



Engaging young people with Science

Discovering new Pathways to STEM

In the UK

Science, technology, engineering and mathematics (STEM) have a profound impact on our everyday lives. Improved teaching and learning of STEM subjects is considered one of the accelerating forces for future economic growth. Issues such as sustainability, managing environmental resources and using renewable energy effectively are challenges that can benefit from the work of mathematicians, scientists and engineers across many disciplines.

The Kusuma Trust UK believes that inspiring young people to pursue STEM subjects in secondary and higher education and into industry is key to addressing the skills gap in the UK. Changes in society are driving up demand for STEM graduates, and it is important that we find new ways to engage students in these subjects.

We have partnered with the Sutton Trust to support a university pathway programme for 300 young people studying in former coalfield communities. The programme includes a range of sessions for students, parents and teachers, tailored education and careers advice, academic classes in STEM subjects, sessions to develop non-academic skills, a residential summer school, work experience placements in relevant STEM settings, assignment of a mentor and a graduation event for students and parents. The programme is delivered in collaboration with the Universities of Nottingham and York, which have highly regarded STEM faculties.

The Pathways to STEM programme was launched with 'Science Trails' at the Universities of York and Nottingham. The events provided an opportunity for pupils to work with leading academics and university students across a range of different science departments. Nearly two hundred pupils from local schools in former coalfield communities participated in the events.

Pupils participated in hands-on workshops in areas of science that affect us every day. Pupils had the opportunity to explore science through laboratory sessions, lectures, seminars, demonstrations and debates.

In York, the event was held at the university's National STEM Learning Centre. Pupils started the day with a short

Chemistry demonstration and were then divided into groups and allocated a current undergraduate Ambassador for the day. Each group followed their own trail of five different STEM activities across the university campus. The trail engaged pupils in sessions ranging from making packaging from potatoes and walking in virtual reality, to discovering DNA and launching rockets.

For students interested in studying STEM at the University of Nottingham, the Science fair was held at Mansfield Central Library and involved six local schools. Students had the opportunity to participate in an exhibition organised by the Royal Society on the 'plastics inside us', create objects with 3-D printing and understand the science of the MRI scanner.

Student Ambassadors were on hand during the day to work with pupils and answer questions about university life and a range of higher education science courses. University academics held training sessions on teaching STEM for accompanying teachers.

"I saw every single student engage in an activity and interact with the academics who were leading the activities. It was really good to see them enjoy themselves and stretch themselves learning about Science in a university environment."

Science Teacher, Tupton Hall School, Derbyshire



Students learn about electronics at the York Science Fair
Photo: The Sutton Trust

New schools recruited from former coalfields

Kusuma Sutton Scholars works with schools in coalfield communities and supports 600 students aged 11-16 years to boost their aspirations and support academic performance through a series of school visits, project days and university campus visits. The programme is delivered in partnership with the Sutton Trust and the University of Nottingham. In April, nine new schools from coalfield communities joined the scholars programme including schools from Nottinghamshire and North Derbyshire.

Young Upstart establishes dance academy

Jazz, a college student studying Theatre and Dance, recently took part in an enterprise workshop as part of the Young Upstarts programme. Following the workshop, Jazz realised that many of the topics covered resonated with her and made her think about what she could do for herself in the future. Jazz stayed in touch with the workshop trainers and met with them to seek further advice and support to set up a business.

In April, Jazz took the leap to set up a new business 'Pierre and Jazz Academy of Dance'. Motivated and inspired by the programme, Jazz had the confidence to start up her own academy with her partner.

"Thank you very much for your guidance and motivation at the Young Upstarts workshop. I work every day of the week and teach at four different dance schools including my own academy! It's manic but I love it. It's going really well so far. The academy is performing at the Tour De Yorkshire event at the end of the month, and we've managed to get Virgin Trains to sponsor us for the event and they're going to get all the kids t-shirts!"



The Pierre and Jazz Dance Academy
Photo: The Youth Association

In India

Student award for Earthquake Alarm

Students from Government Girls College (GGIC) Sandila in Hardoi, Uttar Pradesh recently won a science award for an innovative idea for an earthquake alarm. The model was devised as part of a Science Fair competition held in Hardoi to promote Science through project-based learning. A total of 65 students from 28 schools in the district participated in the fair to demonstrate their scientific ideas and models to peers, other schools and the wider community. Scientific models on display ranged from a 'fire sensor' to a model to conserve water.



Earthquake alarm created by GGIC Sandila
Photo: Kusuma Foundation

Many teachers who supported their students with the models were inspired by the event. Ms Pooja, Assistant Teacher, GGIC, Hardoi said:

"I am delighted to see the effort students have put in to develop working scientific models. The science fair has given me ideas to develop and use models in my own teaching."

Students at the fair learnt about science 'by doing' and shared their ideas and experiences of creating the scientific models with others. The opportunity to interact with peers and learn about each other's models motivated them to engage with Science more at school. The students who won awards for their models were encouraged to develop more scientific ideas and put theories into practice. Kumari Meera, a Class 10 student from Government High School Jamu participated in the event for the first time and received a prize of INR 1,000 for her model:

"I have learnt a great deal at the Science Fair and I am amazed to see so many different creative models and inventions. I am inspired to continue my Science studies into the future."

Kusuma is committed to supporting innovative ways to engage young people with Science through fairs, interactive workshops and Olympiads, which are held each year in the districts of Sambalpur in Odisha and Hardoi in Uttar Pradesh.