectives

Students will

- research one of three professions related to electricity;
- write a story about performing this job; and
- share their ideas with their classmates.

Materials

- Paper and pencils
- Computer with Internet access
- *Understanding: Electricity* video and VCR

Procedures

1. Begin the lesson by showing the first segment of the video, focusing on the professions—lightning researcher, scientist specializing in electricity in space, and a lineman.
2. Next, have each student choose one profession. Each student's task is to learn about the profession and write a story as if they worked in that field.
3. Give students time in class to work on their stories. They may use the following Web sites as starting points for their research:

Lightning Researcher

<http://www.floridaenvironment.com/programs/fe00703.htm>
http://home.att.net/~amcnet3/fulgurites/uman_conleynajafi.html
http://www.pr.ufl.edu/we_said.htm
<http://www.usatoday.com/weather/resources/askjack/walightn.htm>

NASA Research on Electricity

http://www.space.com/businesstechnology/technology/space_tether_020306-1.html
<http://www.spaceflightnow.com/news/n0202/05prosedes/>
<http://www.mufor.org/rch3.htm>
<http://www.padrak.com/ine/BLOWSNASA.html>

Lineman

http://www.ci.edmond.ok.us/Electric/elec_crews.html
<http://www.dailyitem.com/archive/2003/0901/local/stories/05local.htm>
<http://www.wapa.gov/media/cct/2003/july3/25no141.htm>
<http://www.trainingtechnology.com/safetytrng/SFTY470.htm>

4. As students work on their stories, make sure they include the following:

- an individual worker's tasks
 - safety precautions
 - accomplishments
 - high points of the profession
5. Encourage students to be as creative as possible. Have them incorporate details about the profession to make the piece exciting or suspenseful.
 6. Ask volunteers to share their stories. Try to have all three professions covered in the student presentations.
 7. Conclude the lesson by asking students if they realized how many professions involved electricity. Discuss whether the activity broadened their ideas about career options.

Evaluation

Use the following three-point rubric to evaluate students' work during this lesson.

- **Three points:** Students participated actively in class discussions; researched a profession thoroughly; and wrote an interesting, informative, and creative story.
- **Two points:** Students participated in class discussions; researched a profession; and wrote a competent story.
- **One point:** Students did not participate in class discussions; did not complete research about a profession; and did not write a complete story.

Vocabulary

current

Definition: the flow of electricity

Context: A circuit provides a path along which an electrical current can flow.

electrical energy

Definition: energy associated with the movement of electrical charges

Context: The power of running water can move turbines in a generator, resulting in the production of electrical energy.

electrician

Definition: an individual who has knowledge of electrical systems and who can build and fix electrical systems.

Context: During power outages, people often turn to an electrician for help.

lightning

Definition: the dramatic collision of a positively charged object and a negatively charged object that collide and produce an electrical spark

Context: Lightning, or the discharge of an electrical spark, occurs when electrons move from areas of negative charge to areas of positive charge.

lineman

Definition: a specialized worker who works on power lines

Context: The lineman, whose job requires climbing on power lines to inspect or repair them, has a difficult and dangerous job.

static electricity

Definition: the type of electricity associated with the accumulation of excess electrical charges on objects

Context: Lightning is the most dramatic example of static electricity, but we usually experience it after walking on a carpet and then touching something containing metal.

Academic Standards

The National Academy of Sciences provides guidelines for teaching science and a coherent vision of what it means to be scientifically literate for students in grades K–12. To view the standards, visit this Web site:
<http://books.nap.edu/html/nse/html/overview.html#content>.

This lesson plan addresses the following national standard:

- Physical Science: Motions and forces; Interactions of energy and matter

Credit

Marilyn Fenichel, education writer and editor