

IET Travel Grant Report

India, Easter 2019

Over my Easter vacation I was able to spend 5 days teaching in rural Karnataka, India.

I travelled to India with a group of 6 other volunteer teachers from Oxford, a mixture of undergraduate and postgraduate students. We were able to invite over 150 children to attend the camp. They were from a variety of schools in the area and included both boys and girls.

The camp was an initiative supported by Engineers Without Borders Oxford, a student society which is committed to using engineering to change the world for the better, supporting those in society who need it most.

We were supported by Professor K P J Reddy, of the Indian Institute of Science, as well as many members of the Karnataka state education system.

The children attending the summer camp were students at local governmental schools – these schools have very limited resources and are taught in a very traditional style. Our workshops offered these children their first chance to learn through practical, hands-on experiments, an invaluable experience.

Our summer camp was the only completely free educational camp of its kind available in the area – it was due to the generous donations of our supporters that we were able to make the camp completely free and available to anyone, regardless of their background.

The camp began with an opening ceremony where some of the children performed songs and gave speeches to welcome us to the school.

After this, the children were split into 5 groups – as the camp was taught over 5 days, the groups rotated between 5 different activities, taking part in one activity each day.

I taught an activity based around the importance of binary. Binary is a number system used in all computing systems and is a really important part of modern computer science and technology. During my activity we talked about why and how computers use binary. I also covered how to count in binary, how to add binary numbers and used binary to write and decipher codes.

The main practical part of my workshop was to make a binary calculator. The inputs and outputs were represented by marbles, and the marbles would run through a maze of cardboard, pushing through gates and rotating hinges, giving a binary output which was the sum of the inputs. The children worked in small groups to each make an adder which could add single bits. We then combined everyone's machines to create a large multi-bit adder.

I think through this activity the children learned a good understanding of the binary system and its importance, as well as gaining some practical skills and getting the experience of working within a team.

Some of the other activities available included building water-powered rockets, making a DC motor, constructing and racing robots and learning about sustainability and renewable energy.

I think through the camp we were able to really enthuse the children about STEM, and give them a new perspective on learning science.

We are all incredibly grateful for the support we received from the IET, iMechE, the Engineering Science department at Oxford, EWB Oxford and many of the Oxford colleges.