Many of the experiments in this booklet have been kindly donated by Science Made Simple, a social enterprise aiming to inspire the next generation of scientists and engineers. The organisation offers a variety of high quality science shows for schools, festivals, adult audiences and the public and even work with the media on popular science programmes.

You can find out more about Science Made Simple, discover more science experiments and resources and even book a science show at www.sciencemadesimple.co.uk

For more science fun,

... remember to check out my blog at **smartypots.wordpress.com**

... follow me on Twitter **@smartypots**

or find me on Facebook **www.facebook.com/smartypots**

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MOBILE SCIENCE LABORATORY
www.explorerlab.co.uk

LapSafe® PRODUCTS
www.lapsafe.com
T: +44 (0)1787 226 166

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EXPERIMENTAL SCIENCE:

A GUIDE TO CLASSROOM SCIENCE EXPERIMENTS

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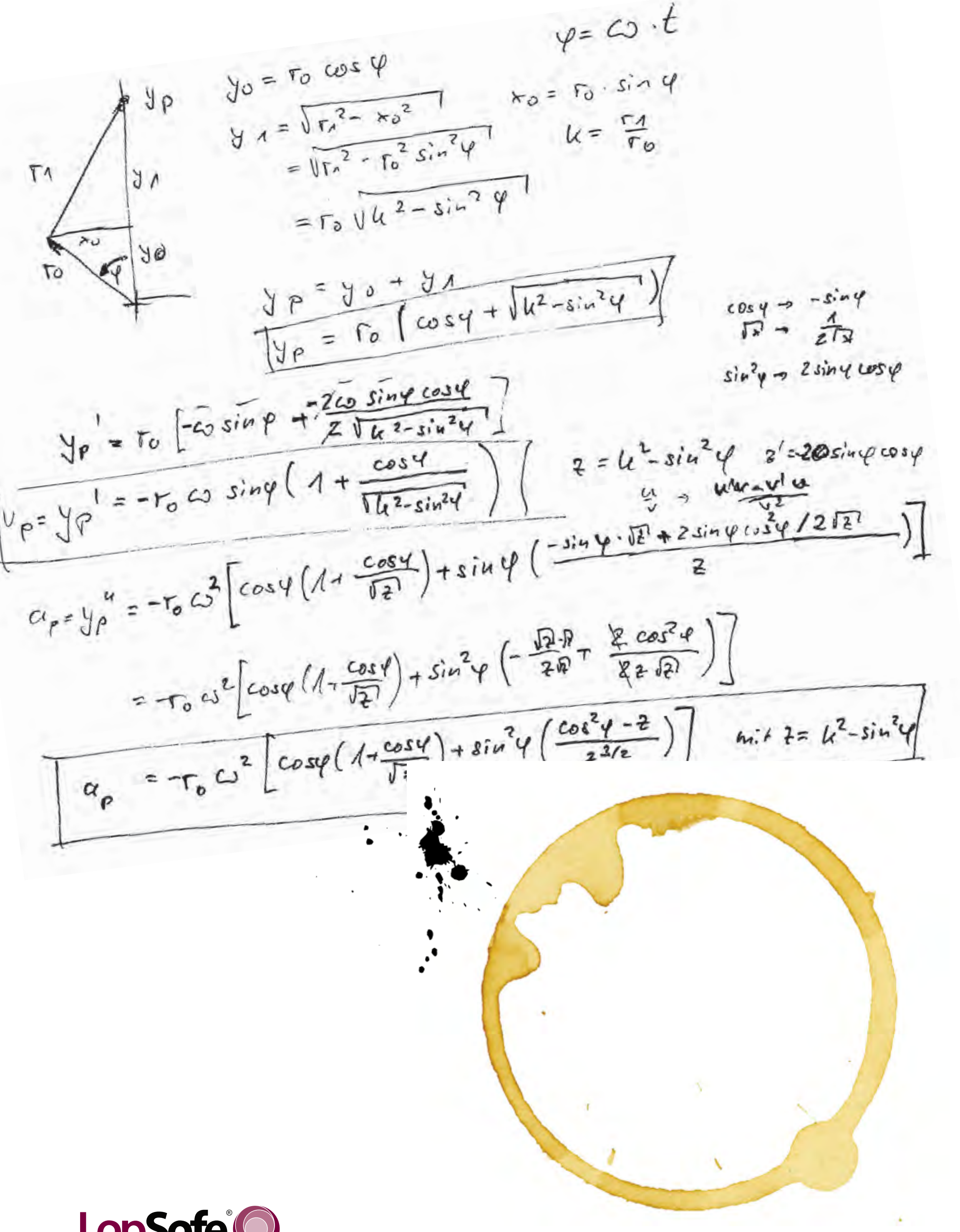

TEACHING SCIENCE

I love experimenting with science, and my greatest ambition in life is to get everyone just as excited about science as I am.

To do this, I've been pushing my mobile science lab, the ExplorerLAB™, all over the world to show off my science experiments and demonstrate that you really can teach science anywhere. The ExplorerLAB™ mobile science lab is a revolutionary portable teaching platform to deliver interactive and experimental learning for biology, chemistry and physics. The cart comes complete with the equipment usually found in a traditional fixed laboratory, including a working sink, compacted into a secure, robust and rust-free mobile cabinet to enable science to be taught anywhere.

The science cart is perfect for primary schools that may not have dedicated science labs, or for schools wanting to replace their existing science rooms to save space. The ExplorerLAB™ can also be used as an alternative for schools and colleges that cannot afford to refurbish their existing fixed laboratories and for those looking for a quality teacher demonstration unit to conduct science experiments.

I'm getting a bit technical now, but the mobile science laboratory is constructed of a fully welded chassis manufactured in recycled steel, with care taken to ensure that the unit's surface provides resistance to corrosion and rust that may occur as a result of a chemical spill. As with all products manufactured by LapSafe® Products, the ExplorerLAB™ mobile science lab meets all British safety standards. The mobile science laboratory conforms to ISO 9001: 2008 specifications and has been CE and SASO Certified.

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FINDING THE DOMINANT EYE

Children of any age can carry out this experiment safely. Firstly, ask your pupils to make a circle with their thumb and first finger. Then, with both eyes open, look at an object on the wall or in the distance and centre it inside the circle.

Ask your pupils to close one eye and then the other, and note what happens.

What has happened?

The pupils will have found that when they closed one of their eyes, the object remained inside the circle but jumped outside of the circle when they closed their other eye. If the object seemed to move when a pupil closed their left eye, then that pupil has left eye dominance. Conversely, if the object seemed to move when a pupil closed their right eye, then their right eye is the dominant one.

The human brain builds up an image of the world using slightly different views from the right and left eyes. Most people tend to have a dominant eye, so that even when both eyes are open, one is giving priority information.

The object your pupils chose to focus on was lined up to be in the circle using information from their dominant eye. When the dominant eye is closed, your pupils will notice that the object was not lined up for their other eye.

About 80% of the population are right-eyed, and a very small percentage seem to have no eye-dominance at all.

Why does this matter?

Those that take part in any sport that involves shooting at a target (e.g. archery or darts) need to know their eye-dominance. Left eyed people should shoot with their left hand and vice versa.

Welcome to Experimental Science,

a free booklet of science experiments and activities to help you teach interactive science in the classroom. These simple and inexpensive science tasks can be used to demonstrate concepts, begin a science lesson and make science fun!

Professor Smarty Pots
The Official Ambassador of the

explorerLAB™
MOBILE SCIENCE LABORATORY

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DANCING RAISINS

For this experiment, you will need:

- A bottle of good quality lemonade
- A tall, clear beaker
- Some raisins.

Firstly, pour some lemonade into the beaker and notice the carbon dioxide bubbles being released from the liquid. Now drop a few raisins into the liquid and watch what happens. Ask your pupils to describe what they see.

What has happened?

Initially, your pupils would have noticed that the raisins sank to the bottom of the glass, and this is because they are denser than the lemonade. When the carbon dioxide bubbles stick to the raisins, the raisins increase in buoyancy and rise to the surface. Once at the top, the bubbles will have popped, causing the carbon dioxide to escape and the raisins to sink. The dancing will continue until all of the carbon dioxide has escaped and the raisins can no longer rise to the surface.

LEMON JUICE AND OXIDISATION

For this experiment, you will need:

- An apple or pear
- A lemon or some bottled lemon juice
- A knife.

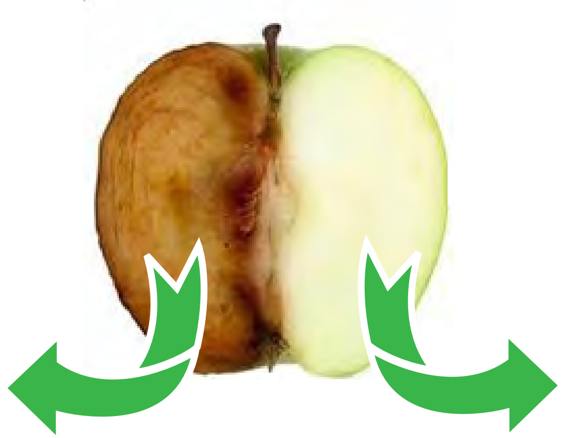
You may want to demonstrate this experiment in front of your class as a whole, or ask your pupils to work in small groups. If you opt for group work, it may be best to cut the apples or pears yourself, to avoid your pupils injuring themselves.

Firstly, carefully cut the pear or apple in half, and then rub lemon juice onto one half of the fruit. Leave the halves for a period of time, before returning to see what has happened to your experiment. You should notice that the half without any lemon juice on it has turned brown, whilst the other half has stayed the same.

What has happened?

When the fruit was cut, a lot of its cells would have been damaged. When liquid from these damaged cells was released, the liquid came into contact with the oxygen in the air and oxidised, causing the fruit to turn brown.

Oxidisation can be prevented by vitamin C and citric acid, both of the substances found in lemon juice. When you covered the other half of the fruit in lemon juice, vitamin C and citric acid reacted with the air to prevent it from attacking the fruit.



Apple without lemon juice

Apple with lemon juice

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