Gopher Science Lab – parent explainer for science activities at home

The Gopher Science Lab resource is designed to support non-science specialist teachers who want to run science activities with primary school children. The training package consists of a series of lessons that develop understanding of the science underpinning the activities and the applications of this science to everyday life.

By using our activity booklet, you can run simple science activities at home with a short explanation and some suggested questions to ask your student. Our online training course may be helpful as it provides:

- a slide presentation with images and diagrams of the experiment
- a video demonstration of how to carry out each activity
- links to further information, wider reading and video clips
- a "test yourself" exercise if you would like to test yourself on the knowledge – or use the test with older siblings or secondary students to engage them with the activity

You might want to display the slide presentation or your phone or laptop as you work through the experiment.

This equipment list sets out everything you need for the activities in the activity booklet and online course. Most items you should be able to find in your own home, and a couple of substitutions will cover the rest:

- a flat shallow container in place of a petri dish (activity 1)
- a straw instead of a pipette (activities 3, 8)
- drinking glasses can be used in place of beakers or test tubes (activity 8)
- Coffee filter paper or kitchen towel can be used instead of chromatography filter paper (activity 8, 10)
- If you can't find red cabbage, fresh beetroot will work too (activity 8)
- Hydrophobic sand or "moon sand" is not needed for activity 9

The stroop test card can be downloaded here in English and Welsh
The activity booklet is also available in Welsh (part 1 and part 2)

Please see the following page for additional notes about activity 5 – The Lemon Battery, which might be the most challenging to complete at home.

To access the free online training course:

Go to Gopher Science Lab course on learn.rsb.org.uk
Click "Log in" and create a free account
Go to "Pricing" or "Buy" tab, scroll to Free voucher
Select the Free option for parents teaching students at home, and enter the discount code HOMESCHOOL

Additional note:

Activity 5 – The Lemon Battery, which might be the most challenging to complete at home. Some videos or resources from other websites may help you understand and complete the experiment.

It can be tricky to show this low voltage at home, so if you are struggling to make it work we suggest watching a video on youtube of the experiment and discussing the experiment instead.
BBC Royal Institution Christmas Lecture 2016 – Lemon Battery World Guinness Record

The activity booklet suggests making a clock run with a lemon battery, this is easiest if you already have a lemon clock kit.

Some substitutes:
You can use a copper coin in place of a copper strip and an uncoated, shiny steel paper clip or galvanized nail can replace the zinc strip.

If you have an electric clock that the battery can be removed from, you can use multiple lemons together and attach to the battery connectors with wire.

Instead of using a clock, the Gopher Science lab online training shows you how to view the voltage. If you have a multimeter touching the leads to the metal in the lemon will show the voltage.

Image from wikiHow: