

Supporting STEM sector employers

Developing effective STEM engagement activities



NUSTEM

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How can NUSTEM support you?

Increasing the number and diversity of young people choosing to work in science, technology and engineering is a long-term endeavour. Many organisations see working with schools and families as one way to do this.

Through their research NUSTEM knows how to support children and young people to engage with STEM careers.

We work with employers and sector bodies to help them create effective STEM engagement resources.

Already have a STEM engagement programme?

If you're already running activities, NUSTEM can work with you to explore your current provision and clarify your objectives. We'll audit activities against research and sector best practices to suggest improvements.

Depending on the findings of the audit we can then collaborate with you to upgrade your current provision, or co-develop a range of new activities that meet the aims of your organisational strategy.

New to STEM Engagement?

As a small or medium employer, it can be hard to know where to start with STEM engagement. NUSTEM will support you to explore what you want to get out of engaging with your local community, and collaborate with you to develop activities that fit within your capacity and budget.

Typical activities

Services and consultancy NUSTEM can offer:

- Co-development of company and career-related workshops targeted at primary or lower secondary age children.
- Co-development of company and career-related activities for family audiences.
- Staff training to support delivery of STEM engagement activities.
- Communication skills training for staff.
- Evaluation of STEM engagement activities.

Turn over for examples of our work.

About NUSTEM

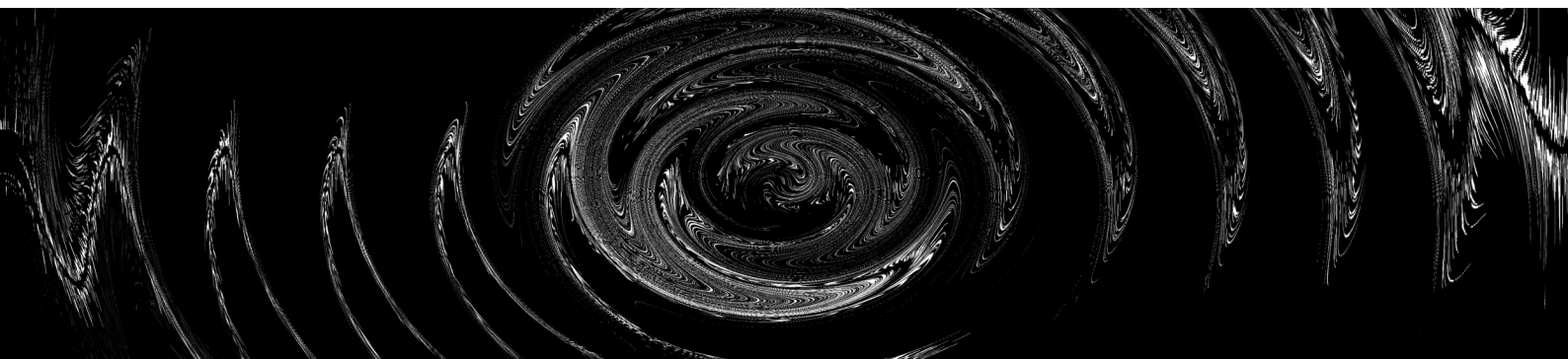
NUSTEM are a STEM outreach and research group based at Northumbria University. Since 2014 we have worked to improve the long-term diversity of the physical sciences, technology and engineering sectors through development and delivery of engagement activities.

Research underpins what we do, and page 4 gives one example of our findings. We've had over 121,600 engagements children and adults, and have discussions and collaborations with 90+ other organisations.

NUSTEM also host the North East STEM engagement network, which meets three times a year.

Want to know more?

Contact Carol at: nustem@northumbria.ac.uk





Strategic organisational support

Case study 1: Developing a STEM outreach strategy

Organisation: Museums Northumberland
Project: Union Chain Bridge: Crossing Borders, Inspiring Communities

What did we do?

Working with Museums Northumberland staff, NUSTEM created an extensive primary school programme which used the restoration of the bridge as a starting point to showcase different related careers.

The programme included loans boxes, cross-curricular workshops, printed materials and teacher CPD.

NUSTEM then provided ongoing support to the delivery team during the three year project.

What was the impact?

"... [the material] has allowed participants to see beyond their traditional, or perhaps stereotypical, views of STEM and STEM careers and provided more insight into diverse opportunities available in the sector."

"Teachers reported an improvement in [children's] vocabulary as a result of the diverse jobs and characteristics ... and also noted that children were making connections between the job roles and activities in their wider community..."

(UCB Year 1 Evaluation report)

Case Study 2: Specialist advice and guidance

Organisation: The Reading Agency
Project: Reading Sparks

What did we do?

Reading Sparks is a project which aims to harness the power of reading to engage children and families with STEM. The project is being piloted with eleven library services across England.

NUSTEM supported the creation of reading and science activity bags for loan to families: helping to identify suitable fiction and non-fiction books and devising high quality STEM activities to the information in the books. We have also worked with The Reading Agency to train library staff on how to support young people to create multi-media resources.

What was the impact?

Two-thirds of the families taking part live in the most deprived areas of the country. 55% of participants would use more loan bags if available, and 53% expressed an interest in using other science resources.

"My daughter discussed the book with me & showed me her favourite pages. We talked about the magnets & what is and isn't magnetic. We then looked up extra information online."

(Reading Sparks Evaluation October 2021)





Resource creation

Case Study 3: Creating a bespoke workshop & training package

Organisation: British Gear Association (BGA)
Project: Gears workshop for primary schools, sourcing of resources, and training package

What did we do?

BGA commissioned NUSTEM to create a primary school workshop to be used by employees of their member organisations. NUSTEM had discussions with staff at BGA to understand the nature of the organisation and then developed a whole class workshop, along with the resource kits required.

We piloted the workshop in primary schools, delivered a training package for BGA members, and ran a training workshop to establish the project.



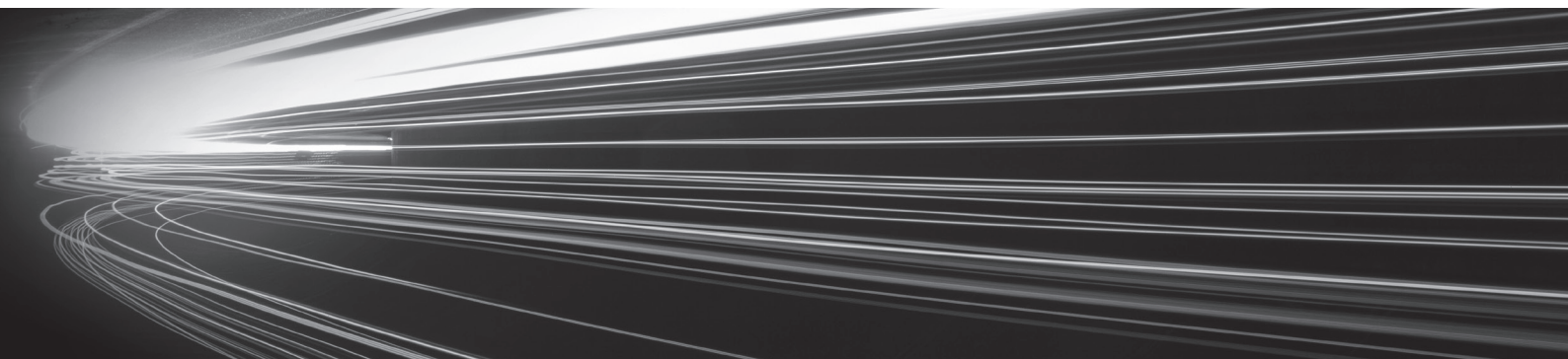
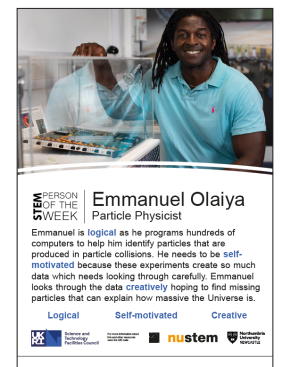
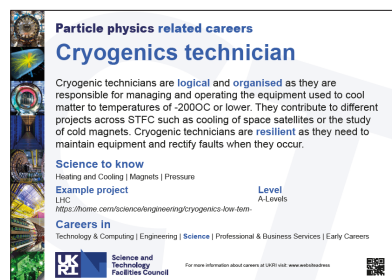
Case Study 4: Developing resources aligned with existing strategy

Organisation: Science and Technology Facilities Council (STFC)
Project: Particle Physics Career Postcards / STEM Person of the Week

What did we do?

STFC already have a well-developed public engagement strategy. NUSTEM worked with STFC to develop a set of resources which highlighted different careers from physics. The job roles ranged from research scientists to technicians and IT support, to showcase the breadth of careers available from physics.

The resources are being used by STFC staff to give to students and teachers following activities, and on social media to promote careers.



INCREASING DIVERSITY AND NUMBER OF YOUNG PEOPLE CHOOSING STEM CAREERS

1. Diversity in the UK STEM Sector

Diverse teams produce more creative and innovative solutions to problems, and companies with diverse boards are more profitable.

However, for over 50 years, there has been a recognition that many STEM sectors are not diverse. Girls, young people from areas of higher level of socio-economic deprivation, and from black and some minority ethnic groups are under-represented throughout the sectors.

Increasing diversity of the STEM workforce will improve UK STEM sectors, and provide more people with interesting and fulfilling careers.



2. NUSTEM'S Role

NUSTEM's research is committed to creating a vibrant and sustainable STEM sector which meets the needs of learners and employers, reflecting the diversity of wider society.

A recent paper from NUSTEM outlined a theory of change exploring ways to improve diversity in the STEM sector, and increase the number of young people choosing a career in STEM.

This infographic aims to help business and organisations shape interventions that will make a difference.



nustem

3. The Context



Research consistently shows that **children and young people like science, and find it inspiring.** However, this **doesn't translate** into them wanting to have a career in science or STEM.



Many children and young people from under-represented groups don't see STEM as **being done by someone like them.**



Before the age of 8, **young children make career limiting decisions** about what they would and wouldn't like to do when they are older.

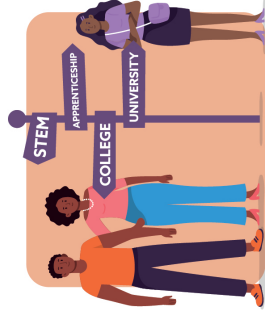
4. The Solution



Start working with families and children **from a young age.**



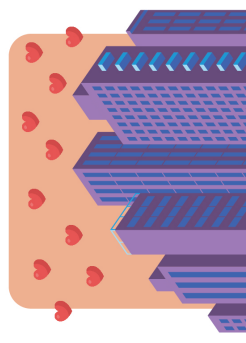
Use attributes of people working in STEM to help children to see what **they have in common with them.**



Show parents and carers the **different routes into STEM careers.**



Support teachers to include careers in their subject lessons. **Showcase local opportunities.**



Ensure that **company culture is inclusive of staff from different backgrounds.** Make STEM sectors good places to work.

To find out more, visit [nustem.uk](https://www.nustem.uk)

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