

Welcome to the STEM Clubs Newsletter for Schools in Wales



Welcome to a regular newsletter from See Science for teachers and anyone with an interest running a STEM Club (Science, Technology, Engineering and Maths) across Wales.

Discover new opportunities, competitions and resources that will bring practical and real-life contexts to your STEM Club.

Find out about grants available to support your Club.

Do you have a story or information that we could include in the next edition of this newsletter? If you can contribute, send your article together with any relevant photos to stem-clubs@see-science.co.uk.

Ambassadors and STEM Clubs

To find out how a STEM Ambassador's visit to STEM Clubs can engage and inspire both students and teachers, just read the stories in our [STEM Club case studies](#).

- You can request an Ambassador to visit your Club [here](#).
- If an Ambassador has visited your Club, or you have met an Ambassador at an enrichment activity, send us your feedback using the [teacher feedback form](#) – each month there's a chance to win a M&S Gift Hamper.

What is a STEM Club?

A STEM Club is any out-of-timetable session that gives students the chance to explore aspects of Science, Technology, Engineering, or Maths outside their normal curriculum-based classroom activities.

STEM Clubs come in all shapes, sizes and themes. They can focus on specific disciplines or be cross-curricular.

Many STEM Clubs are completely individual and formulate all their own ideas for sessions and projects. Other Clubs are aligned to national programmes or competitions, such as the British Science Association's CREST Awards, Young Engineers or Salters' Chemistry Clubs.

Clubs are a powerful enrichment and enhancement activity and can be all-inclusive or focus on specific groups of students. The format of your Club depends entirely on what suits the needs of you, your school and your students.

STEM Clubs shouldn't be confused with homework or revision clubs. Although they complement the curriculum, they are not designed to be about writing, tests, or exams. Activities can include practical experiments, investigation, group work, discussion and reflection. Most of all, they should be fun.

STEM Clubs can:

- Enrich, enhance and extend the school curriculum
- Improve attainment in, interactions with, and experiences of, the STEM subjects among pupils
- Improve collaboration between schools and also between schools and industry

- Encourage pupils to continue their education in STEM beyond GCSE and Diploma (or equivalent qualification) level.

The National STEM Clubs Programme

The aim of the National STEM Clubs Programme at www.stemclubs.net is to help secondary schools across the UK set up and maintain STEM Clubs.

We can offer advice and guidance on:

- Setting up Clubs
- Activity ideas
- Where to look for funding, and
- How to get local businesses involved.

Competitions

Shaun's Cracking Ideas Design Challenge



This year Shaun the Sheep has taken over [Cracking Ideas](#) and wants you to help him get back to the farm! Shaun, Bitzer and their farmyard friends have found themselves in the big city and they need you to use your sheer determination to help them get back to Mossy Bottom Farm.

The challenge is to invent a cracking contraption to transport them back home. You could take inspiration from the ways in which you travel; your invention could transport the gang by road, rail, air or even underground! It could be the materials you use, or the way you power the contraption.

Competition extended deadline – 24 July 2015.

NEW Practical Action STEM Plastics Challenge

Suitable for KS2 and 3, packed with practical science investigations based around plastics, and an enterprise challenge to design and make a quality product for UK or Nepal market. More details [here](#).

There is also a linked video competition – entry deadline 18 December 2015.



First Lego League Competition Registration



First Lego League is a global competition which challenges teams of learners aged 9 to 16 to programme a robot to solve exciting



missions. The regional competition in Wales is run by EESW/ STEM Cymru and the IET. Registration for FLL opens on 19 May.

Solve real world problems with the help of a robot!. Sponsors 2014/15. For more information email firstlegoleague@theiet.org.

CLEAPSS – ASE Primary Competition 2015



Dunking that doesn't take the biscuit

This year's ASE Primary Competition is about designing and testing a new food product, a "healthy dunking biscuit".

At the end of a long healthy walk, there is nothing nicer than your favourite drink and a few biscuits to dunk in it. But when you are ready for your treat it's very frustrating to find that your biscuits are just crumbs, or that they melt into your drink leaving nothing for you to taste.

This year's competition could solve these annoying problems! You can download the competition details [here](#).

Timstar Experimenthly

Timstar is looking for STEM Clubs to inspire children to work scientifically in their Experiment of the Month campaign.

- Send a video demonstration carrying out an experiment to science@timstar.co.uk.
- To qualify, all products used must be sold by Timstar and the video should have clear, easy to follow instructions.
- Each month Timstar will choose a favourite to be published on their website and social media channels – the favourite will receive £50 worth of Starclub points for their school.



Water: a global experiment with hydrogels

Royal Society of Chemistry global experiments are designed for mass participation using everyday items, with alternative suggestions for schools less able to source materials. Upload your results onto the global experiment website and get a certificate from the Royal Society of Chemistry. Students can use an investigation into how water can be retrieved from a hydrogel to get a CREST Bronze Award.

Club activities

Measuring the speed of light in your kitchen

In order to be able to accurately describe the distance light travels in a year scientists need to know the speed that light travels. Get your KS3 science students to try this experiment from [Smart Learning](#) in their own kitchens to measure the speed of light!



The microwaves in your microwave oven are part of the same spectrum of waves as light, and they all travel at the same speed. This means it is possible to use a microwave oven to measure the speed of light. There is a turntable in a microwave oven because the microwave oven has hot spots. We can use these hot spots to measure the speed of light. Designed by [Smart Learning](#) – supporting Science teachers with free resources, news and ideas.

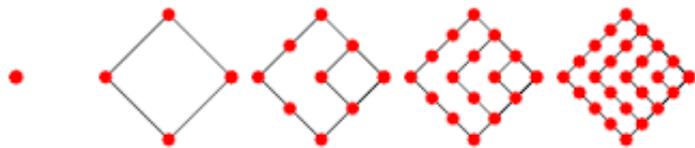


Square Number Surprises – from NRICH

Challenge Level: Stage 4

You're probably very familiar with the sequence of Square Numbers: 1,4,9,16,25...

Below are some ideas to explore with square numbers. For each one, try a few examples and see what you notice.



- Add two consecutive square numbers and then subtract 1
- Square any odd number, then subtract 1
- Multiply two consecutive odd numbers and then add 1
- Multiply two consecutive even numbers and then add 1

Can you explain what you've noticed? Can you prove that it will always happen? Can you come up with any Square Number Surprises of your own?

With thanks to [Don Steward](#), whose ideas formed the basis of this problem. There are links to more puzzles at <http://nrich.maths.org/11194>. NRICH is a team of qualified teachers who are also practitioners in RICH mathematical thinking. This unique blend means that NRICH is ideally placed to offer advice and support to both learners and teachers of mathematics. NRICH is directly and indirectly involved with educational policy makers. This means that we can offer informed guidance and practical advice about working in schools.

Grants

Small grants for schools to run a Gopher Science Labs day

Thanks to generous support from the Biochemical Society, the Society of Biology is able to offer grants which will enable up to 60 schools across the UK to host either:

- A Gopher Science Lab day at their school, or,
- A Gopher Science Lab day followed by hosting and leading a training session for surrounding schools.

More information [here](#). The deadline for applications is 25 May 2015.



BMCS grants for chemistry clubs

BMCS grants for chemistry clubs can be made by a teacher at a primary or secondary school for sums up to £1,000. Applications from existing chemistry clubs looking to expand/ enhance activities would be welcome as would those from colleagues interested in starting a club.



Resources

IET Faraday Careers Packs

The IET offer a post-16 careers pack full of useful information about the routes to a wide range of engineering careers.



IET Faraday DIY Challenge Days

The DIY version of Faraday Challenge Days with free resources.

IET Faraday Challenge Days

IET Faraday Challenge Days give students the opportunity to research, design and make prototype solutions to genuinely tough engineering problems. At each event teams compete to win a prize for themselves and a trophy for their school.

Free teaching resources from the IET

Free teaching resources – classroom activities for students aged 11-19 years with film clips, online games and quizzes.

Free A2 posters from IET

A range of free primary and secondary curriculum support posters, related to various aspects of electricity and power. As well as posters created solely by the IET, we also work as part of Tomorrow's Engineers and have included these additional engineering posters for you to download or order as part of our posters pack.

Disaster Zone!

[Disaster Zone! resources](#) are a series of downloadable resources to help school students understand more about a range of natural hazards. They include information posters, factsheets, quizzes and wordsearches/crosswords. They have been produced by a NERC-funded scientist (Jeannie Scott) carrying out research on volcanoes.



See Science / Gweld Gwyddoniaeth
Norfolk House, 59 Charles Street, Cardiff CF10 2GD
02920 801644 www.see-science.co.uk enquiries@see-science.co.uk