

# In2scienceUK

## Facilitating social mobility in STEM

Students from low socio-economic backgrounds face many hurdles when it comes to pursuing careers in the STEM sector. This is due in large part to entrenched systemic inequalities, which means large numbers of students do not have the support or the infrastructure within school and beyond to confidently progress. As a result, these students may find they lack the information and opportunities to cultivate scientific ambitions. Dr Rebecca McKelvey founded In2scienceUK in 2010, as a means of addressing this significant inequality. Research Features spoke to her about the vital work of the organisation, and about the broader importance of ensuring fair and equal opportunities needed to nurture a strong and diverse STEM workforce.

In2scienceUK now empowers 700 young people a year to gain opportunities and to undertake placements alongside academics and professionals. These placements have had remarkable results, with 75% of students going on to pursue degrees in STEM subjects. Research Features was privileged to speak with Dr Rebecca McKelvey about the issues faced by students from lower-income families, and about the work being done by in2scienceUK to counteract these issues.

**Could you tell us about your professional background, and how this led to you founding In2scienceUK?** After completing a degree in biology at the University of Bath, I became a teacher through the Teach First programme. I was unsure of what I wanted to do but I knew that by teaching I would develop a range of skills while working with young people to teach them a subject I loved. I was placed in a school in London that taught 11–18 year olds, many of whom were from low-income backgrounds. It was a challenging but thrilling job and I developed a passion for conveying complicated science theory in a fun, engaging way. It also gave me an insight into the tremendous challenges that young people from low socio-economic backgrounds face in realising their potential despite being intelligent, interested and aspirational. I subsequently left teaching after four

years and began studying a masters in neuroscience at UCL. Seeing the lack of diversity in research, like many other careers, and the fact that some of the amazing students I'd encountered were never going to access such a career compelled me to set up In2scienceUK, which I ran with colleagues as a side project during my PhD. Our key aim was to provide equal opportunities to young people in science and engineering and empower them to excel.

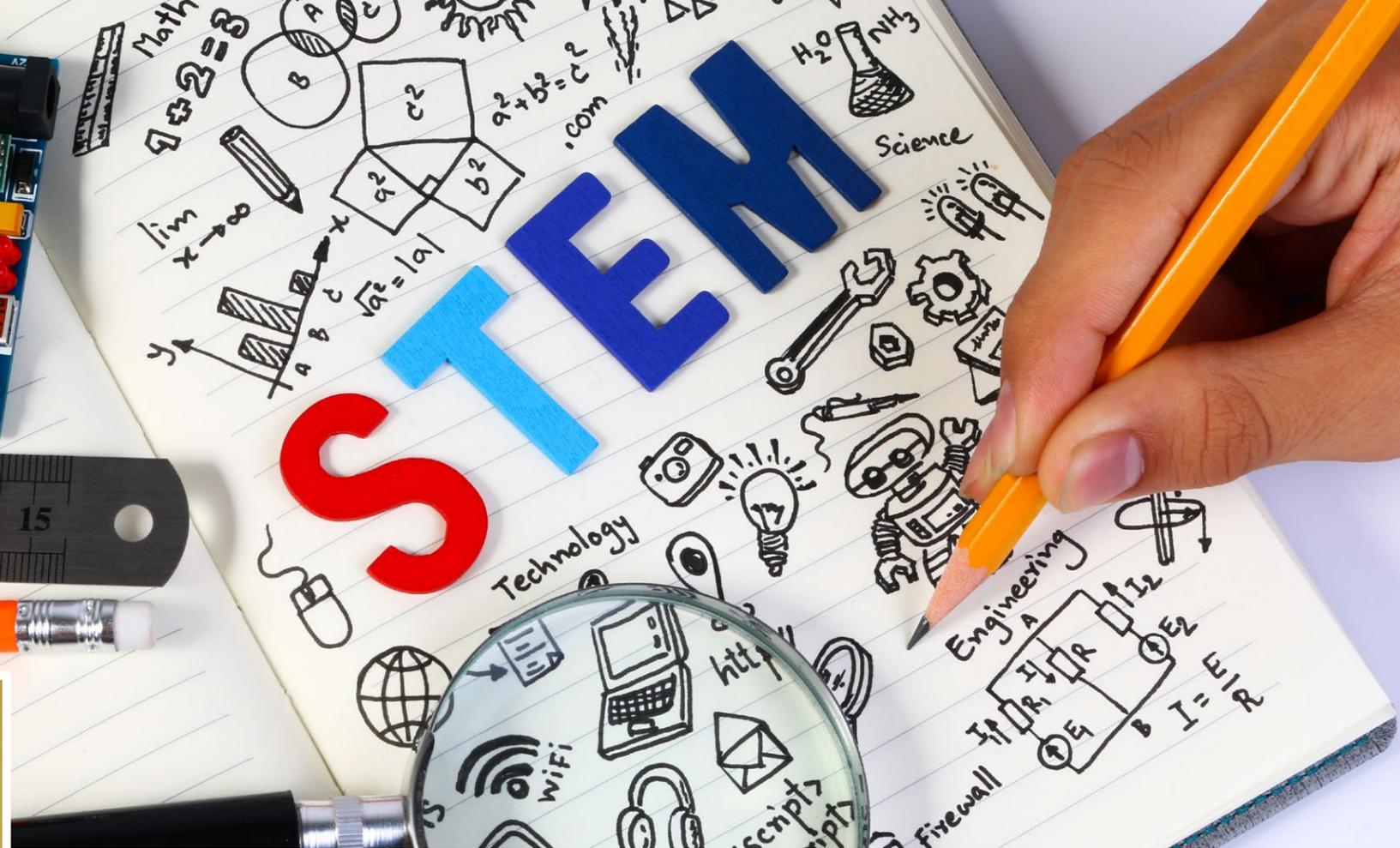
**What are some of the many placement opportunities In2scienceUK has opened up for students?**

No two placements are the same, as young people are matched based on their interests and location. The programme works by connecting communities, so a young person's placement will be under an hour's commute by public transport from their home – which is something we see as a vital aspect of the programme and encourages feelings of belonging and local opportunity. Placements range from working in a local STEM company to work in research labs at research centres and universities. Abcam, one such company, produces protein research tools and enables the young people they host to gain insight into how new antibodies are identified and produced, as well as working in their marketing and communication department.



Dr Rebecca McKelvey.

The universities we work with (Leeds, Birmingham, Exeter, Kingston, Oxford and UCL), as well as numerous research centres and science societies that offer support, enable us to leverage the passion and expertise of researchers. Each offers exciting and varied placements. Examples include working in neuroscience and physiology labs that use EEF and fMRI to understand how interactions with the world drive brain plasticity to shape perception. In data science young people learn skills that enable them to use large data sets to identify how the spread of bacterial infections moves through populations. In engineering, young people have been investigating how to modify different materials for use in the body and how to modify cities to make them accessible to wheelchair users. In physics, students have been investigating how lasers can



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be altered to produce more efficient communication. Impact analysis of the programme highlights that it is these opportunities that boost young people's knowledge of STEM career pathways, confidence, resilience and significantly increase a young person feeling that 'people like me work in STEM'.

Without personal experience, it is difficult, if not impossible, for teachers to explain the diversity of careers which science and engineering can afford. It is even more difficult to break down the stereotype that STEM is only for geniuses. This is why getting young people up close to STEM is vital for empowering them to take up science and engineering.

**What do you feel are some of the biggest hurdles preventing students**

**from disadvantaged backgrounds from pursuing STEM careers in the UK?**

Young people from low socio-economic backgrounds face multiple major barriers when pursuing their interests in STEM at every level in the system. At a school level, many schools do not offer their young people the opportunity to study triple science GCSE, with some students automatically being put into single science. The least deprived third of GCSE students are 2.2 times as likely to take separate sciences as the most deprived third. This effectively blocks them from pursuing STEM at a higher level. This is compounded by a stubborn recruitment and retention crisis of science teachers, particularly in physics and maths.

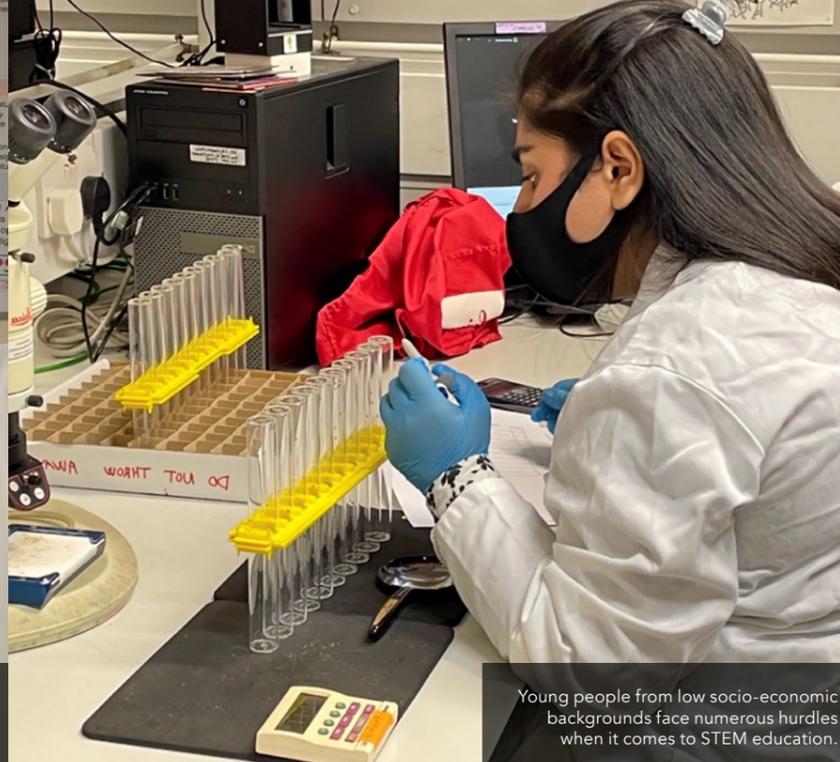
To remedy this, we need more funding for schools and teacher recruitment

to ensure schools have the resources and capacity to deliver the high quality of STEM education that we know is so important. As young people from disadvantaged backgrounds progress past GCSEs, research highlights that a lack of good university and careers advice is significantly negatively impacting their progression. In England, the most disadvantaged students are the least likely to access careers advice. They are also more likely to apply to the most competitive course at a university and their university personal statements are also substantially weaker. Young people need timely access to high quality university, apprentice and career information and advice.

Many studies highlight that people from all backgrounds have high aspirations. However, a person cannot



In2scienceUK empowers young people to gain the knowledge and skills to progress in STEM.



Young people from low socio-economic backgrounds face numerous hurdles when it comes to STEM education.



be what they do not know exists and this is a big problem for many jobs in STEM, and is one of the key reasons why careers – particularly in life science and academia – are closed to people from low income backgrounds. For something so vital we need training and career support for all. For us to encourage young people into STEM careers we need to disseminate high quality comprehensive and engaging information about career pathways into the wide range of roles available. By opening doors to people from under-represented backgrounds, organisations can demonstrate that everyone is welcome in this exciting sector. These hurdles are what In2scienceUK tackles and with our passionate supporters and volunteers, we ensure people with interest and potential – not just good networks – can access the many exciting career pathways that STEM has to offer.

*How might improving access to STEM facilitate more general improvements in society and industry in the UK?*  
The UK is at the forefront of research and STEM innovation. Engineers,

physicists and biomedical researchers and STEM professionals advance the frontiers of our knowledge, essential in understanding and solving the world's problems. The tireless work of the community beyond a doubt has improved the health of our citizens, our environment, the education of our young people and ultimately the society we live in.

There is much to celebrate about UK research and innovation. However, the sector base is only as strong as the people who work within it and there is a clear business case for improving access to STEM for all, and retaining people within their roles. It is reported on a daily basis that the UK needs more STEM skilled workers and, by ensuring all young people achieve their full potential, the costs in both recruitment and public and commercial spending will be cut. A diverse, inclusive environment is not only beneficial for the individuals who are underrepresented but improves everyone's lives.

An example of this can be observed from *Athena SWAN*, with both women and men reporting a personal benefit and a healthier work-life balance, access to flexible working and transparency in promotions. Studies show that 80% of engineers report increased motivation when they feel included, 52% increased commitment and 68% increased performance. Greater inclusion also

results in being more confident about speaking up on safety as well as seeing a future for themselves in the sector. Diverse workforces also pay dividends in boosting innovation, profit, and productivity. Companies in the top quartile for ethnic diversity have 35% increased financial return, and for gender diversity have a 15% return. A more diverse STEM community will also ensure we are looking after all our citizens, from the creation of products and medicine to the systems and policy we implement. A diverse STEM workforce will mean a more safe, healthy, and equal society and one that can remain at the cutting edge of research and innovation.

*Could you tell our readers a bit more about the programme and how your volunteering programmes work?*  
In2scienceUK's mission is to promote social mobility and diversity in science, technology, engineering and maths and we do this by working with young people who receive free school meals (and will therefore have a combined family income of less than £7,400) or have parents who do not hold higher education qualifications. Through the programme In2scienceUK empowers young people (17-year-olds) to gain the knowledge, skills and confidence to progress to STEM degrees, apprenticeship and careers. In2scienceUK puts STEM professionals and researchers at the forefront of the solution. Each volunteers their time

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to offer summer work placements, mentorship or skills workshops, enabling our young people to be part of a vibrant STEM community for the summer and see STEM innovation first hand. Each volunteer can [apply at our website](#) and will receive training before they volunteer. Each young person on the programme works alongside a researcher or other STEM professional at their place of work and attends university and career access workshops, skills days and mentoring throughout the summer. This year we supported just under 700 young people across the UK, delivered 41 skills and employability workshops and 31 research modules.

*For you, what have been some of the most valuable or rewarding experiences of working with In2scienceUK?*  
Meeting young people who completed the programme three or six years ago and hearing first hand how the programme has benefited them and supported them onto degrees, PhDs and careers in STEM is hugely rewarding. It really is a testimony to how a simple initiative can provide huge gains and how giving back something

seemingly small to someone – like our STEM professional volunteers who offer these opportunities – can be life changing to a young person. In2scienceUK is an impact-led organisation and every year in October we analyse programme impact, both through surveys that students complete before and after the programme, and one year on. We also send our data to UCAS to identify university progression data compared to control groups and show that In2scienceUK students are 'highly significantly' more likely to apply to higher-tier universities compared to controls. These reports importantly show the tangible impact of the programme which significantly increases young people's knowledge of STEM career pathways, the feeling that 'people like me' work in science and engineering, as well as confidence and resilience. Our next aim is to further develop our Alumni programme to empower young people to develop their employability skills, CVs, interview performance and knowledge of the variety of STEM careers each can progress into specific to their qualifications and interests.



*What else can our readers do to help the vital work of In2scienceUK?*  
We are inundated with applications from young people wanting to access opportunities through the In2scienceUK programme and we are always seeking new companies, universities, research centres and science societies to get in touch to make the difference and boost social mobility and diversity in STEM. As we seek to expand and develop a comprehensive Alumni programme there are many ways organisations can get involved. Follow us at [@in2scienceuk](#) or contact me at [r.mckelvey@in2scienceuk.org](mailto:r.mckelvey@in2scienceuk.org)



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