

## Making Physics Matter in Primary Schools

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"Efforts to broaden students' aspirations, particularly in relation to STEM, need to begin in primary school."  
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From my outreach activity I have learnt that primary teachers could feel under pressure when faced with delivering the science curriculum. The teachers could be lacking confidence in their subject knowledge, lacking the equipment needed to deliver practical science or lacking enthusiasm for the subject. In addition, English and Mathematics were the subjects that were externally tested and reported to the authorities and so some teachers felt that time for science was being marginalised to ensure the best results in the externally assessed subjects.

In my work with The Ogden Trust Primary Science team I have been involved in developing a range of strategies to address some of the issues outlined above.

- CPD (Teacher Training) Programme

We have provided free training to improve teachers knowledge and understanding of key physics concepts to GCSE standard and a practical workshop consisting of ten investigations, extension and challenge tasks. The teachers each receive a book of lesson plans and a resource box containing a class set of the equipment required.

The four year programme covers

Forces

Light and Sound

Electricity

Earth & Space

- "Phiz Labs"

Funding from The Ogden Trust has allowed us to set up science laboratories within primary schools. The pupils have lab coats, goggles and access to a range of equipment that allows them to participate in more practical science activity and open-ended investigative work. My Phiz Lab is in the secondary school where I teach physics and practical workshops for primary pupils and teachers are held there on a regular basis.

- Enrichment

In order to enthuse and challenge the primary pupils a variety of enrichment activities take place. These include "Physics of Go-Karts" and "Particle Physics for Primary" workshops, competitions and regional Science Fairs held at Universities. Stargazing evenings and Family Learning Nights where parents join their children to learn about science together are very popular.

- Sixth Form Science Ambassadors

A-level Physics students (age 17-18) are trained as STEM Ambassadors to run after school science clubs for primary schools. I have worked with the British Science Association to develop this scheme and my students have received Gold CREST Awards for their science communication skills. This year, in conjunction with the Royal Institution, we have introduced "Maths for Physics Masterclasses" for gifted and talented primary pupils.

Sixth form Space Ambassadors also train their younger peers to use the Bradford University Robotic Space Telescope to take images of planets and stars and to analyse the images.

These schemes benefit the primary pupils, the sixth form students who gain invaluable teamwork and science communication skills and the primary teachers who attend these sessions.

Initial evaluations have shown a greatly increased engagement in science in primary schools. Many of the schools involved have received the Primary Science Quality Mark.