

## LESSON 2: ELECTRICITY: THE ENERGY TO CHANGE LIVES (SCIENCE)

<b>OBJECTIVE</b>	To appreciate that access to 24/7 electricity is a luxury for us in the UK and by investing in renewable energies and sharing knowledge we can help works towards global access to electricity.
<b>BACKGROUND</b>	Please edit and adapt the newspaper articles and the questions included in order to differentiate and cater to the ability of your students.

### PROCESS

#### Stage 1

- Ask pupils to think about how electricity shapes their lives. Imagine life without electricity and discuss how different life would be if we didn't have instant access to electricity.
- Students to list and discuss the different ways in which electricity is generated.
- Explain to the class that in the UK (statistics 2007) we generate electricity in the following ways:
  - Oil: 38.0%.
  - Natural gas: 37.7%.
  - Coal: 16.7%.
  - Nuclear power: 5.8%.
  - Renewable: 1.8%.

#### Stage 2

- Discuss that out of a total global population of nearly 7 billion approximately 1.5 billion people live without electricity. Lack of electricity is not just a result of poverty but also a cause of poverty.
- Discuss the reasons why some people may not have access to electricity.
- Discuss the economics and geography of power generation. Harnessing natural resources can provide electricity when we have the right knowledge and access to materials. For example, solar power has huge potential for many African countries due to the amount of sunlight they receive. Recap knowledge of solar power.

#### Stage 3

- Students read and analyse the following article: <http://edition.cnn.com/2010/TECH/innovation/08/10/solar.energy.africa/index.html>.
- Students see this [photo and its caption](#).
- Ask students to think about the following questions:
  - What are the problems with kerosene lamps?
  - What are the advantages of using solar-powered bulbs?
  - How can access to electricity change lives?
  - Why is having access to electricity so important for children?
  - Which countries does the Rural Energy Foundation support?
  - What did Willem Nolens, the director of the Rural Energy Foundation say and what does he mean?
  - If we didn't have light bulbs what wouldn't you be able to do when it gets dark?

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### Stage 4

- Students read and analyse the following article: <http://news.bbc.co.uk/1/hi/8257153.stm> and watch these short TED talks:

[http://www.ted.com/talks/william\\_kamkwamba\\_on\\_building\\_a\\_windmill.html](http://www.ted.com/talks/william_kamkwamba_on_building_a_windmill.html)[http://www.ted.com/talks/william\\_kamkwamba\\_on\\_building\\_a\\_windmill.html](http://www.ted.com/talks/william_kamkwamba_on_building_a_windmill.html)

[http://www.ted.com/talks/william\\_kamkwamba\\_how\\_i\\_harnessed\\_the\\_wind.html](http://www.ted.com/talks/william_kamkwamba_how_i_harnessed_the_wind.html)[http://www.ted.com/talks/william\\_kamkwamba\\_how\\_i\\_harnessed\\_the\\_wind.html](http://www.ted.com/talks/william_kamkwamba_how_i_harnessed_the_wind.html)

- Ask students to answer the following questions:
  - Why did William Kamkwamba leave school at age 14?
  - Where did William come from?
  - What was William's dream?
  - What did William do? And why is he remarkable?
  - How has William transformed his village and the lives of the villagers?
  - What percentage of people in his country have access to electricity?
  - What do you think about William and his achievements?

### LESSON SUCCESS

- Students write a paragraph about the role of electricity in their lives and how access to electricity can have the power to change people's lives and to give examples from the articles they have read.
- This challenge will help students appreciate that many people around the world do not have access to electricity and the serious implications this has on their lives.

### DEVELOPMENT

- Students to discuss and explain the following quote: 'Lack of access to energy is a cause of poverty, not just a result of poverty'.

If using this lesson to evidence a move up an Eco-Schools level, especially from Silver to Green Flag, we ask that you ask students to demonstrate a deeper understanding of this issue than 1 paragraph of writing. For example, how would they create electric energy if they had to? How could they work in teams and co-ordinate local resources to do so? How could they lead community efforts to save power?