



Summer Programme Impact Report 2023



**Promoting Social Mobility
and Diversity in STEM**

Foreword



In2scienceUK's mission is to increase diversity and inclusion in science, technology, engineering and maths (STEM). Young people from low socio-economic backgrounds continue to face a range of barriers in pursuing an interest in STEM, and this is even more challenging in the context of a cost of living crisis which continues to disproportionately affect those we strive to support.

With salaries in STEM paying higher on average compared to other sectors, we aim to narrow the access gap, helping students to achieve their full potential and progress into better-paid jobs and economic stability, regardless of their background.

In 2023 we have taken huge leaps forward in supporting more students than ever before. Alongside supporting the highest number of students ever on the In2science summer programme, we are pleased to have successfully trialled an online programme offering students access to cutting edge research in STEM, no matter where they live.

We have seen and heard many success stories this year for students who have flourished through their summer placements, eagerly engaged in research, and developed a range of life and STEM-specific skills, insights and experience. I encourage readers to explore this report and see for yourself what our students and volunteers have to say about their experience of the programme this summer.

I would like to say a huge thank you to our dedicated staff, volunteers and partners, without whom we would not be able to achieve our mission and continually grow our positive impact for future generations of young people, year on year. As we move into 2024, we are looking forward to building on this year's successes, expanding the programme to support and inspire more young people on their journeys into STEM careers and research.

Anishta Shegobin,
Head of Programmes



Our Vision

Young people from low socio-economic backgrounds face significant and overlapping barriers to progressing into STEM, and these individuals continue to be under-represented across STEM education, training and employment.

Yet, alongside these barriers to access STEM opportunities, the UK faces a significant STEM skills shortage, with demand rapidly increasing¹, to drive forward crucial innovation, economic growth and

address the growing global challenges that we face. We believe that by supporting young people to gain exposure to STEM environments and passionate role models through the In2science summer programme, we can empower young people with the skills, knowledge and confidence to make more informed decisions about further education and careers in STEM. Closing the access gap for our young people will help progress towards a future where we:

- 1** Address the social mobility gap and create an equitable future for our young people.
- 2** Increase pipeline of STEM professionals and address growing skills shortage gap.
- 3** Build a more diverse and inclusive workforce to drive innovation and economic growth in the UK.
- 4** Support growth of STEM literacy to tackle existing and emerging global challenges.

Only 6% of doctors, **9%** of life science professionals and **19%** of IT professionals were from low-socio-economic backgrounds in 2022. Compared to 29% of those from low socio-economic backgrounds across the UK workforce²



280% increase in STEM sector vacancies in a decade - 44,000 to 125,000⁴



150,000 additional researchers and technicians required by 2030 to sustain UK targets⁵

STEM graduates earn **20%** more and have lower unemployment rates³



£1.5 billion the additional cost to the STEM sector to address the STEM skills gap¹



1. The Sutton Trust (2022) Bridging the Gap, - What we can learn about social mobility from Engineering '[Bridging the Gap](#)' - [what can we learn about social mobility from engineering? - Sutton Trust](#)

2. James Howell (2016) graduatejobs.com, STEM graduates take top salaries, https://www.graduate-jobs.com/news/13556/STEM_graduates_take_the_top_salaries

3. Office for National Statistics (2023), VACS02: Vacancies by industry, [VACS02: Vacancies by industry - Office for National Statistics \(ons.gov.uk\)](#)

4. Department for Business, Energy & Industrial Strategy (2022) Diversity in STEM Inquiry, Written evidence submitted by the Department for Business, Energy and Industrial Strategy (DIV0047), <https://committees.parliament.uk/writtenevidence/42514/pdf/>

5. Institution of Mechanical Engineers (2018) STEM skills gap costs the UK £1.5bn a year, <https://www.imeche.org/news/news-article/stem-skills-gap-costs-the-uk-1.5bn-a-year>

Programme Overview

The In2science summer programme provides current year 12 and S5/S6 students from low socio-economic backgrounds the opportunity to gain real-world work experience at the cutting edge of research and innovation. We support students to develop the skills, knowledge and confidence they need to progress in their STEM journey, through a range of skills, university and employability workshops.

Regionally, we saw the programme expand further into Scotland, hosting placements for the first time in Glasgow, as well as expansion into a range of regions including Newcastle, Salford, Essex and Southampton.



3659 student applications, 69% higher than in 2022, showing the continued increasing demand for the support of the programme.



809 young people participated, with 788 in-person work experience placements delivered, a significant increase of 33%, up from 594 placements in 2022.

1737 participations across our 28 skills, university and employability workshops.

17,016 hours of in-person placement experience.



88 students participated in the trial of our online summer programme alongside our in-placement programmes.



“

I have never learned as much about STEM careers and research as I have on this programme. I have enjoyed every aspect of the programme, from the workshops that have helped me understand how to improve my personal statement, and the unusual careers that no one has really heard of, to the placement that has given me first-hand experience of what it is like to work in research.

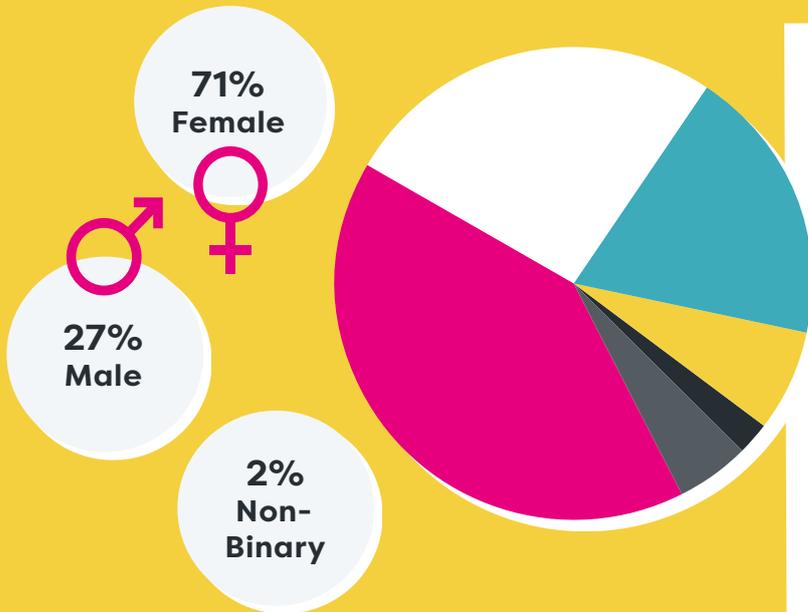
I have improved in the lab and with data analysis, and I could not have asked for anything more. I am very grateful to have been a part of this programme.”

Audrey Bianco,
In2science summer programme participant
- Queen Mary University of London

Our Young People

Our programme supports young people from low socio-economic backgrounds, such as those on free school meals and individuals who have parents or guardians with no higher education qualification⁶.

This year we supported **809** young people from over **361** schools



81% were from minority ethnic groups;

- Arab (5%)
- Asian or Asian British (41%)
- Black, Black British, Caribbean or African (26%)
- White (19%)
- Mixed/Multiple ethnicity (7%)
- Any other Ethnic Group (2%)

81/809

(10%) have an Education Health Care Plan



644/809

(80%) of parents did not have university degrees



515/809

(64%) were eligible for Free School Meals



418/809

(52%) participants at some point received Pupil Premium, Education Maintenance Allowance (EMA) or the 16-19 Bursary

41/809

(5%) are currently or have been in care



93/809

(11%) have caring responsibilities

⁶. Participants meet at least one of the following criteria. (1.) Be a recipient of free school meals in Year 11, or at sixth form (or equivalent), (2.) Be a current recipient of EMA, Pupil Premium or the 16-19 bursary, (3.) have parents or guardians with no higher education degree, (4.) students who are, or have been, in care, or have caring responsibilities.

Munem's story

“

I applied to the In2science summer programme because I will be the first in my family to go to university and I wanted to confirm that it was the right decision for me. Having the chance to experience engineering at the University of Leeds, first hand, as well as what student and university life is really like, has given me the confidence to go for university.



During the placement we have got hands on with projects, like working with the chem-cars. It has been fantastic because not only have we had the opportunity to do experiments and work with equipment we only talk about at school, we have also had to work like a real chemical engineer would, thinking about requirements, optimising processes and adapting the design.

Learning these skills will be really helpful, but the placement has also helped me learn soft skills. Speaking to professors, university students and other In2science participants has really helped me to learn how to communicate with people I didn't know.

Following the programme I am leaning towards a career in chemical engineering, but having the opportunity to speak to engineers from different departments and even from industry, has made me realise that there are a lot of options and not one path to achieve it. ”

Munem Akram,
In2science summer programme participant



2023 Impact Evaluation

We evaluated pre- and post-programme survey responses from 788 participants who took part in the 2023 In2science summer programme. Responses from our participants were compared to responses from a comparison group of 147 students⁷. The comparison group did not attend the programme and surveys were run alongside those completed by our participant group.

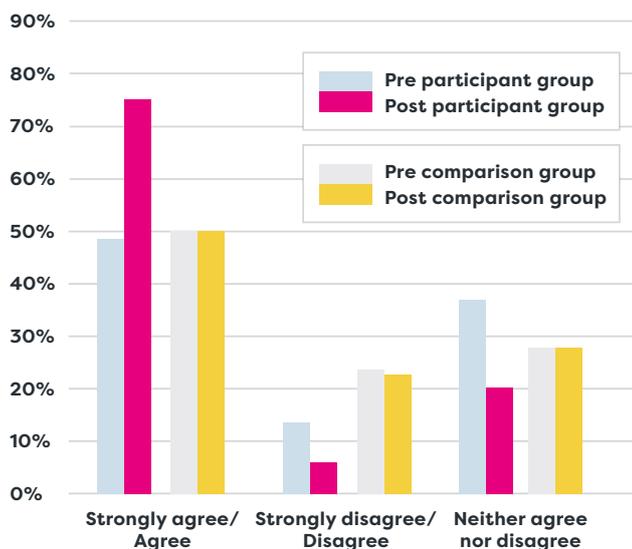
University Access

An understanding of the education and employment pathways is critical in enabling young people to make informed decisions about their studies and careers. Our data below provides a snapshot of how the programme helped our young people to gain knowledge and understanding of opportunities available to them within STEM.

After the programme, 75% of participants agreed or strongly agreed that they feel confident that they can write a high quality UCAS personal statement or application. This is an increase of 26% compared to before the programme (Figure 1). Furthermore, 83% agreed/strongly agreed that they know where to seek support and advice about the application process, an increase of 18% (Figure 2). The comparison group didn't show an increase during the same period of time.

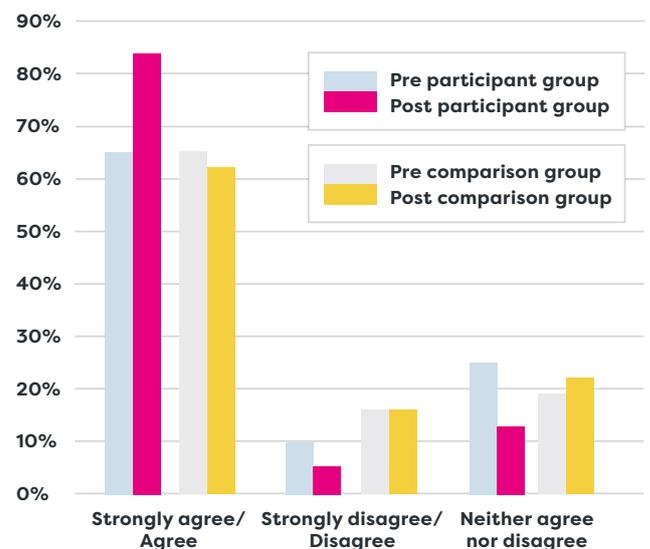
(Figure 1)

'I feel confident I can write a high quality UCAS personal statement or application'



(Figure 2)

'I know where to seek support and advice about the application process'

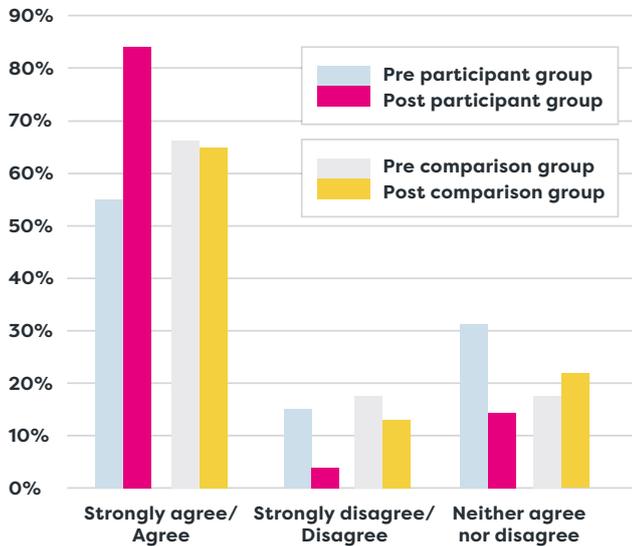


7. The comparison group consists of 147 students who applied and were eligible for the programme but we were not able to offer a place.

There was an increase of 28% of participants that said they understand the content and structure of a range of STEM degrees and apprenticeships and an increase of 19% that said they know a number of diverse careers they could enter with the degree or apprenticeship they are choosing (Figures 3 and 4). There was no increase in the comparison group.

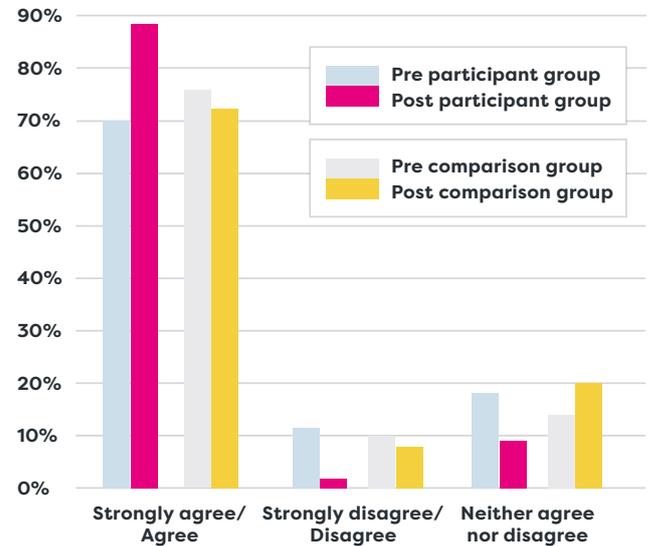
(Figure 3)

'I understand the content and structure of a range of STEM degrees and apprenticeships'



(Figure 4)

'I know a number of diverse careers I could enter with the degree or apprenticeship I am choosing'

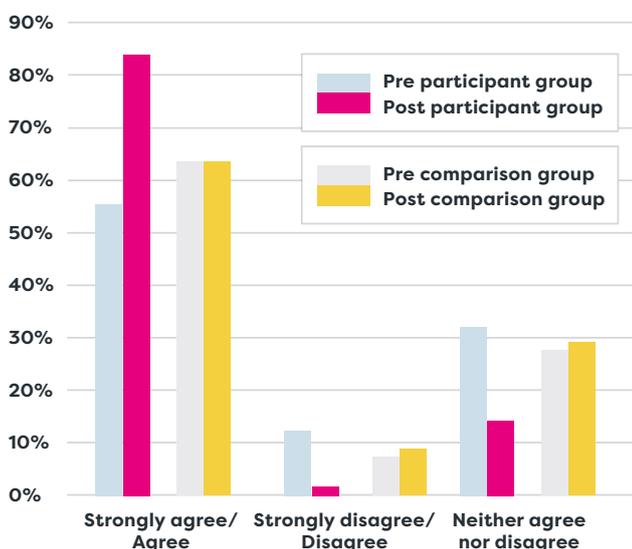


Overall, **87%** of students reported that the programme made them more sure of their career aspirations.

Young people on our programme improved their knowledge about a career in STEM. After the programme 84% agreed or strongly agreed that they know quite a lot about the nature of jobs in science, technology, engineering or maths (STEM) and 91% reported that they know what it means to work in STEM. This compares to 56% and 62% agreeing/strongly agreeing before the programme (Figures 5 and 6). The comparison group didn't show an increase in knowledge during the same period of time.

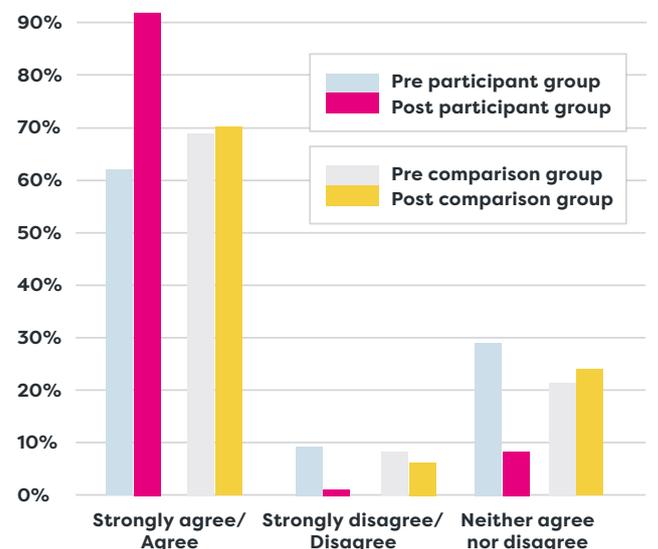
(Figure 5)

'I know quite a lot about the nature of jobs in science, technology, engineering or maths'



(Figure 6)

'I know what it means to work in science, technology, engineering or maths'



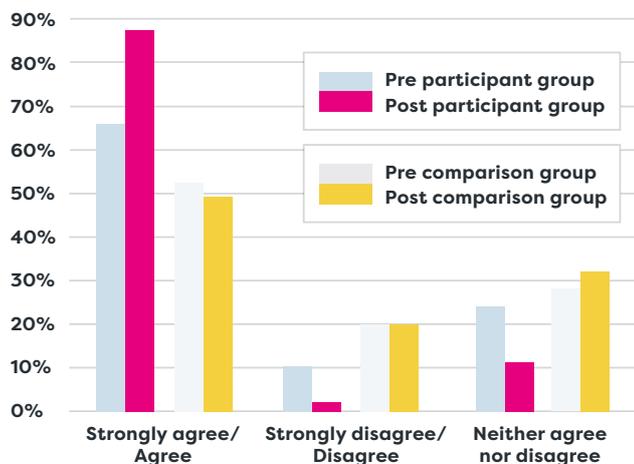
Science Capital

Science capital refers to what you know, who you know, how you think and what you do⁸. The more of it you have, the more likely you are to believe that ‘science is for me’ which can lead to engaging better as well as taking science education further.

Alongside increased knowledge about careers in STEM, our participants also gained confidence to engage with academics and professionals. 87% of participants agreed/strongly agreed after the programme that they feel confident introducing themselves to a researcher in person and 93% felt confident to do so by email (Figures 7 and 8). This compares to 66% and 82% respectively before the programme and no increase of confidence in the comparison group.

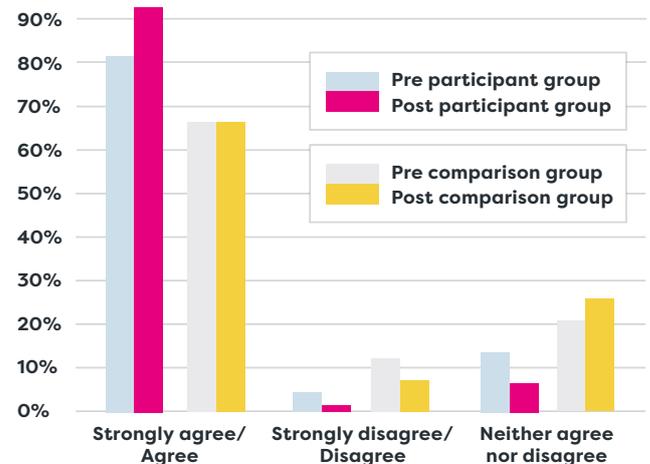
(Figure 7)

‘I feel confident introducing myself to a researcher or science, technology, engineering or maths professional in person’



(Figure 8)

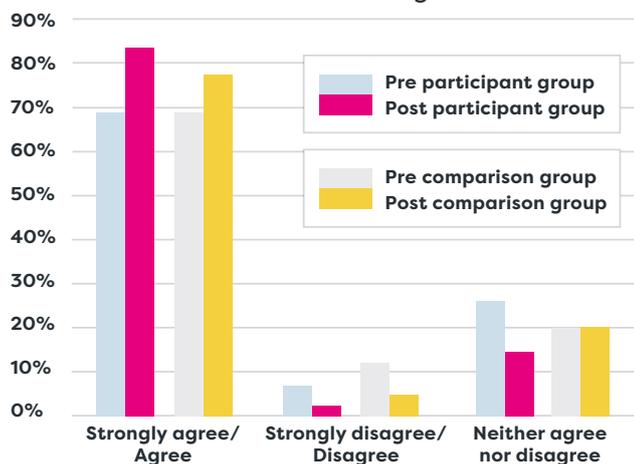
‘I feel confident introducing myself to a researcher or science, technology, engineering or maths professional by email’



Furthermore, participants showed an increase in their confidence in their skills. 84% of participants agreed/strongly agreed after the programme that they feel confident about using scientific evidence to make an argument. This is an increase of 15% compared to before the programme. The comparison group showed an increase of 8% in the same timeframe.

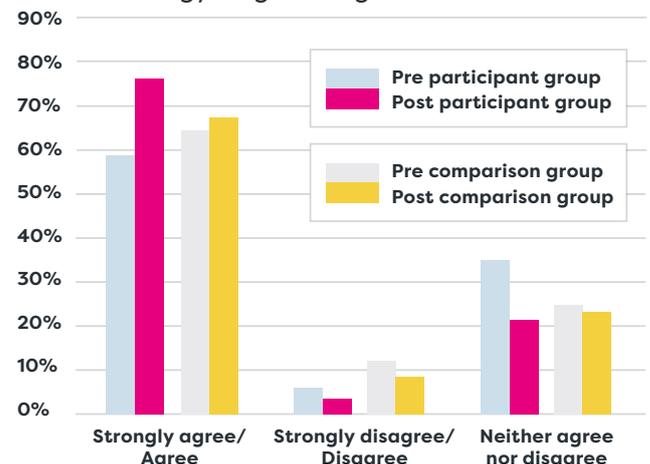
(Figure 9)

‘I feel confident about using scientific evidence to make an argument’



(Fig. 10)

‘People who are like me work in science, technology, engineering and maths’



8. Godec, S., King, H., & Archer, L (2017) The Science Capital Teaching Approach: engaging students with science, promoting social justice. London: University College London.

Jazmin's story

“

I wanted to do the In2science summer programme because I don't have anyone around me who has knowledge about the area I want to study. Neither of my parents went to university; one parent studied up to secondary school and my other parent left school to start working from 14 years old. I am the first one that will be going to university.



Doing my placement at the Francis Crick Institute gave me great insight into what research is about. I had the opportunity to look into the microglia, a cell within the brain tissue, neurons, and how it contributes to and impacts diseases. The project also takes into account how it differs between sex.

I got to master using the pipette and look into the slices we sectioned from the brain of mice with a microscope which is exciting. There are a lot of machines in the lab with strange names that I have had the chance to use! I love reading about neuroscience and have looked into research by myself over the last year. There are some techniques which came up on this placement which I've only ever heard about before. This week was really enriching.

The highlight for me was definitely getting to see the brains, it's not something you normally get to see. I have always wanted to study the brain and it was right there!

Where I am from, you don't get opportunities like this to explore science. I am even more excited to study neuroscience at university now. I am interested in working in research and I was lucky that my host is a really great person too, of a similar background. I really enjoyed the In2science summer programme, doing this programme is definitely a win-win! ”

**Jazmin,
In2science summer programme participant**

Online summer programme

Following on from the success of our online programme delivery during the COVID-19 pandemic, in 2023 we trialled a fully online programme to measure the success and continued engagement with an online offer.

88 students gained access to cutting edge research courses, mentoring by STEM professionals working in their aspirational fields of Biosciences and Engineering, and the opportunity to develop their skills, knowledge and confidence through our online workshops.

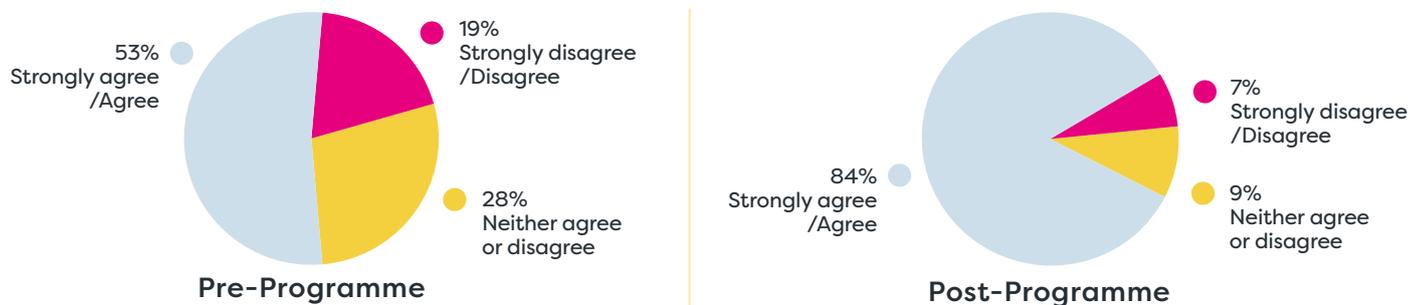
81% of participants agreed or strongly agreed after the programme to knowing quite a lot about the nature of jobs in STEM compared to only 49% before the programme (Figure 12).

There was an increase of 31% of participants who agreed or strongly agreed that they understand the content and structure of a range of STEM degrees and apprenticeships after the programme (Figure 13).

(Fig. 12) 'I know quite a lot about the nature of jobs in science, technology, engineering or maths'

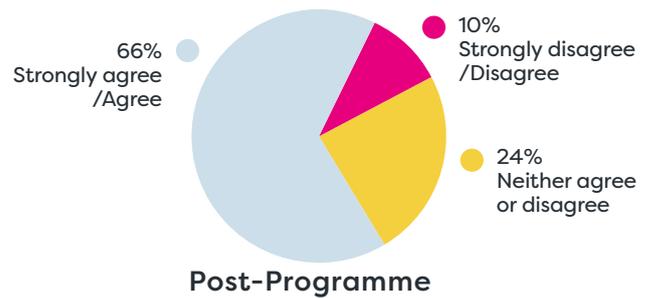
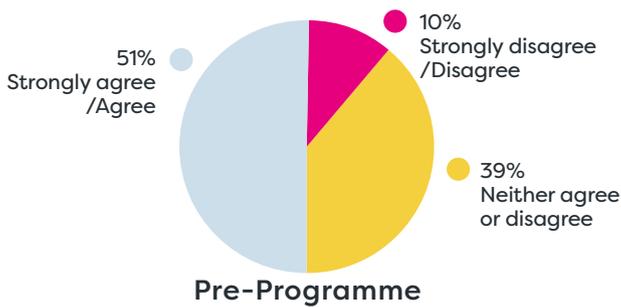


(Fig. 13) 'I understand the content and structure of a range of STEM degrees and apprenticeships'



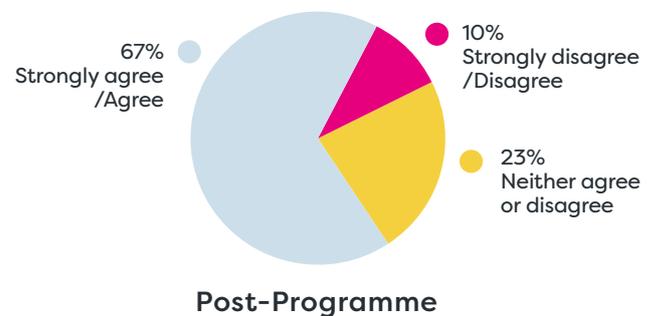
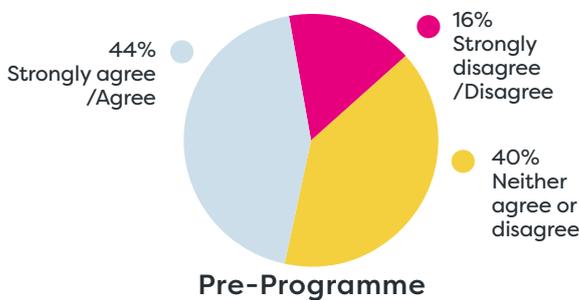
66% agreed or strongly agreed that people like themselves work in STEM, which is an increase of 15% compared to before the programme (Figure 14).

(Fig. 14) 'People who are like me work in science, technology, engineering and maths'



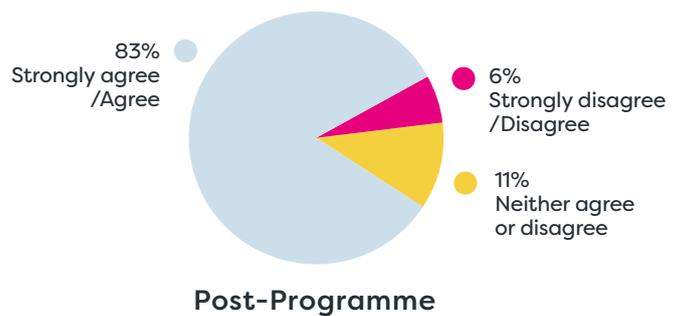
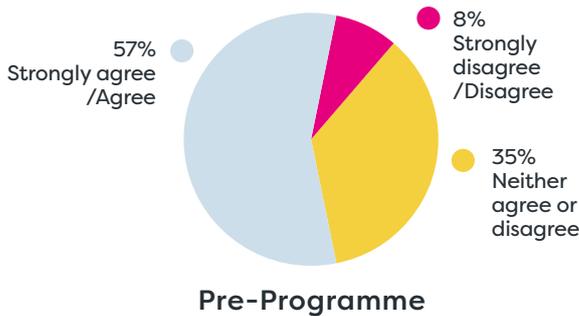
67% of participants agreed/strongly agreed after the programme that they feel confident they can write a high-quality UCAS personal statement, which is an increase of 23% compared to before the programme (Figure 15).

(Fig. 15) 'I feel confident I can write a high quality UCAS personal statement or application'



Furthermore, 83% agreed/strongly agreed that they felt confident about using scientific evidence to make an argument, which is 26% more compared to before the programme (Figure 16).

(Fig. 16) 'I feel confident about using scientific evidence to make an argument'



“

My experience on the In2scienceUK programme was fantastic. I had a great mentor, she was so lovely and kind. She helped me improve my communication skills and confidence although the program was virtual. The research topics were captivating, especially Huntington's disease, it was an eye opening area of discovery. In2scienceUK has been the best thing that has ever happened to me, plus you become an alumni after completing such a wonderful program and a participant of In2careers which is also a great place to build connections. ”

In2science summer online participant

Past Participants

Since the launch of the In2science summer programme, we have seen 4,293 students take part in cutting edge STEM research and innovation. We take immense pride in the programme's effectiveness in bolstering the aspirations of our young participants.

We analysed the data of the three most recent cohorts for which UCAS STROBE data was available, cohorts 2019 - 2021⁹, comprising 1,546 In2science summer programme participants.

Our analysis shows that in comparison to the respective matched group, In2science summer programme participants had a statistically significantly higher rate of application to university in general and to higher tariff universities^{10,11}. This indicates that the In2science summer programme increases the ambition and confidence of participants in applying to universities - especially more competitive universities.



97% of students who applied were offered a place at University.

95% of those that went to University said they studied a STEM degree¹².

89% of our students applied to university through UCAS



85% of those that applied accepted a place at university immediately after school.

9/10 students who applied to university applied to a higher tariff university.

8/10 students who are offered a place at university were offered a place at a higher tariff university.

60% of students who were offered a place at a higher tariff university accepted a place at a higher tariff university.



“

In2scienceUK has made a noticeable difference to my career. Firstly it gave me strong scientific experience to focus on in my university personal statement. Also during my time in the Royal Free Laboratories with In2scienceUK, I was introduced to numerous laboratory techniques that I had only learned about in theory. I currently work as an analytical scientist for an Oxford-based Biotech company where we manufacture viral based vectors to treat a wide range of conditions including a variety of cancers, cystic fibrosis, Parkinson's disease as well as one of the approved COVID-19 vaccines. I still use most of the techniques I learned during my experience in my job today. ”

Mason, In2science summer alumnus



9. Data for 2022 is not yet available as the UCAS process has not been completed.
10. Higher tariff universities are defined by UCAS STROBE as representing the highest performing and most competitive institutions.
11. The data compares a database of UCAS applicants matched with the In2science summer programme using characteristics such as age, ethnicity, gender, postcode, proportion eligible for free school meals and academic achievement.
12. Data taken from analysis of our 1 year on surveys for the same period. (~30% response rate)

Our Volunteers

In2science summer programme

Without the support of our volunteers, our mission would not be possible. We are hugely grateful to each and every volunteer who continues to offer their insight, experience and knowledge across STEM to support and inspire our beneficiaries.



“

We get so carried away in our jobs. It's fundamental to give an opportunity and insight into our professional lives to someone else who can then go and reflect on what they've experienced. I wanted the students to really gain real-life experience and to be able to offer this to them makes me proud, it makes me think "Look, people have smiles on their faces!". It's made people in the whole team, from academic staff to academic support, reflect on things. We've achieved a lot in our careers but we were all these students at one point. We wanted them to feel like this was something they could always remember and can look back at, and feel proud that they came. ”

Victoria Hoskins, In2science summer programme host, UCL Eastman Dental Institute

Our continued commitment

Choosing to pursue STEM beyond school is the first step towards a successful career in the STEM sector. However, students from low socio-economic backgrounds are still more likely to drop out of university^{13,14}, less likely to progress to academic research¹⁵ and face significant barriers to equitable employment¹⁶.

At In2scienceUK we have launched a number of initiatives to continue supporting our young people beyond the In2science summer programme, throughout their career journey, to help them progress into a bright future within STEM.

In²careers

In2careers is committed to supporting our young people as they journey through higher education and training and onto successful STEM jobs and careers. With over 1,000 participants on our interactive platform, our alumni community have access to a portfolio of opportunities, including employability workshops and skills clinics, university peer mentoring and industry networking opportunities, access to work experience and internships, attendance to STEM festivals and events, as well as a host of volunteering opportunities to be able to give back to our community.

In²research

In2research is run in partnership with UCL, City, University of London, Leading Routes, Students' Union UCL and UPSIGN. This year-long programme strives to improve access to postgraduate degrees and careers for people from low socio-economic and under-represented backgrounds. In 2022/23, the programme supported 87 participants access year round mentoring, research access and skills building workshops, alongside 8-week fully funded research placements in London and Cambridge.



13. Social Mobility Commission (2019) State of the nation 2018-2019: Social Mobility in Great Britain, Summary, [State of the Nation 2018-19: Social Mobility in Great Britain – Summary \(publishing.service.gov.uk\)](https://publishing.service.gov.uk)

14. Lewis, J. & Bolton, P. (2023) Equality of access and outcomes in higher education, <https://commonslibrary.parliament.uk/research-briefings/cbp-9195/>

15. Mateos-Gonzalez, J. L. & Wakeling, P. (2021) Inequality in the highest degree? Postgraduates, prices and participation. Sutton Trust, [Inequality-in-the-Highest-Degree-Final-Report.pdf](https://www.suttontrust.com/wp-content/uploads/2021/06/Inequality-in-the-Highest-Degree-Final-Report.pdf)

16. The Royal Society (2014) A picture of the UK scientific workforce - Diversity data analysis for the Royal Society, Summary Report, [070314-diversity-report.pdf \(royalsociety.org\)](https://royalsocietypublishing.org/doi/10.1098/rsos.140314)

2024 and beyond

In²STEM

We are thrilled to announce that we are changing the name of our In2science summer programme to “In2STEM” in 2024. The In2STEM name reflects our commitment to empowering youth and fostering more opportunities across the landscape of STEM, with an emphasis on growing our offer in the fields of technology, engineering and mathematics. This will further help to address the needs of the industry and our young people.



Growing our reach

The next year will be one of growth for In2scienceUK and the In2STEM programme. As the organisation grows in size and reach, our ambitions are growing as well. In 2024 we will aim to support more young people than ever before and will specifically focus on regional expansion to achieve this goal. We will engage a wider range of volunteer hosts to offer young people in underserved regions the chance to participate in our programme.



Building on our work in policy

The In2STEM programme has created a foundation for our impact to expand. In 2024 we will continue to influence policy to break down barriers for young people from disadvantaged backgrounds.

By bringing our voice and knowledge to the policy world, we will highlight how various regulations impact young people. We will especially focus on the intersection of STEM careers and education with socio-economic disadvantage and will create opportunities for young people from disadvantaged backgrounds to be better represented in STEM industries.

With thanks to our funders and partners

Abcam

Alzheimer's Research UK - Scotland
Network CentreBioSciToolkit

Appleyard Lees

Blackfield Associates

Cancer Research

College of Medical and Dental Science
(University of Birmingham)

Creative Tuition

D Young & Co

Garfield Weston Foundation

Grayce

GSK

Guarantors of Brain

HGF

Institute of Applied Health Research
(University of Birmingham)

IP Federation

IPEM

IPReg

MEI

MRC AIM DTP

MRC Brain Network Dynamics Unit
(University of Oxford)

MRC Laboratory of Molecular Biology
(University of Cambridge)

MRC Weatherall Institute of Molecular
Medicine (University of Oxford)

New Scientist Live

Ocado, Code for Life

Omnicom Healthcare Group

Paul Hamlyn Foundation

Peoples Post Code Lottery

Playstation

Ricardo

SEC

Singular Talent

SiSTEM

The British Computer Society, Institute of
Technology

The Manly Trust

The National Physical Laboratory

The Red Pen

TPXimpact

UCL Birkbeck MRC DTP

UCL Engineering

UCL Widening Participation

UK Dementia Research Institute

Univeristy of Birmingham - School of
Biomedical Sciences

Univeristy of Essex

Univeristy of Leeds

Uptake Strategies

Urenco

ZeroAvia





STEM Behind the Scenes Competition entry by participant - Afra Khan

To find out more about our programmes, or to get involved
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If you would like to partner with us, donate or fundraise to support our initiatives contact
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