Electricity
God is a miraculous provider

Spiritual Awareness: God is a miraculous provider
God has placed within the creation resources that can be tapped to meet our needs. Electrical power is one of these. Electrical signals travel through the human body's nervous system and massive electrical discharges can be experienced in storms.

While electricity is a wonderful power source, it is our Christian responsibility to be good stewards, and not to exploit the non-renewable resources of the earth. It is also our responsibility to find ways to produce power, without causing pollution and without adding to the greenhouse effect.

We should also be aware that this resource that God has provided can be used for good or evil. Electrical technology can be abused, causing pollution and destruction of the environment. It can be used as an agent for export of the Gospel.

How do we demonstrate power in our Christian life? Stay connected to the source of power, Jesus Christ, the Vine (John 15:5).

Supporting devotional resource
Themes for Christian Studies 7, (Powerful): God is a source of power
Themes for Christian Studies 6, (Provider): God is a miraculous provider

Biblical references
Bible stories and passages
1 Kings 17:2-6 Elijah fed by ravens. God provided though the creation.
1 Kings 17:10-16 Oil and meal
Mark 6:30-44 Loaves and fishes
Acts 1 & 2 The disciples receive power. God's provision of energy for our needs is symbolic of the energy He provides through the Holy Spirit.
Acts 3 Peter and John demonstrate the power of the Holy Spirit.
Acts 5:12-16 Healing through the power of the Holy Spirit
Acts 28:1-11 Snake bite and miraculous healing
Judges 13-15 God gave power to Samson

Memory verses
Psalm 145:6 – Men shall speak of the power of Your awesome acts; and I will tell of Your greatness.
Psalm 66:5 – Come and see the works of God, who is awesome in His deeds towards us.
John 15:5 – I am the Vine and you are the branches. Apart from me you can do nothing.
Matthew 28:19-20 – “Go and make disciples of all the nations, baptizing them in the name of the Father and the Son and the Holy Spirit, teaching them to observe all that I have commanded you; and lo, I am with you always, even to the end of the age.”

Key Questions

How does electricity make life easier?
Where does electricity come from?
How long has electricity existed?
Who discovered electricity?
When did electricity first become a power source in the home?
How is electricity produced?
Why should we try to use less electricity?
How can we conserve the use of energy in the home?
If God is a source of power, how can we use this power to be effective in our Christian life?

Outcomes

Students will

Knowledge

- demonstrate some understanding of the nature of a circuit, electro-chemical energy, conductors and insulators, batteries, switches, AC and DC, bulbs in series and parallel, fuses, capacitators, electrical engines, electromagnetism, generators, meters, electrical human nervous system as a current
- explain how the flow of energy is dependent on the conductivity of the materials in the circuit
- understand the difference between non-renewable and renewable sources of energy
- demonstrate an awareness of energy conservation

Skills

- demonstrate ability in manipulating equipment
- connect currents
- use equipment safely
- plan experiments
- dismantle electrical devices
- identify parts of a circuit and use symbols

Values

- safe practice
- energy conservation
- environmental stewardship
- use of technology for good and not evil
- thankfulness for God's provision of electricity

Activities

a) Bulbs, batteries and circuits

- Collect batteries, pieces of wire and torch globes for informal manipulation.
- Take torches apart and describe how they work.
- Rub materials which will gain an electric charge, e.g. rub a plastic ruler and pick up pieces of hair or tissue.
- Use a lemon to create a battery.
- Make circuits that incorporate more than one globe and dry cell.

- Use a toy electric motor to spin a cardboard disc.
- Make models, such as cardboard-box robots or animals, which can be illuminated in some way.
- Investigate switches, such as the switch in a torch.
- Correctly connect a single bulb to a battery.
- Connect a series of bulbs to a battery.
- Test materials to see whether they conduct electricity. Place a range of objects in a circuit to discover which ones conduct electricity, e.g. glass, paper, plastic, tin, aluminium foil, thumb tack, pin, water.
- Generate electricity using a coil and a magnet.
- Dismantle electrical devices.
- Make a small generator/engine.
- Discuss conservation of energy.
- Discuss the nervous system.

b) Safety and conservation

- Discuss safety factors and make a poster.
- Make a chart showing how electricity is used in every-day life.
- List sources of non-renewable energy: coal, oil, gas.
- Discuss problems caused by the burning of these fuels: release of carbon dioxide, air pollution, greenhouse effect.
- List renewable energy sources: wind, solar energy, water, geothermal.
- List ways of conserving energy in the home.

Assessment

1. Make an electrical circuit, draw and label it.
2. Make a chart to record materials that will/will not conduct electricity.
3. Make a model that uses an electrical circuit and explain how it works in a class presentation.
4. What have I learned from the study of electricity…
    - about God?
    - about doing what God wants me to do?
    - about the Bible?

Helpful resources

http://www.sciencecompanion.com/wp-content/uploads/2011/04/Electrical-Circuits-Digital-SamplerWEBv2.pdf

Link with Australian Curriculum

Science Year 6: Physical Science

Learning connections:

English: discussions on energy conservation issues; science reports; word banks;
Mathematics: Use of mathematics in computer programming
Health: safety with electricity; safety during electrical storms
Social Studies: energy conservation

History: the history of lighting; early discoveries, e.g. Michael Faraday, Thomas Edison
Music: Comparing electronic and non-electronic musical instruments; the development of recorded music
Art: Create a model that incorporates and electrical circuit.
Thinking skills: See the *Creative Thinking Skills* section of this website – *"Energy Sources" (Middle/Upper Primary).*