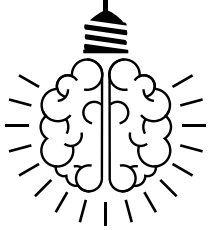
Teachers' notes

- bringing Catalyst to life in the classroom



Discover ideas and resources to build on the issues covered in edition 32 of Catalyst.

Contents

Naming the elements

1

By Mark Langley, Science CPD Lead, STEM Learning

Matching article:
Naming the elements

Useful resource:
www.rsc.org/periodic-table

Helping students understand the origins of the names of elements gives vital clues about the occurrence of the elements, which is useful for our understanding of this area of chemistry. The below classroom exercise may also help to inspire some students to get involved with the competition in the magazine to send in their suggestions for the elements themselves.

Elements like gold, silver, and sulfur have been known since ancient times, even though they were not known as elements until the late 19th century. Elements can exist as a pure element, like sulfur or gold, or those that can easily be extracted from their ore by simple heating- like mercury, are easy to find, so tend to have more common names. Other elements, often ending in "ium" for a metal, have been discovered later- so aluminium and sodium needed electricity to separate them from their ores for example. The more reactive an element, the more of a challenge it has been to isolate.

The Royal Society of Chemistry has a brilliant interactive periodic table and there is a podcast (and transcript) for each element, with extensive background information under the "history" tab, including the date (and method) of discovery. Students could order elements with their discovery date- and how they were found, building a timeline version of the periodic table. This then gives an insight into the reactivity - which can then be linked into general reactions - such as how different metals are extracted, related to their reactivity and electron structure.

Teenage brains

2

By Mary Howell, Biology Subject Specialist, STEM Learning

Matching article:
The workings of the teenage mind

Useful resources:

Siemens app
www.siemens.co.uk/en/index/mri-scan-virtual-experience-app-to-ease-fears.htm

Complemented by
www.stem.org.uk/rxst6

Brain Hat in Animal Brains and other resources
www.stem.org.uk/uxfgvq

This article provides a really great opportunity to make links between different subject areas. You might like to start with biology by posing a question such as 'when is a person truly a grown-up' and asking students to think about differences there might be between teenage and adult brains. Link this to ideas about neuroplasticity and connect with the biology of nerve impulse transmission and synapses. Making a card 'brain hat' from the printable template from 'Animal Brains and other resources,' would be a fun way to develop understanding of brain interconnections and lead into the physics of how brain function is mapped.

How to make and use your own magnetic storm spotter

By Tom Lyons, ESERO-UK, Physics Subject Expert, STEM Learning

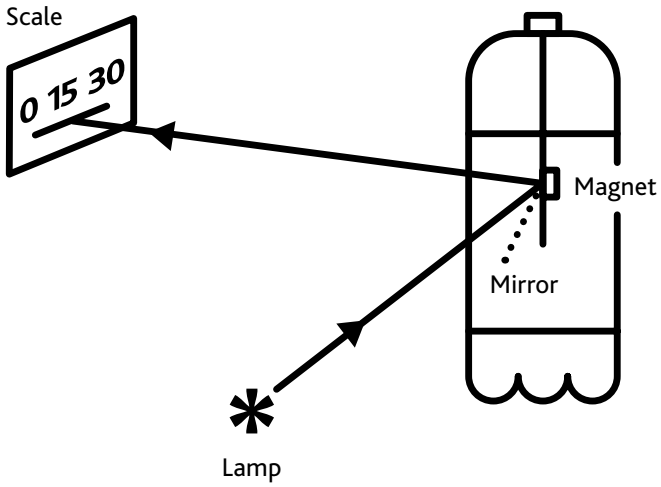
Matching article:
Europe and Japan's first mission to Mercury

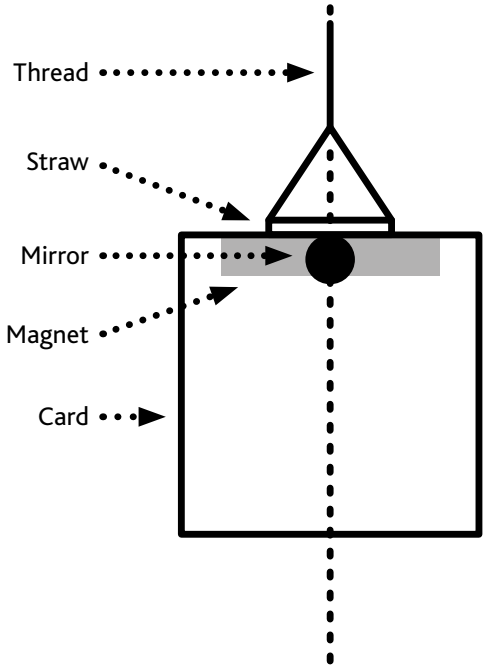
The Bepi-Colombo mission to Mercury will study the magnetosphere around the planet. A magnetosphere is the dynamic region of space around a planet which interacts which charged particles, predominantly coming from the Sun. The flux of charged particles coming the Sun changes over time and this will cause the magnetosphere to change size and shape.

The magnetic storm spotter is a very simple piece of equipment. It measures changes of the magnetic field at the Earth's surface.

Equipment

- clear (and clean!) plastic 2-litre pop bottle with its label removed and a plastic lid
- thread
- bar magnet shorter than the width of the bottle
- small craft mirror, mirrored sequin or piece of mirror-card
- piece of card
- rice to stop the bottle falling over
- drinking straw
- sticky tape, scissors, glue and Blu-tac





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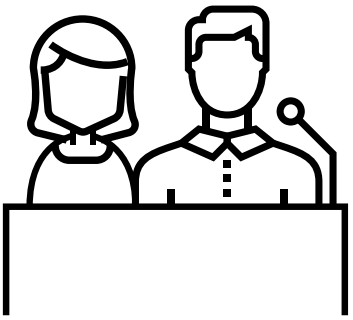

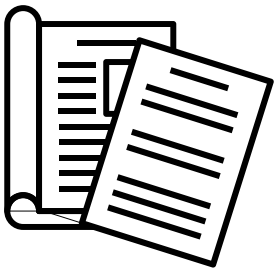

Thank you

We hope you enjoyed Catalyst, and matching teachers' notes. If you have any feedback, or ideas for topics you'd like to see covered in future editions, please email:

catalyst@stem.org.uk

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