

# KINGSMEAD PRIMARY SCHOOL SCIENCE WEEK



STEM Ambassador Hub Merseyside & Cheshire

## Context and Overview

Science Lead at Kingsmead Primary School, Northwich, Dr. Ruth Dubberley, is a hugely passionate champion of enabling students to think and reason like scientists. The ethos of the school's approach to the teaching of STEM subjects is clearly evident on the STEM page of the school website. Quotes from eminent theorists highlight the awe and wonder that is so often the starting place for the questions 'Why?' and 'How?'

The jaw drops, the eyes widen, the mind opens. *Douglas Rushcroft*

It is magic until you understand it, and it is mathematics thereafter. *Bharati Krishan*

The world, and the universe, is an extremely beautiful place, and the more we understand it, the more beautiful does it appear. *Richard Dawkins*

The text on the page asserts the need for students to 'discover for themselves'.

*While children think in much the same manner as adults, they do not have the wide experience of adults to inform their thinking. Children therefore can be taught to 'parrot' scientific knowledge and facts without understanding. They may recite fluently how the Earth is a sphere spinning on its axis, while in their hearts 'knowing' full well that it is flat, as this is what their experience and current level of understanding tells them! Therefore, alongside scientific knowledge and facts to help them develop concepts and understanding, we also teach through encouraging meticulous observation.*

Over the past 5 years, as part of the school's STEM offering, and to support the students' opportunities to explore and observe for themselves, Ruth has organised a wide range of whole-school activities for each British Science Week.

Her programme for British Science Week 2018, saw 27 presenters provide 60 talks or hands-on sessions for students from EYFS to Y6!

As the theme for this year's Science Week was 'Our Earth', Ruth focused on space-related work, geology, and environmental-based workshops and, following an activity request submitted through HUBMC, was supported by a large number of STEM Ambassadors, including **Alfie Neild**, a retired engineer who is well on his way to his 250th STEM Ambassador activity!

The week began with a talk by STEM Ambassador **Dr Stacey Habbergham-Mawson**, an astrophysicist from Liverpool John Moores University. Stacey then worked with Upper KS2 children to design a base camp on Mars and to programme a Mars Rover Mission.

Pupils learnt about the land speed record attempt that Bloodhound SSC is planning in Africa next year during a fascinating talk by STEM Ambassador **John Wood**. Children and staff were captivated by the presentation and asked some excellent questions at the end of the talk. John has offered to return to school to provide an update on the success of the attempt.

Younger children carried out a Scratch computing workshop with another STEM Ambassador, **Massimo D'Ulise**, where they were set the challenge of making a rocket rotate around planet Earth. The children enjoyed the task and there was much excitement when some were successful. Massimo is keen to return to school to support future science activities and has offered to help run a STEM club at the school.

STEM Ambassadors, **Roger Todd** and **Alan Dixon**, from the Institute of Engineering and Technology brought with them interesting pieces of equipment (Wimshurt Machine to demonstrate static energy and Sterling engine model) with which the children enjoyed experimenting. Roger and Alan have also offered to return to school next term to help teachers set up an experiment investigating the effect of low voltage electricity on plant growth.

STEM Ambassador, **Norman Sadler**, from RSPB Chester talked to children throughout school about his recent trip to the Arctic and the effects of plastic waste on the planet and the younger children in the school investigated static electricity and rocket launching with STEM Ambassador **Luisa Peirera**.

In addition to the sessions hosted by STEM Ambassadors, Ruth also arranged various other activities for students including:

- **Activities run by parents with relevant career backgrounds**
- **Engagement with organisations such as Butterfly Conservation**
- **Projects funded in kind by local businesses eg. Creation of hedgehog houses, the timber for which was provided at a greatly reduced cost by a local merchant**
- **Science Show by 'Mad Science'**
- **Trip to Jodrell Bank**
- **Presentation by Professor Paul Clarke from Naturally Smart and the creation by students of a podcast to be broadcast online**

A final highlight of the week was the Y6 science fair. Y6 students created science posters which looked really professional. These were displayed by the Year 6 students who then had the opportunity to share and explain their planned experiments with the rest of the school. What an excellent preparation for future university Poster Days!

## Impact on young people

HUBMC staff collected feedback from Ruth following the event. She strongly agreed that she had seen an increase in students' interest and enjoyment of STEM subjects stating:

*From pupil voice feedback it is clear that working with 'real scientists' has a huge impact on their learning. They are excited about the week and what they will have to look forward to each day. They always listen well to presenters and feedback from STEM Ambassadors often comments on the number of questions children have and how good their questions are. This is because they are interested and enthused by the presenters. Many presenters stay on to run question and answer sessions afterwards as children are so interested in their talks. Children in Upper KS2 have completed diaries which talk about this week 'being the best week of their lives...' Parents often comment on how their children have come home full of questions and bursting with all the knowledge they have learnt during science week.*

*Year 6 children run a science fair for all other children in the school. For this they have to create a scientific poster with method, results, conclusion etc and present this to children along with the experiment. They understand this is how a science conference operates and take this very seriously! They aspire to be real scientists and carry out the fair with great enthusiasm and flair.*

Ruth felt that the STEM Ambassador (and other) activities with which the students engaged during Science Week helped develop their practical skills and that their experiences have a positive impact on their progression to STEM subjects as they move through the Key Stages.

*Science week provides lots of opportunities for practical activities as the whole week is given over to science. This is from Reception to Year 6 children. Reception children had the opportunity to handle meteorites this year and carried out bug hunts in the school grounds as well as investigating clouds and rain models amongst other things! The level of excitement in the class of forty five 4 – 5 year olds was huge!*

*Certainly, all our pupils in school have a real love of science, particularly practical science (they are given lots of opportunities for hands on science rather than it being demonstrated by the teacher). This continues right up to Year 6, and when pupils visit from the local high schools a high number are continuing to study sciences.*

Comments from the children, collected by Ruth, sum up their enjoyment of the STEM Ambassador activities:

**I really enjoyed all STEM Ambassador presentations, particularly Alfie's because it really made my mind explode! Overall I have loved Science week.**

**The week was really fun and I enjoyed making windsocks.**

**I enjoyed everything about this week and I can't even say my favourite one, they were all fantastic!**

**I enjoyed when we changed classes to different things like make windsocks, balloon cars, water turbines and pick up Coco-Pops with static electricity!**

## Impact on educators

HUBMC staff collected feedback from Ruth following the event. She strongly agreed that she had seen an increase in students' interest and enjoyment of STEM subjects stating:

When asked whether she felt that involvement with STEM Ambassadors had improved her teaching or supporting of STEM subjects, Ruth stated that:

*Having STEM Ambassadors in school allows us to provide a greater depth of understanding of certain areas of the curriculum (this year – solar system, volcanoes, rocks and fossils in particular). Alfie Neild's talk on volcanoes fitted well with the geography curriculum in Year 3/4 and his talk and power-point presentation allowed the children to have a deeper understanding than we would have covered in class.*

*The workshops provide opportunities for our teachers in school to get ideas of practical science activities they could do in the future themselves. We also specifically planned an activity this year using computer simulations to look for patterns for Year 5/6 children so that the strand of working scientifically was met. This workshop also made a good cross-curricular link between science and maths (data handling).*

Ruth felt that a really beneficial aspect of STEM Ambassador engagement was the support it provided for teachers in contextualising the curriculum for pupils explaining:

*I feel this is a really important part of teaching science in school as it provides opportunities for the children to understand how science can be used in the real world. Over the years they have found out about lots of different types of jobs that are science related (e.g. field biologists, astrophysicists, pharmaceutical experts, geologists, engineering etc.) I feel this is really important so that they realise there are other possibilities in science besides dentistry, veterinary, medicine.*

In correspondence with Ruth after the event, other teachers also expressed their enjoyment, and that of their students, of the Science Week activities:

**Just wanted to say thanks to you for organising another fab week. We had a great time in UKS2 so many fab workshops etc and the trip was fab, the children got so much from it all. Thanks again, no easy task organising that for the whole school!**

**I just wanted to send an email saying thank you for an amazing science week. Once again, the visiting scientists were fab! Reception have hugely enjoyed it and got so much from the sessions, which was evident in the conversations.**

## Unexpected Outcomes and Impact

**Sarah Longshaw**, Cheshire & Stockport Science Learning Partnership Lead, visited Kingsmead during Science week to see what was going on and to feedback ideas for the Great Science share event in June. Sarah stayed for the entire day and was overwhelmed with the programme of events during the week. She worked with some children and commented on their level of engagement and genuine enthusiasm for the subject. As a result of her visit, Sarah has asked if Ruth would consider training as a facilitator for the SLP.

