

*“It’s great being able to take part in a club with my younger brother and friends”*

## Astronomy, rockets and zoos

Lewis School, Pengam

Caerphilly County Borough

### 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

Lewis School Pengam is an 11-19 School with boys only in years 7-11 and a mixed 6th form. The school is situated 20 miles North of Cardiff in the Rhymney valley in Gilfach, Bargoed. At present there are over 950 pupils on roll, which includes 187 in the Sixth Form.

The school was founded in 1729 and has gone through many changes. Schools play an important and pivotal role in the community. At Lewis School Pengam we have embraced the Community School concept and have placed it at the heart of our school ethos. We run a series of activities and events both during and after school.

Exam results have been excellent in recent years with about 75% of our students progressing to university. During 2013 we celebrated the 10th year of our new school buildings and once again record breaking examination results!

### Brief summary

Over the last few years teachers at Lewis Pengam School have actively tried to change the perception of science and extra curricular activities within our school. By introducing fun, modern and engaging activities for a whole range of pupils we have increased our contact time with pupils hugely which has resulted in a higher level of enthusiasm for STEM subjects. After school and lunchtime clubs have been put in place for pupils alongside the introduction of projects with lesson time.



### Links to curriculum

There are multiple links to many areas of the curriculum that are explored by our various clubs such as the Astronomy and Engineering clubs and activities. All of our projects are pupil lead and the pupils have made their own links to their classwork.

The pupils are encouraged to make these links for example pupils have demonstrated electricity via their work with scaletrix and the developed their knowledge and understanding of the solar system by exploring the photos they have taken.

*“I didn’t realise just what you can see in the night sky”*

### 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](http://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](http://www.stemnet.org.uk)

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T 020 3206 0450

E [info@stemnet.org.uk](mailto:info@stemnet.org.uk)

### Details of clubs that are run

Throughout the winter months we run an astronomy club on a weekly basis. Pupils learn how to use various types of telescope and begin to delve into astrophotography. We have a range of pupils from all ages and our more experienced members are happy to aid the newer pupils within the club. During the summer months the pupils made the decision to switch their focus to the sun, tracking solar activity when the cloud allowed.



During the spring term we run a rockets and model club after school. Pupils build their own rocket designs and attempt to break our school height record for a rocket launch. We combine this activity with our remote control car club that runs throughout the year. Pupils race and maintain their own cars as part of a team with weekly races taking place.

Within the science department, we have our own mini-zoo containing a variety of animals that are cared for by the pupils. Pupils can learn the skills needed to keep various reptiles, mammals and fish.

Over the last year we have started a lego robotics club which has seen 30 pupils learning how to build and program lego mindstorms. The pupils have shown excellent teamwork while building complex robots to carry out numerous tasks. As part of the club the pupils have branched out into other areas of computing and created their own computer games.

### Benefits and impact

- The club members have enjoyed the opportunity to develop their ideas and explore science outside the normal science lessons.
- The pupils have had a chance to develop new skills and work together to develop team working ICT and communication skills.
- Pupils have benefitted from greater contact time with teachers than would normally be possible in normal lessons
- The knock on effect has been that pupils know that they can have fun while learning and the pupils look forward to their lessons rather than just counting down the time until the end of the day.
- Due to this increase of enthusiasm we have been able to offer triple science for the first time over the last few years in school while our A-level numbers in STEM subjects have also increased greatly.
- A higher teacher contact time with pupils has allowed our staff to better tailor our work and so that the maximum progression can be made by the pupils.

