Impact Report 2019

Promoting social mobility and diversity in STEM
Our mission is to support all young people, regardless of wealth, to achieve their potential and progress to degrees and careers in the science, technology, engineering and maths (STEM) sector. We know that poverty and social background remain huge barriers to progressing to university and high skilled STEM and research careers. This is worrying as it doesn’t just lead to a waste of talent, it results in a huge under-representation of people from these backgrounds in the sector. Research shows that diverse workforces improve problem solving, innovation and developing a pathway to social mobility for poor communities. Importantly, focusing on diversity will also help to tackle the ever-growing skills shortages impacting the STEM arena, which is crucial to our economy.

The in2scienceUK programme works by leveraging the passion and expertise of researchers and STEM professionals and puts them at the heart of the solution. These inspiring volunteers support the young people we work with by hosting work placements, delivering workshops and skills days and acting as mentors and role models. This year our brilliant volunteers delivered over 4 years worth of mentoring and support hours. They have really made the difference. I would like to thank all of our supporters and volunteers who are committed to our mission and work with our young people year on year.

In 2019 we have continued to expand our programme, enabling us to give more young people the opportunity to participate in exciting STEM placements, across the South East, South West and East of England.

This impact report highlights the success of these experiences and the positive impact our volunteer hosts have in providing in2scienceUK students with the knowledge, skills and confidence to pursue careers in STEM.

In 2020, we will be expanding our programme to the Midlands. By 2022 we aim to provide over 1,000 placement opportunities each year in all regions of England and across the UK.
1. Increase the pipeline of UK STEM
There is an annual shortfall of 40,000 STEM skilled workers with the number of future technical jobs forecast to increase (UK Commission for Employment and Skills Report, 2017). Increasing the numbers of disadvantaged students in STEM careers is vital for the UK’s economic competitiveness (Broughton, 2013).

2. Promote social mobility
As STEM workers typically earn 20% more than in other fields, getting more young people from low-income backgrounds into these professions promotes social mobility and fights economic inequality (Greenwood et al., 2011).

3. Build a more diverse workforce
Businesses with diverse and inclusive cultures perform better financially, reduce staff turnover, and maintain increased creativity and problem solving capacity (Desvaux et al., 2007; Forbes Insights, 2011).

4. Increase science capital
There are economic, political and social benefits to increasing science capital in all segments of the UK. In this technological age, it is vital that all people have the tools to communicate effectively, assess complex information and distinguish fact from fiction.
Our students

in2scienceUK works with students from the most disadvantaged backgrounds and provides them with the skills, knowledge and confidence they need to progress to university, further training and STEM careers.

We work hard to ensure that students who will most benefit from our programme are offered a place. Students are selected based on their free school meals eligibility, family higher education history and deprivation levels in their local area. We work only with students attending non-selective state schools, and give priority to students with no other opportunities and from backgrounds under-represented in STEM and in their subject of interest.

86% of in2scienceUK students have no family history of higher education

49% of in2scienceUK students have no family history of higher education

70% of in2scienceUK students are female

77% of in2scienceUK students are Black, Asian or other minority ethnicity

100% of in2scienceUK students are from disadvantaged backgrounds

This has definitely opened doors for me. It’s given me many more ideas about what I could do, things that I didn’t think were available to me. All I could base my ideas on before was what was taught in school, but now I have real-life experience.

Laura, on placement at the Oxford Centre for Human Brain Activity (OHBA)

Science capital

Science capital refers to “all of the science related knowledge, attitudes, experiences and resources that you acquire through life” (Enterprising Science, 2016). The more science capital you have, the likelier you are to pursue science at A-Levels, university and beyond.

Young people from low-income backgrounds have lower levels of science capital and lack access to quality careers advice and university application support (Archer and Moore, 2016).

What is science capital?

Science literacy and confidence with scientific thinking

Science related values, attitudes and dispositions

Science Capital

Science capital

What you know
Knowledge and understanding of science

What you know
Family interest in science, contact with people in science-related professions

Contacts, encouragement and support

Integrating science and confidence with science into everyday life

How you think
View of science as relevant to the everyday world

Everyday science
Talking about science, engagement with science media and learning contexts
Science Capital: **What you know**

We surveyed students before and after their in2scienceUK programmes, these students report that they...

**Know a number of diverse careers they could enter with their choice of degree**

These students are more likely to pursue science. This is because they understand "the utility and broad application of science qualifications, knowledge and skills used in science" (Enterprising Science, 2016).

**Understand the content and structure of a range of STEM degrees**

This allows the students to make informed choices about courses and careers that would suit them.

**Feel they know quite a lot about STEM**

An answer of ‘yes’ to this question reflects science literacy and confidence. These students are therefore likely to have higher aspirations for STEM careers (ASPIRES, 2014).

**Read an academic research paper**

These students will have more confidence when approaching scientific research, which they can carry through in their academic and professional lives.

**Our impact**

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Science Capital: **Everyday science**

After the in2scienceUK programme, students report that they...

**Have given a presentation on a STEM topic**

These students are likely to continue engaging themselves and to have the confidence to engage other people in their lives with science.

**Have written an essay about a STEM topic**

These students will be able to understand the value of transferable skills inherent in science qualifications for their future jobs and careers (Enterprising Science, 2016). This practise and any feedback will also prove valuable in future study.

**Feel confident about using scientific evidence to make an argument**

These students are encouraged to apply scientific evidence to a variety of situations, and to perceive science as being “everywhere” (Enterprising Science, 2016). This gives them the confidence to speak about STEM in everyday life and in academic or professional contexts.

**Our impact**

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### Science Capital: Who you know

**Before their in2scienceUK placement, 47% of students had never met a scientist or engineer**

**After their in2scienceUK placement, 100% of students had met a scientist or engineer**

### Our impact

Through the in2scienceUK programme students are given the opportunity to engage with science in a wider context.

Students who have met a STEM professional can better understand what a career in science may look like, and gain high-quality, informed, careers support.

These experiences with science outside of the classroom can inspire, and allow them to maintain their passion for science in the future.

### Science Capital: How you think

**Think that ‘people like me work in science or engineering’**

Feeling like scientists are exceptionally ‘brainy’ and ‘not like me’ is a key barrier to STEM (ASPIRE, 2014). Students feeling like science is accessible to people ‘like them’ is therefore an indicator that they will pursue science in the future. This showed a large increase after the programme, which signifies the benefit of students’ sustained contact with STEM professionals.

**Think anyone can become a scientist or engineer**

This not only indicates the perceived accessibility of STEM, but highlights a growth mindset in regards to STEM ability: that this ability is not fixed and can be improved. Students with a growth mindset have been shown to be more resilient: an asset in any career (Yeager and Dweck, 2015).

### Feel confident introducing themselves to a STEM professional in person

Our students’ confidence in talking to STEM professionals grew, with many saying that they were surprised by their host’s approachability. These students will be better placed to access STEM opportunities in the future. Knowing people in science related roles, including having key people in their lives encourage them to continue with science, is also a key component of a young person’s science capital (Enterprising Science, 2016).

### Feel confident introducing themselves to a STEM professional in person

- **increased by 20%**
- **increased by 18%**
- **increased by 72%**
- **increased by 82%**

### Table: in2scienceUK Pre- and Post-Placement Surveys, 2019

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*In2scienceUK Pre- and Post-Placement Surveys, 2019*
Our impact

We collect qualitative as well as quantitative data to gain an in-depth understanding of student’s experiences and the impact of our programme. We endeavour to visit every student during their placement and encourage them to leave comments in the post-placement surveys. From this, we can see that students feel that the programme gives them a unique insight into STEM careers, and they are encouraged to continue with STEM.

Case Study

Mariam Yassine
King's College London

"Really opened my eyes to what working in a lab is compared to what I thought it was. It broke down my stereotypes about research and I am now considering it as a career."

“Have honestly done quite a few university summer schools and work experiences. However, this was really and truly the best one. There wasn’t a day where I wasn’t doing anything. Always busy and always learning. The placement hosts were truly phenomenal. They let us ask questions and dig deeper into their field of work. It was genuinely a great experience and I would definitely recommend to a friend."

"It was a very useful experience, without the placement I don’t think I would be as confident when applying for STEM degrees and top universities."

I can’t recommend the in2scienceUK programme enough! The experiences gained from participating are invaluable. Being a part of the programme has certainly affirmed my decision to progress to university and complete a degree in a STEM subject. It has reignited my passion for the sciences and has helped me to decide on my degree for the future.

Harry, on placement with Roche & Imperial College London

Our partners - Universities

in2scienceUK works with volunteer STEM researchers in academic settings to provide students with inspirational work placements, giving insights into cutting-edge research and promoting access to universities.

Mariam spent her placement in the Department of Physics at King’s College London. She worked on a project involving the interaction of lipid molecules and culminating in the formation of a Micelle. This project was part of ongoing research into the delivery of drug based treatments.

Through this research, Mariam was able to learn about computer programming in order to carry out a specific process during the project. “This was a great opportunity to experience something outside of my A-levels. The placement was a great way to get hands on experience with people working in science and to see what they do in their daily lives.”

This experience gave Mariam exposure to the different routes into a career in science, “It was eye opening - a lot of people working there had different experiences as to how they got to where they are today.”

The words used most commonly by students to describe their in2scienceUK experience.

in2scienceUK post-placement survey, 2019

"This placement made me realise that a career in science or continuing education into research was what I wanted or would want in the future."
Public engagement and promoting diversity in STEM is at the heart of what we do. Our inspirational volunteers most of whom are researchers benefit from engaging with young people from a background they might never meet in everyday life. Our public engagement writing, film and image competitions ensure research can be easily disseminated to students, their families and the community.

Our partners - Research institutes

Kieran Power-Lydon
MRC Brain Network Dynamics Unit,
University of Oxford

"I'll be honest, I thought all researchers would be sat at their desks not talking. But working in this lab has been fantastic!"

Kieran spent his placement with the MRC BNDU and was able to work with Dr Gihan Weerasinge, whose group focuses on Parkinson's disease. Kieran experienced both experimental and theoretical work, as well as gaining experience in computational neuroscience, working on a project in MatLab and learning how it is used to analyse data.

"I was surprised by how approachable the researchers were, and the diversity of the group. The team of scientists is made up of people with different research specialisms, training and perspectives. It was interesting to experience first-hand the collaboration involved in making scientific discoveries, and to get in-depth and understandable answers to my questions."

"This placement will make my university application unique, the level of experience of research is rare for applicants, and will make me stand out as a candidate. I feel as though I am well-placed to talk about the collaborative nature and reality of modern labs and I also have been able to see and understand the format of research papers."

Our partners - STEM businesses

in2scienceUK works with leading STEM businesses to leverage their employees’ passion and expertise to provide bespoke programmes. Here, employees play a crucial role to deliver life-changing opportunities to students who lack access to these resources through their families and schools.

Case Study

Jamie Searle
Roche

"Being able to come in and speak to the people working in Roche and find out what they do, gave me a new appreciation of the different aspects of the business and helped me become more comfortable and confident talking to people professionally."

This year the Roche Scholars programme paired up students with inspiring Roche employees who delivered ongoing mentoring alongside their research placements. The students gained invaluable knowledge through shadowing their mentors and learning about their career paths and also gained from participating in fantastic CV & interview skills workshops delivered by Roche’s HR team.

"For me, the programme was about having mentors who will help you achieve your goals. For example, helping with our university applications and CV, as well as helping us to find apprenticeship opportunities. I found it really useful having my mentor, Pete, and would often send things, such as my CV, for him to review and provide feedback on. He also helped a lot with helping me prepare for my application to the Dyson Institute apprenticeship program."

When asked about the way he now thinks about science, technology, engineering and maths (STEM) Jamie said: "It has shown me that STEM businesses are more than just their STEM aspects. There is a lot of work "behind the scenes" which keeps the businesses running. The programme has definitely helped me open up my options for possible future careers."
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