CASE STUDY

STEM Ambassadors supporting

# NUFFIELD RESEARCH PLACEMENTS

all about STEM

STEM AMBASSADOR HUB

STEM Ambassador Hub Merseyside & Cheshire

## Context and Overview

**All About STEM manages the STEM Enrichment Partnership (SEP), which includes the Nuffield Research Placement programme, in the North West region (Cumbria, Lancashire, Merseyside, Greater Manchester, and Cheshire) and, as one of the North West regional STEM Ambassador Hubs, is keen to develop a synergy between the NRP and STEM Ambassador programmes.**

Nuffield Research Placements (NRPs) are engaging, real-life research or development projects, where talented Year 12 (or equivalent) students are placed at the heart of a UK host organisation.

They are a fantastic opportunity for students to apply skills and knowledge learned at school while providing a meaningful contribution to the work of researchers and industry professionals.

The NRP programme lasts 4-6 weeks (for students) and includes completion of:

- **A set of online skills modules (covering professional, research, data and digital skills)**
- **A 2-3 week research project placement with an academic or industry partner**
- **A scientific poster and report**
- **A presentation of their research at the programme celebration event**

Students must meet at least one of the following eligibility criteria:

- **Be in Y12**
- **Be in full-time, state-funded education**
- **Have at least 5 GCSEs at Grade 6 or above, including a Science, Maths and English**
- **Be studying one or more A Levels in a Science, Technology, Engineering, Economics, Geography, Geology, Psychology, Computing, Statistics or Maths**
- **Meet at least one of the following eligibility criteria:**
  - *Be first in family to attend university*
  - *Come from a family with a combined income of below £30k pre-tax*
  - *In receipt of free school meals within the past 6 years*
  - *Have lived in care*
  - *In receipt of discretionary payments at school*

The STEM Ambassador Programme provides life-changing impact for young people, delivered by STEM professionals in classrooms and communities. The 37,000 STEM Ambassador volunteers, available (free of charge) across the UK, make a positive difference to the lives of young people by:

- **Supporting learning – helping young people to understand the real-world applications of their learning**
- **Illuminating careers – showcasing different careers, providing information on roles and pathways into industry while raising awareness of the skills that are important in the workplace**
- **Raising aspirations – giving young people the opportunity to meet a wide range of inspiring role models, encouraging them as they think about their future**

These impacts are common to the aims and vision of the NRP programme and so, it makes sense for STEM Ambassadors, from relevant backgrounds and with the appropriate skills, to engage as an NRP project supervisor, as part of their wider volunteering. The NRP programme is a ready-made vehicle for supported engagement for the STEM Ambassadors who, in turn, are able to provide quality experiences for NRP students by sharing their research experience, whether in an academic or industrial context.

Nuffield Research Placements

## Brief summary of key interventions

On taking over management of the contract, All About STEM actively promoted the NRP programme to their STEM Ambassador cohort, via regular mailers, directed communications and via social media. Drop-in information sessions were advertised as activities on the STEM Ambassador website, providing those with no prior knowledge of the Programme to start their NRP journey. STEM Ambassadors whose profile job title, biography or employer etc. were related to the research field, were actively identified and invited to engage with the programme. Specific introductory sessions were then provided for interested university departments, companies or other relevant groups.

As a result, in the Summer prior to writing, several STEM Ambassadors volunteered to host placements, three in particular who stand out: Prof. Peter Giblin (Professor of Mathematics, University of Liverpool), Dr. Nordine Helassa (Research Scientist University of Liverpool) and Robert Dawson (Formulation Manager and STEM Lead, Unilever R&D).

## Key successes – what was achieved?

UNIVERSITY OF LIVERPOOL

### Prof. Peter Giblin

Peter Giblin is a retired Professor of Mathematics (Emeritus) at the University of Liverpool. He has hosted Nuffield Placements for about 15 years and has engaged in other outreach activities since about 1985, before the STEM Ambassador Programme even existed! Peter says:

> *I can't remember how I got involved in the STEM Ambassador Programme; as for as why, because I enjoy working with young people and by about 2006 I was not so overwhelmed with administrative responsibilities as a head of department that I could spare some time. I have given talks in schools, run master-classes in Liverpool and taken part in problem-solving sessions, supervised work experience students for many years, in addition to the Nuffield programme.*

Last Summer, Peter hosted two NRP students on Maths-focused projects. One was entitled 'Envelopes of families of plane curves' and the other was 'Elementary number theory' which, in Peter's words:

> *Involved the students doing lots of hard maths, using computer software and writing up results for others to read. They got to see Maths which is beyond their school experience, and gained a flavour of what it might be like if pursued beyond A level.*

The programme has a range of benefits for both the students and the host organisations. Peter says:

> *A few Nuffield students have come to Liverpool as undergraduates, though I make no attempt to 'sell' the university to them! When we are able host students in person in the university, they have the opportunity to meet postgraduates and other staff members and sample the atmosphere of a university Maths department.*

One of the students who took part in Peter's projects, was selected to feature in the **North West Celebration event** as she had been so very complimentary about her experience. She said at the event:

> *The support I have received from the Nuffield team has been absolutely amazing! You have all been so thorough and helpful and are doing a great job in providing a platform where students can grow and develop! My placement coordinator has been very thorough and quick with replies to emails and has been so very engaging and enthusiastic! I am so thankful to have been given this opportunity. You must have seen some potential in me, for which I am very grateful.*

## Key successes – what was achieved?

### Dr. Nordine Helassa

Dr. Nordine Helassa is a Research Scientist working at the University of Liverpool (Department of Cardiovascular and Metabolic Medicine). He graduated from a PhD in Biochemistry in France and has worked in several institutions in France and UK. His current research focuses on inherited cardiovascular disease and is funded by the British Heart Foundation.

Unlike Prof. Giblin, who has been a STEM Ambassador and an NRP supervisor for many years, Nordine was a very new volunteer. Although he had already taken part in the national 'I'm a Scientist – Get Me Out of Here!' activity and a range of STEM Ambassador Hub training, he had only been a STEM Ambassador for a couple of months before agreeing to offer an NRP project!

Nordine's project was entitled 'Understanding Cardiovascular Disease' and he hosted a lab-based placement for one student. He had heard about the NRP programme from a colleague and, whilst he was the main supervisor, PhD students from his department also supported the placement so, in Nordine's words, *'it wasn't too much work!'*

Nordine was keen to highlight the benefits of engagement in the NRP programme for all participants.

> *Students gain technical experience through the use of lab equipment and adherence to safety rules. They gain an insight into the importance of team-work and the work environment as well as getting a sense of the workings of the wider institution.*

There are also tangible benefits for host organisations. Nordine says:

> *My student was high quality – keen and with good basic knowledge. Time spent training her was well-spent as she generated excellent proteins throughout the duration of the project as well as data that can be included in my research. Hosting a student is great for my own professional development and provides excellent evidence of outreach for my CV. Funders like to see evidence of outreach and your ability to communicate the outcomes of your research to the public.*

Engagement in the NRP programme was a really positive STEM Ambassador volunteering experience for Nordine though his advice would be that gaining team support in hosting a project is essential or it could be quite time-consuming. A perfect opportunity to recruit more STEM Ambassadors from your organisation!

## Key successes – what was achieved?

### Robert Dawson

Robert Dawson is the Formulation Manager and STEM Lead at Unilever R&D Port Sunlight. Rob leads a team of scientists to create new haircare products, which give the user a great experience and deliver to their needs. This involves developing new formulations, working with brand new ingredients and ensuring the products are stable and perform to their requirements, all underpinned by scientific principles.

As STEM leader for Port Sunlight site, he is responsible for defining the STEM and associated outreach activities for the site and ensuring these are delivered to the local community.

When Rob first hosted a Nuffield placement, he had been a STEM Ambassador for over 12 years, but specifically with Unilever for about 7 years. Leading the STEM outreach programme for the Unilever site he has been involved with all its aspects including:

- **Challenge setting and project-based learning**
- **Project pitching and judging**
- **Hosting students on site for hands-on activity days**
- **Careers fairs (at school and virtual)**
- **Bespoke careers guidance/mentoring**
- **School visits in various contexts**

Asked about his motivations for getting involved in the STEM Ambassador Programme, Rob says:

> *I have always had a passion to help the next generation of students develop and grow, which is why I initially became a teacher. Even though I crossed over into industrial science, this passion never left me. When I see those light bulb moments for a child it makes everything we do in STEM/outreach all that more worthwhile.*

As a company, Unilever had been involved in an ongoing partnership with the NRP programme for several years previously before Rob supervised his first projects in 2021. It was the virtual delivery aspect of the programme during the Covid-19 pandemic that drew him to get involved as he was keen to offer development opportunities to students in the absence of other hands-on activities. He hosted two students working on a project entitled 'Determining the key polymer properties of hair styling products'. Students had to work to understand the type of hair products that contain polymers, the type of polymers are used and the key properties of these polymers (Glass transition, moduli values). They explored techniques to measure both polymer properties (DSC) and hair performance properties (Hold) and then had to correlate, based upon theory, which properties are important for which performance criteria.

Rob identifies a range of student benefits gained from their experience with him.

> *(Students) broadened their understanding of how science is applied in industry, in relation to an everyday product and in a real-life situation. They developed greater understanding of different types of resources and where to find them - research platforms and patents etc. They learned to identify good and bad resources. They also developed the skills needed to identify key information when addressed with large documents and to consolidate this into its salient points. They worked on the correlation of data sets to draw conclusions and gained experience in report writing and academic presenting styles.*

Following his experience as a STEM Ambassador hosting a Nuffield Research Placement, Rob says he would recommend that other STEM Ambassadors within industry consider following his lead.

> *It is a rewarding opportunity for a STEM ambassador to help develop and hone research skills in the next generation at a point in life where they are making important career/ academic decisions. It is also beneficial to your own organisation when the project generates data that supports ongoing work programmes. This becomes a useful resource within the team as well as making the student feel that they are making a significant, and valued, contribution to a wider project.*

## Impact

On average, 90 students from across the North West are supported to engage with the NRP Programme each year. Last year, at least 9 of these placements were hosted by a volunteer actively recruited via the STEM Ambassador Programme, contributing hundreds of Volunteering Hours and extending School Reach and Active Ambassador KPIs.

All About STEM's management of both the SAH and SEP (including. NRP) contracts is mutually beneficial to each, enables a simple gateway to school outreach for organisations looking to engage with young people and provides a single point of contact for schools and colleges looking to access a range of future-focused support for their students.

## Next Steps

All About STEM are using the positive experiences, particularly of Nordine and Rob as brand-new STEM Ambassador hosts of NRP projects, to encourage even more volunteers from the Programme to consider hosting a placement student in the future.

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