

“I don’t know if you’ve noticed, but there seems to be a lot to do for this STEM enrichment business! Clubs, CREST awards, competitions, cross curricular work, careers links – the possibilities are endless and when are you going to fit it all in? During the night?”

The answer is- do it all at once!

Ysgol Maes Garmon

Flintshire

Quick facts for teachers

What is a STEM Club?

Although they complement the curriculum, they are not designed to be about writing, tests, or exams. Activities may involve practical experiments, investigation, discussion and reflection. Most of all, they should be fun.

They can motivate and build confidence in young people who struggle with STEM subjects, and provide an extra outlet for children who already show aptitude and are interested in furthering their learning.

The aims of STEM Clubs are to:

- enrich, enhance and extend the secondary 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.

Introduction

Ysgol Maes Garmon is a designated Welsh-medium school for pupils between the ages of 11 and 18. The school is situated in Mold and is maintained by Flintshire local authority. The school serves towns and villages across Flintshire. The area contains some prosperous areas in the town of Mold, and also some villages, in addition to less privileged industrial towns in Deeside. There are 558 pupils on roll, including 105 in the sixth form.

Brief Summary

Head of Science at Ysgol Maes Garmon, Lesley Howells, asked her local STEMNET supporter Rachel Mason from See Science to visit the school to discuss some initial ideas and to create a plan in order to launch a STEM Club in September 2012 and from there something more than just a club has grown.



Links to Curriculum

- Solve a relevant, science-based problem, set within a context
- Work in pairs or small groups, independently of adults
- Take part in practical, hands-on science activities
- Think and talk about science
- Share ideas using a variety of media

Details of Club activity

At the science department at Ysgol Maes Garmon, teachers and students have worked together to develop a nice, simple way to set up a lunchtime science club for Year 7 and Year 8 students.

Head of Science Lesley Howells asked Rachel Mason, her local [STEMNET supporter](#), to bring a few exemplar ideas to school to enable the department to run a STEM Club during the lunch hour. Rachel provided links and examples from the [STEM Clubs Network](#), where schools throughout the UK (more than 500!) have shared their own clubs’ activities for other schools to pick up ideas and adapt to their own requirements. The British Science Association’s [CREST Award site](#) also has lots of pick-up-and-run projects and outline ideas. The Institute of Physics ‘[Marvin and Milo](#)’ series is packed with short experiments, perfect for club time.

“We were all asked to talk about our STEM Ambassador activities at our university interviews and this really gave us confidence.”

What are STEM Ambassadors?

STEM Ambassadors are volunteers of all ages and from all backgrounds working in STEM related roles from apprentices to geologists and nuclear physicists to zoologists.

Have they received any training to work in schools?

All STEM Ambassadors are registered and have been checked by the CRB, and have each received an induction into working in the classroom.

What do they do?

STEM Ambassadors provide a wide variety of services such as careers talks, mentoring, helping with school events or clubs and facilitating workplace visits. Past activities have included: building rockets, farm walks, mock job interviews, rat dissection and speed dating!

How much does STEMNET charge?

Absolutely nothing.

Sounds great – how can I book my STEM Ambassador?

Simply log on to www.stemnet.org.uk to find your local contact.

Inspire young people in science, technology, engineering and maths (STEM)

Become a STEM Ambassador

For further information visit: www.stemnet.org.uk

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To share the workload and ensure that enthusiasm for a STEM Club would continue throughout the academic year, eight Year 12 students were registered as STEM Ambassadors – to help run the Club, to take some of the work load off the teachers, to create student mentors and to support the volunteering requirement in Welsh Baccalaureate Qualification. As STEM Ambassadors in Year 13, the students have joined a scheme which places them in a relationship with people already in careers. It has also provided them with material for their university applications. Students interviewed during a club session said they had all been asked to talk about their STEM Ambassador activities in their university interviews and this really seemed to give them confidence.



To keep the momentum of the Club going, the Year 13 students have picked the activities each week and, with the support of the department's technician, have set up some great experiments. After a few weeks they embarked on a more in-depth project over several sessions for which club attendees will receive CREST Bronze Awards. They chose Practical Action's

Floating Garden Challenge – one of the charity's Crest linked schools projects. This challenges students to find a solution to a real problem in Bangladesh, is downloadable from the website and is available fully in Welsh and English. As a result of climate change there is more rain in Bangladesh than ever before. Land where farmers used to grow their crops is now flooded on a regular basis. The result is families go hungry. Pupils are asked to design a Floating Garden and build a model structure that will enable farmers to grow crops even in an area that may become flooded. This is a fun hands on investigation suitable for KS 2-5 (age 7-19) pupils which requires very little preparation time and equipment.

So with just one Club, meeting for 25 minutes every Tuesday, Ysgol Maes Garmon has created a whole suite of STEM enrichment opportunities, bringing together a good cross-section of the school to enjoy their delight in science.

The STEMNET Supporter visited the Club in one of the school's most hectic weeks, with the whole school ringing with the stops and whoops of Eisteddfod rehearsal.

Benefits and impact

Rachel Mason visited the Club once it was under way, to find that the sixth form group were running the club themselves, under the supervision of Lesley Howells. All three students that Rachel spoke to had referred to their STEM Ambassador status in UCAS applications, and all three had been asked during interview to talk about it. They have all been offered places on science degree courses.

The Year 13 Ambassadors also volunteered to spend a week at the Science and Technology Tent at the National Eisteddfod in Denbigh in August 2013, running workshops and demonstrations which attracted thousands of pupils.