



# STEM Ambassador Programme

## Case study: Engineering Extravaganza

### Overview

The Engineering Extravaganza was hosted by the Advanced Manufacturing Park Technology Centre and the Advanced Manufacturing Research Centre Knowledge Transfer Centre in Rotherham on Thursday 12 March 2020.

The event is now in its ninth year and aims to encourage 12 to 14-year-olds to take up a career in engineering. It provides a hands-on introduction to some of the career options open to students in the STEM subjects.

The event is led by leading engineering institutions:

- The Institution of Chemical Engineers (IChemE)
- The Institution of Civil Engineers (ICE)
- The Institution of Engineering and Technology (IET)
- The Institute of Materials, Minerals and Mining (IOM3)
- The Institution of Mechanical Engineers (IMechE)

The event is open to North Derbyshire and South Yorkshire schools and this was coordinated by the STEM Ambassador Hub North Midlands South and East Yorkshire managed by Derbyshire Education Business Partnership. Over 90 students and 15 teachers from the following schools were involved:

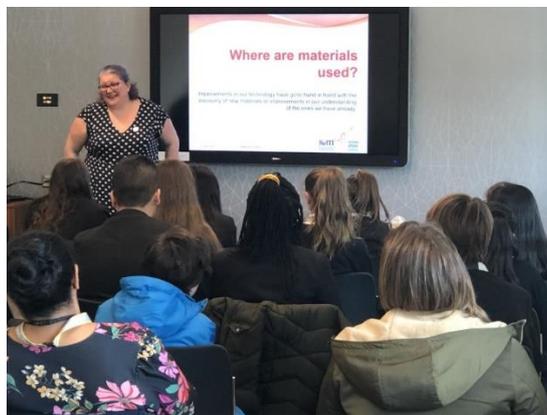
- Clifton Community School
- Forge Valley School
- Outwood Academy Carlton
- Rawmarsh School
- Sheffield Springs Academy
- Thrybergh Academy
- Wath Academy
- Winterhill School

Before the event, students were encouraged to consider how many different types of engineers there are. This helped them gain an appreciation of the activities they were attending and the practical activities they were to be involved with.

At the event, students moved in small groups through five of a possible six stations (ran by the professional engineering organisations, the venue and with support from STEM Ambassadors) as predetermined by the organisers. These included:

### **IOM3 Materials in Action**

The IOM3 challenge explored how materials play a central role in our lives and have helped to change and improve the technology we rely on.



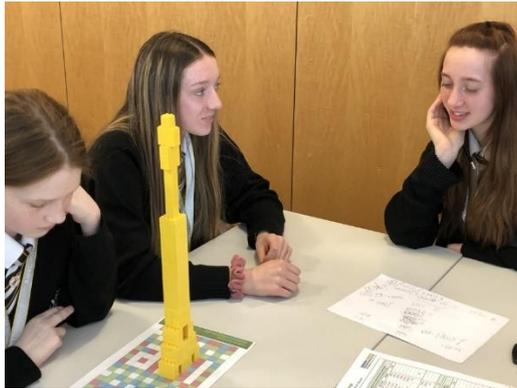
### **IMechE Bloodhound Car**

The IMechE helped teams of students to create an air-powered model of the Bloodhound Super Sonic Car. Teams had the opportunity to compete against each other to determine which cars travelled furthest/fastest on the day.



### **ICE Skyscraper Challenge**

The ICE challenged the young civil engineer's skills to build a tower out of Lego, whilst earning the maximum profit. Teams had to think about the costs incurred in building it, and potential income that could be made from it. The tower could be of any design but had to stand up by itself and be stable enough to withstand a mild wind force.



### **IChemE The Secret World of Gases**

The IChemE explored how some gases are used and could be used in the future as we move towards a lower carbon and more energy-efficient society. It involved some students getting involved in some of the interactive demonstrations.



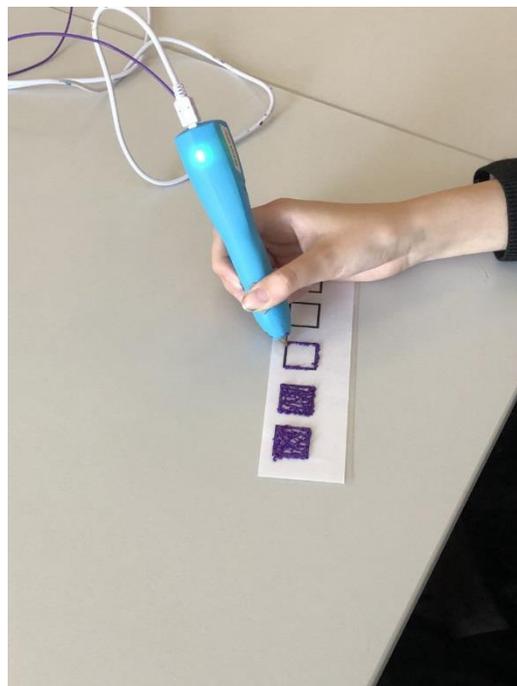
### **AMRC Training Centre**

Students got to try their hand at virtual welding.



### **AMRC STEM Team**

3D printing session where students compared their 3D models made manually using 3D pens to the models produced by a pre-programmed 3D printer.



## **Feedback**

Feedback from the teachers included:

“Overall the students had an excellent day out and were really enthusiastic about what they had learnt.”

“Really great day, all the workshops had our students so engaged throughout. The format of introduction to this area of engineering, why it's useful, real world examples, then activity worked really well.”

## **Future plans**

The Engineering Extravaganza will be repeated in November 2020 at Sheffield Hallam University.