

In2scienceUK and the University of Leeds: unlocking equitable opportunities in STEM

Ruth Holland and Hannah Newman

In2scienceUK and the University of Leeds are working together to deliver impactful STEM placements. By combining academic outreach with charitable expertise, they are opening doors for students from underserved backgrounds – offering practical experience, guidance, and a supportive community to help them navigate their path into science, technology, engineering, and mathematics.

In the UK, young people are encouraged to take part in work experience placements while at school or college as an opportunity to gain insight into a particular career.

Whilst schools help source placements where they can, provision varies across the UK and students and their parents are often involved in searching out opportunities themselves [3]. This can lead to students who are already connected to particular professions gaining high-quality experiences, while students with no relatable role models struggle to find relevant opportunities.

Lack of connections and access to work experience are particular challenges when it comes to educating students about potential careers in science, technology engineering, and mathematics (STEM). According to the latest Science Education Tracker [1], a survey conducted by the Royal Society in partnership with EngineeringUK, only 15% of young people surveyed had STEM-related work experience. A quarter of young people reported that they wanted to secure work experience in these areas but were unable to do so.

Improving representation in STEM

There are a number of groups who are currently underserved by the higher education system, including students from lower socioeconomic backgrounds. The additional expense of commuting to voluntary placements instead of earning money through a holiday job can be yet another barrier for these young people.

STEM subjects, in particular, have some additional challenges, for instance university physics, engineering and mathematics departments often have a low proportion of female colleagues and

these disparities begin earlier in the educational journey. How should we encourage more girls to consider continuing their study of these STEM subjects and perhaps to become researchers themselves?

Another challenge is that many higher-education STEM disciplines are new to students. For example, many haven't come across disciplines like engineering at school and so if they don't have a personal connection to an engineer, they may never think to consider this sector as a potential career.

As part of university access work, it is important for institutions to reach out to students who are underrepresented as we strive to increase diversity. In the case of STEM research at universities, how do we engage those students who are unaware of how universities work and what the world of research involves? How do we give them better insight into how subjects develop beyond school and where they might lead?

Our outreach approach at the University of Leeds

The STEM outreach team¹ at the University of Leeds has developed several programmes to provide university experiences and role models for students from communities or backgrounds which are underrepresented. These programmes introduce STEM subjects, including mathematics, in a different light, and include Leeds Futures – STEM, Medicine – not just medics,² the Materials Science Award,³ and our Royal Institution Mathematics Masterclass series.⁴

We also work with a number of external partners like IntoUniversity, With Insight Education, and the Advanced Mathematics Support Programme to enhance our in-house outreach offer. These partners provide additional resources and expertise, or a different channel to work with young people from underserved communities. They enable us to extend our reach, provide more opportunities to

¹ <https://accessandoutreach.leeds.ac.uk/stem/>

² <https://accessandoutreach.leeds.ac.uk/medicine-not-just-medics/>

³ <https://accessandoutreach.leeds.ac.uk/materials-science-award/>

⁴ <https://accessandoutreach.leeds.ac.uk/royal-institution-mathematics-masterclasses/>

involve colleagues and students within the University who want to share their enthusiasm for their disciplines, and allow us to welcome in more young people to give them a valuable experience of STEM at university.

Work placements at university

Whilst our extensive schools outreach programme is the main focus for our outreach team, we and colleagues across the University are often approached by teachers, students and their parents to offer STEM work experience opportunities. While colleagues have sometimes been able to host such placements, responding to these requests individually is inefficient and poses a number of challenges, including:

- substantial additional workloads;
- a lack of coordination which makes it difficult to respond in an equitable manner. Are those who reach out for placements already connected with universities and therefore receiving a disproportionate chance of gaining such placements at the expense of those who are already underserved?

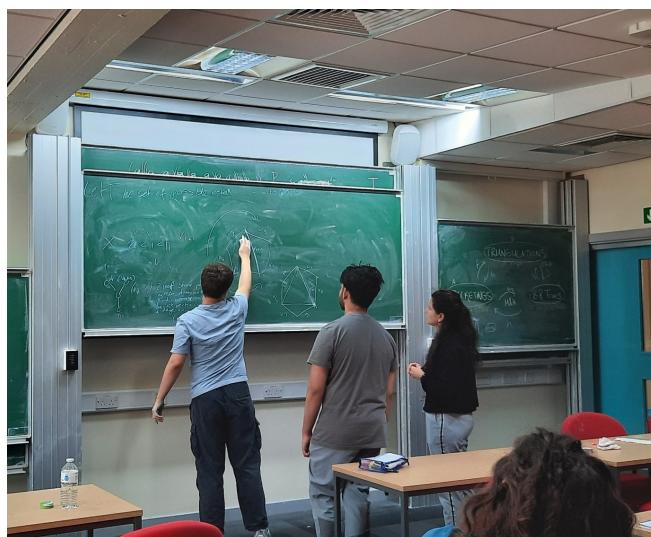
Ideally, we need:

- to provide enough support to make the process as straightforward as possible for colleagues, so that more choose to be involved, and many return to offer placements on a regular basis;
- a large enough scheme to provide effective matching which ensures we cater to and align with a range of young people's interests;
- a fair, objective way of allocating places to those who would most benefit due to limited resources.

Introducing In2scienceUK

This is where charitable organisations like In2scienceUK⁵ can provide valuable support. In2scienceUK is a charity which promotes social mobility by offering opportunities for young people from low socioeconomic backgrounds to explore education and careers across STEM-related fields. Established in 2010, the organisation works to break down barriers to STEM by offering a range of programmes⁶ to help equip beneficiaries with the knowledge, skills and confidence to navigate the decision-making process about their future.

Both the In2STEM⁷ and In2research⁸ programmes provide a mix of free in-person placements and events with online support and



In2STEM students discussing mathematics with their placement host.
(© In2scienceUK)

skills workshops. These interventions are designed to offer support at pivotal points in the participants' education when they are deciding on their next steps.

In2STEM is open to 16–19-year-old students who are deciding whether to pursue a STEM degree or apprenticeship, while In2research is designed to help explore postgraduate research. After attending these programmes, participants can sign up to further alumni support, where members can access career resources such as webinars, mentoring, networking events and other insights into the diverse range of career paths which exist in the STEM sphere. Participants can be a part of the alumni community for as long as they need after their placement has ended, so that resources are still available further on in their career journey.

For In2STEM, a wide range of STEM workplaces can sign up to host placements across both industry and academia. Applicants are matched by their subject area of interest and location, so they are within a commutable distance. Through the programme, charities subsidise expenses to ensure there are no financial barriers, neither for the hosts nor for the participants.

Year-on-year, In2STEM receives huge amounts of interest from young people all over the UK who are looking for support in kick-starting their STEM careers – the programme received 5000 applications in 2025 alone. This indicates that the shortage of skilled workers in a range of UK STEM industries isn't due to waning interest or engagement, but perhaps to the presence of persistent and systemic barriers to access.

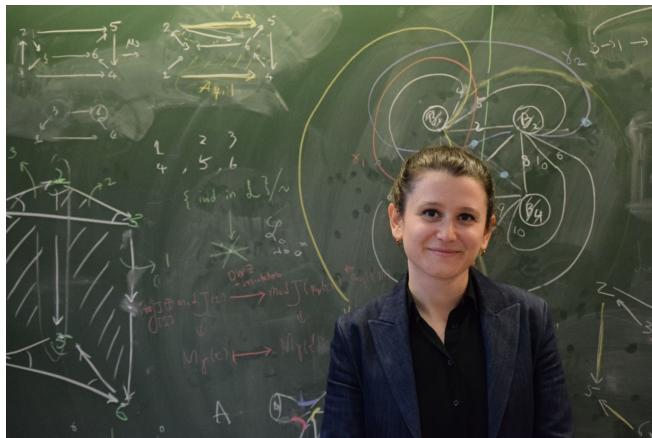
And when these barriers are removed for young people through programmes like In2STEM, the transformative effect is clear. Following the 2024 programme [2], 85% of participants said they

⁵ <https://in2scienceuk.org>

⁶ <https://in2scienceuk.org/our-programmes/>

⁷ <https://in2scienceuk.org/our-programmes/in2stem/>

⁸ <https://in2scienceuk.org/our-programmes/in2research/>



Dr. Emine Yildirim, one of the In2STEM hosts at the University of Leeds.
 (© In2scienceUK)

understood the content and structure of a range of STEM degrees and apprenticeships, up from 53% before taking part. Out of the past participants surveyed, 97% who applied to university received offers, and 92% who accepted chose a STEM degree.

Bridging the experience gap through collaboration

Since 2020, the University of Leeds has partnered with In2scienceUK to provide In2STEM placements, which has resulted in a scheme which suits all our needs and now means we are able to provide around 45 placements each year. The charity is able to provide good advice and guidance to interested hosts and coordinates the application and matching processes so that young people are assigned appropriate placements.

The STEM outreach team actively encourages colleagues from PhD students to professors to be involved. Responding to feedback, In2scienceUK brought in the prospect of co-hosting placements and this has meant that more academics and research groups have felt able to be involved as it shares the time-commitment required both preparing for and during the placements.

Whilst the university advertises the scheme to schools and individuals, In2scienceUK are also active in recruiting young people to take part. This means that more young people are made aware of the possibility than if the university was working alone.

In addition to their placement on the scheme, young people are part of a larger cohort that spans the whole of the UK. This also enables the University of Leeds to be involved in additional workshops and online courses and engage with a greater number of young people from low socioeconomic backgrounds.

The benefits are not one-sided – with partners in academia and industry who support the programmes and provide volunteers,

it facilitates In2scienceUK's national mission to support as many young people as possible to pursue vibrant careers in STEM. With their generosity and dedication, the charity can deliver meaningful impact for beneficiaries across the UK.

One In2STEM participant from 2024 who took part in a placement at Leeds' School of Mathematics described the experience as "enlightening." They highlighted how it had been "insightful to learn how to think differently, to collaborate and work with people who think differently than you" as well having "such a positive impact" on their confidence.

By working together to offer transformative opportunities like these in mathematics, we can drive long-term change, starting with our own institutions.

Case study: Volunteering with In2STEM

Dr. Emine Yildirim, a research fellow based at the University of Leeds' School of Mathematics, shares her experiences as a recurring placement host for the In2STEM programme.

Why did you decide to take part in the In2STEM programme?

I enjoy volunteering during the summer for maths outreach events, and I find it very important for the community. I care about students, people who are enthusiastic about learning. It is a great joy for me to share my knowledge and experience, especially with the younger generation.

Tell us a bit about your placement – what did it involve?

It was an interactive placement – we shared our ways of thinking about maths problems and asked students to find their own way. Our project was based on different ways of thinking about mathematics. As a host, I was always with them, discussing and answering their questions, and also asking them questions. I think we tried to boost their curiosity about mathematics.

What have you learnt in your role as an In2STEM host?

Our research or work is meaningful when we share it with others. I learnt to be patient, and I saw how students are able to develop their skills once given the chance. It is a unique experience because as we teach, we also learn from students. Also, it is great to see young people who are passionate about mathematics!

Did you enjoy the experience? Would you recommend it to others?

I loved the experience, it was so much fun! These students are bright, smart, enthusiastic, curious and incredibly kind. If my time in Leeds permits, I would be interested in doing it again. If someone was interested in volunteering for the programme, I would tell them that it will be a priceless experience and to go ahead and host some of these amazing students.

References

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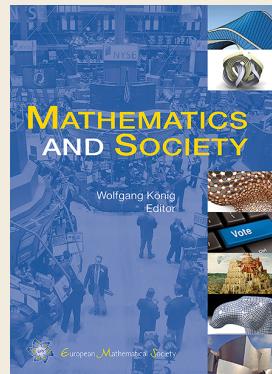
Ruth Holland is a mathematician working in STEM outreach at the University of Leeds. With experience teaching mathematics at both school and university levels, and nearly 20 years of involvement in outreach, she is committed to inspiring the next generation of scientists, engineers, and mathematicians. A strong advocate for inclusive STEM education, Ruth also serves as a Trustee of MathsWorldUK, a charity working to establish the UK's first Mathematics Discovery Centre. She is passionate about improving public understanding and enjoyment of mathematics.

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