

LESSON 1

Objective Students will be able to name the three major ways electricity is produced at generating plants and to identify the power source used at each type of plant.

Materials Needed Classroom Photocopies of Activities No. 2 and 3
Classroom Photocopies of “Power Facts”
Teacher Background—Generating Electricity

A Look Inside Electricity (request on teacher signup page)
Crayons (red and blue)

Procedure

- Using the Teacher Background and *A Look Inside Electricity*, explain to students the three major ways electricity is produced: fossil fuel, hydroelectric and nuclear generation. Discuss the source used at each type of generating plant.
- Assemble the generator found in *A Look Inside Electricity*. Discuss the role of the generator and turbine in producing electricity.
- Distribute and discuss “Power Facts.” (Discuss root words and prefix “trans.”)
- Distribute and have students complete Activity No. 2. Discuss these questions:
Which two ways of producing electricity are most similar?
Water is used in liquid form for hydroelectric and in gaseous form (steam) for nuclear and fossil fuel generators.
Do you think ice could be used?
Why or why not?
Which method do you think is safest?
Why?
Many times man-made lakes are built in order to construct hydroelectric plants. What are some of the nice things that result from building a lake?
Can you think of any problems or disadvantages from building a lake?
- Explain to students that each generating plant has a maximum capacity of producing electricity. Electricity can't be stored in large quantities. Therefore, power plants produce electricity 24 hours a day, 365 days a year. This enables everyone to have electricity whenever it is needed.

- Distribute and have students complete Activity No. 3. Discuss how electricity is generated in your state or province. Discuss these questions:
Which type of power plant is most common in your state or province?
Least common?
Discuss the type of power plant which is located closest to your school and mark it on the map.
Why do you think this type of plant was built in this area?
- With hydroelectric plants, water needs to flow “downhill” or “rapidly” in order to move the turbine.
Does your state or province have hills or mountains?
If so, in which part of the state or province are they located?
Which part of your state or province is the flattest?
If a power plant were needed near mountains or hills, which type of plant would be built?
Why?

Additional Activities

- Use a toy plastic fan to show students how a water turbine works. Hold the fan under the faucet and turn on the water. Watch how the water pushes the fan's blades.
- Fill a plastic bottle with water to demonstrate high and low voltage of electricity. A soft squeeze is equivalent to low voltage which travels a short distance. A hard squeeze is equivalent to higher voltage which travels a longer distance.
- Assign students to do individual or group reports on alternate sources of energy.
- Use Activity No. 3 to teach various map skills such as directions and labeling oceans and countries.
- Discuss capitals and abbreviations of states and provinces.