

Lesson Plan Four – Evil Standby

Y5 Maths Learning Objectives	Y5 Science Learning Objective	Key aspects of other learning
<p>Number</p> <ul style="list-style-type: none"> Solve problems involving subtraction and finding the difference. <p>Measurement</p> <ul style="list-style-type: none"> Use all four operations to solve problems involving measure. 	<ul style="list-style-type: none"> To apply mathematical knowledge to understanding in science, including collecting, presenting and analysing data. 	<ul style="list-style-type: none"> To know that appliances left on standby waste energy. To know that a watt is another unit of measurement and that it describes electrical power.

Introduction – 10 minutes

Did you manage to switch off lights this week? Who saw you? What difference did it make?

Explore and share pupils' completed **Log Books** about home energy use. Was it easy reading the dials or counters? Which homes have used the most energy? Can we explain why?

Fill in the **Weekly Energy Monitoring Sheet** and calculate the total energy used for the week in pupils' own homes this time rather than at school. If any pupils weren't able to collect home energy data, then they can share or copy another child's.

Main Activities

A – 15 minutes	B – 10 minutes	C – 20 minutes
<p>Ask pupils to compare data consumption over the week in their homes. They need to illustrate this use on a bar chart. Remind pupils how to draw a bar chart, what each axis will describe in this case as well as the scale needed to explain the kWhs used.</p>	<p>Talk about the effects of leaving appliances on standby. Standby is not free and it uses energy! The average UK household spends £76 or 9% of their annual electricity bill on appliances left on standby. How much is that over 5 years? How long is your TV left on standby every day? How many hours a week is that? Look together at the Evil Standby ... Information Sheet and explore how much energy is used by appliances even when they are on standby. Recap what is meant by the term <i>climate change</i> and how leaving appliances on standby can contribute to this. If homes were supplied by renewable sources of energy, what would be the effects on <i>climate change</i>?</p>	<p>Each child makes an Evil Standby Character ready to take home. Use a wooden spoon and a variety of other materials to create this character. Look at examples on Google images of 'wooden spoon characters' to give pupils some ideas. These characters can be taken home but could also form part of a display for the Community Event.</p>

Plenary – 5 minutes

Remind pupils to continue to record and collect data in their **Log Books** about energy use at home.

Tell pupils to take their **Evil Standby Character** home and to take photos of him next to appliances left on standby. If possible, they should upload these photos onto the **Energy Heroes** page on the website of your delivery partner in order to share with others and encourage them to stop leaving appliances on standby. (Pupils should only include themselves or family members in these photos in accordance with school/home policies for safe internet use.)

Home and School Challenge

- Continue to try and influence energy-saving behaviours at home and at school.
- Continue to complete meter reading **Log Book** at home.
- If possible, take photos of **Evil Standby Characters** next to appliances on standby at home.

Resources

- Worksheet – **Weekly Energy Monitoring Sheet**
- Squared paper for energy bar chart
- Wooden spoon for each child, plus other materials to create their **Evil Standby Character**. (Fabric marker pens, marker pens, pipe-cleaners, elastic bands, glue, squares of coloured fabric and scraps, ties etc.)
- Evil Standby ... Information Sheet**
- Pictures or examples of wooden spoon characters from Google images

Evil Standby ...

How much energy do household appliances use?

Appliance	Energy use when on (watts)	Energy use on standby (watts)
Stereo	22	12
TV	100	10
Video recorder	13	1
DVD recorder	12	7
Digital set-top box	6	5
Computer + peripherals	130	15
Computer monitor	70	11
Laptop computer	29	2
Broadband modem	14	14
Answering machine	3	3
Battery charger	14	1
Mobile phone charger	5	2
Total	418	83

Source: <http://www.sustainable-girton.org.uk/articles/standby.html>

What is a watt?

A watt is a unit of power equal to the work done at the rate of one joule (of energy) per second. The watt is named after James Watt. He was born in Scotland in 1736 and died in 1819. James Watt's great claim to fame is that he greatly improved the steam engine, making it easier for it to be used in factories, mills and mines. The unit of power was named after him in 1882.

Watt climate change?

Remember that if energy is produced by burning fossil fuels like coal or gas, then carbon dioxide is being emitted into the atmosphere. So leaving appliances on standby contributes to global warming and climate change by blanketing our earth with this gas.



Coal