In2science UK

Impact Report | 2021

Improving social mobility and diversity in STEM

Foreword

I am pleased to report, on behalf of the trustee board, on a successful and impactful year for In2scienceUK.

Many useful lessons from the experience of successful remote delivery in 2020 were taken by the staff team and developed even further with higher levels of engagement seen this year. The rest of this report details the fabulous impact we have had.

I can also report a successful year from a growth and governance perspective. The staff team have put in place a number of components of essential operational infrastructure to help us grow further. From a leadership and governance perspective I'm delighted to welcome our new CEO Colby Benari, as well as six excellent new trustees who bring a really wide range of relevant experiences to the board. In welcoming them I also pay tribute to the founding trustees who depart this year - Kate Hamblin, Geraint Rees, and Lila Winger. The impact you will read about in this report is a testament to their contribution.

Jonathan Flowers
In2scienceUK Chair of Trustees

The mission of In2scienceUK is one that I hold close to my heart. We empower young people to choose STEM regardless of their background. We do this because we know that by pursuing a STEM degree or apprenticeship young people open themselves up to a rich array of careers. The STEM sector also benefits from their diverse ways of thinking and understanding of the world.

We know that young people from socioeconomically disadvantaged backgrounds have many barriers to overcome in order to pursue a STEM degree and career. I have dedicated my career to helping young people along their journey.

Stepping in as CEO of In2scienceUK in October 2021 has been a dream come true. This organisation not only has admirable values, it acts according to those values. Nowhere is this more apparent than in our impact data.

Our 2021 programme data tells a story of an organisation adapting to change whilst expanding our offer to new areas of the UK, including the North West, Leeds and Cardiff. Thank you to everyone who made the last year a success - especially our Trustees, volunteers and phenomenal participants.

Colby Benari
In2scienceUK Chief Executive Officer

Our Vision | Diversity in STEM

In2scienceUK is an award-winning charity that leverages the passion, knowledge and experience of researchers and science, technology, engineering and maths (STEM) professionals to unlock the potential of young people from disadvantaged backgrounds and progress to degrees, apprenticeships and careers in STEM.

Young people from disadvantaged backgrounds face multiple barriers to progressing to university and onto STEM careers which leads to their under-representation in the sector. At In2scienceUK we believe in providing high-quality opportunities, passionate role models and support, to empower all young people, regardless of backgrounds, to become the next generation of innovators and pioneers.

Under 10% of life science professionals...

15% of academics...

and 6% of doctors are from a working class background[1]

In 2021, with the dedicated support of our funders, partners and volunteers we delivered an impactful programme, enabling young people to meet a range of researchers and STEM professionals, learn about cutting edge research, gain insight into the breadth of STEM careers, and build the skills, knowledge and confidence to support their STEM aspirations.

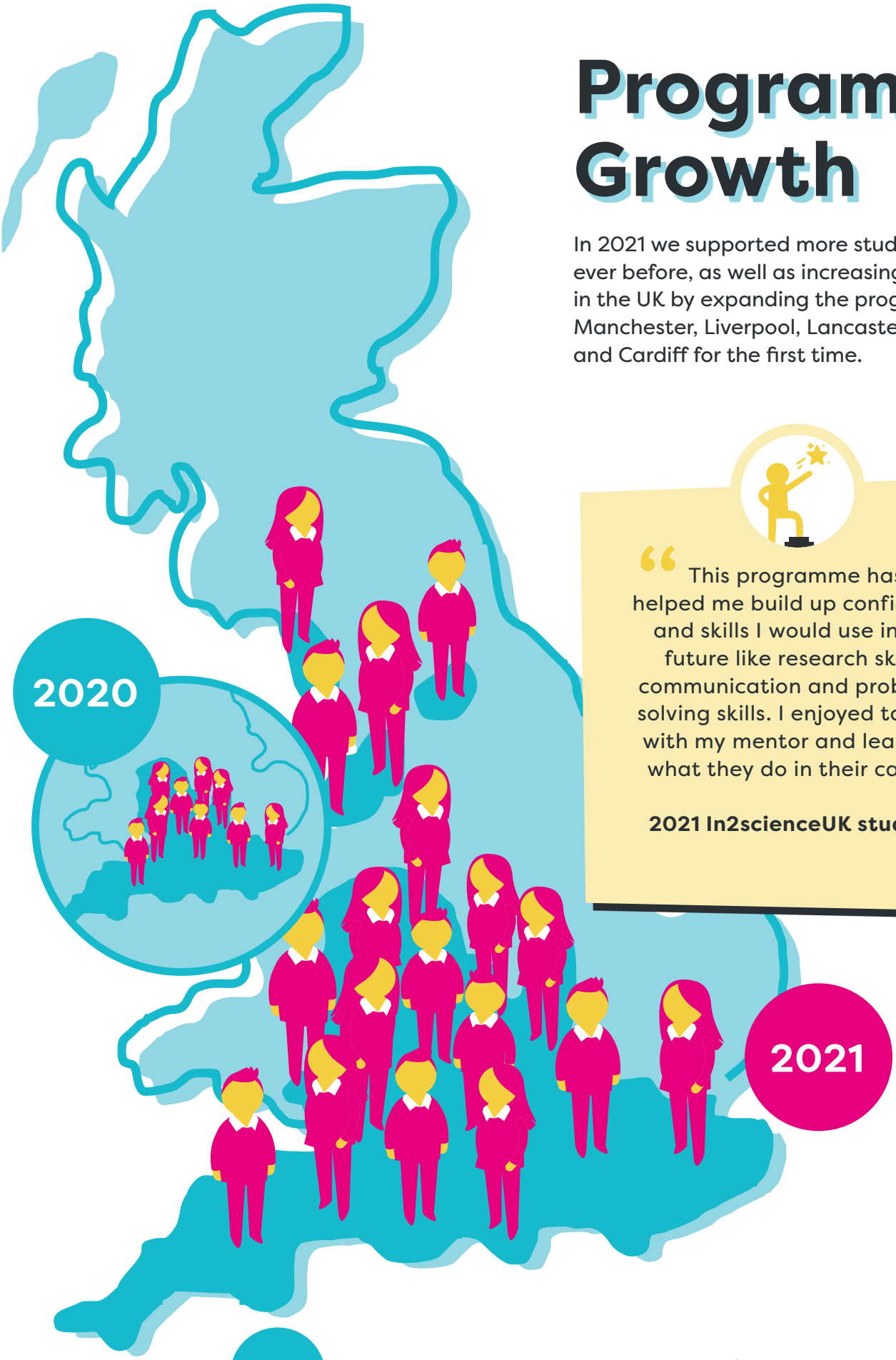
We were also honoured that in April 2021 In2scienceuK received the Queen's Award for Enterprise for promoting opportunity through social mobility. This prestigious award recognises outstanding achievement in creating an inclusive and compassionate society by supporting socially disadvantaged individuals to develop their skills and chances of finding work.

THE QUEEN'S AWARDS FOR ENTERPRISE: PROMOTING OPPORTUNITY 2021

[1] Social Mobility Commission (2017) State of the Nation 2017: Social Mobility in Great Britain

Programme Growth

In 2021 we supported more students than ever before, as well as increasing our reach in the UK by expanding the programme into Manchester, Liverpool, Lancaster, Leeds and Cardiff for the first time.



> "This programme has helped me build up confidence and skills I would use in the future like research skills, communication and problem-solving skills. I enjoyed talking with my mentor and learning what they do in their career."
>
> **2021 In2scienceUK student**

567 students supported in 2020

670 students supported in 2021

Improving access to STEM degrees, apprenticeships and careers

1 Increases the pipeline of UK STEM professionals

There is a **shortfall of STEM skilled workers** with the number of future technical jobs forecast to increase. Increasing the numbers of disadvantaged students in these careers would increase the UK's economic competitiveness[2].

2 Promotes 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[3].

3 Builds a more diverse workforce

Businesses with diverse and inclusive cultures perform better financially, reduce staff turnover, and maintain increased creativity and problem-solving capacity. [4] [5]

4 Grows a science literate society

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.

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[2] Broughton, N. (2013) In the balance: The STEM human capital crunch, Social Market Foundation

[3] Greenwood et al., (2011) The Labour market value of STEM qualifications and occupations, Department of Quantitative Social Science, Institute of Education

[4] Desvaux, G., Devillard-Hoellinger, S. and Baumgarten, P. (2007) Women Matter: Gender diversity, a corporate performance driver, McKinsey & Company

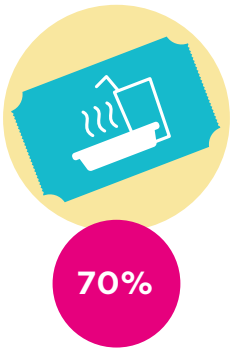
[5] Forbes Insights (2011) Fostering Innovation Through a Diverse Workforce, Forbes

Our Young People

Our programme supports young people who are from low-income and disadvantaged backgrounds, such as those on free school meals and parents or guardians with no higher education qualification.

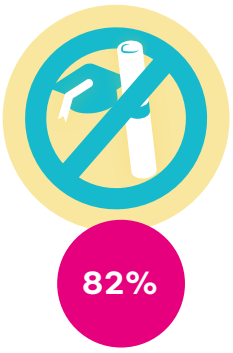
These students face significant barriers to accessing STEM degrees, apprenticeships and careers, our programme enables them to gain the knowledge, skills and confidence to achieve their aspirations.

The 2021 Programme supported 670 young people from 286 schools.



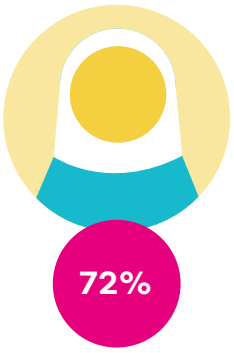
70%

are in receipt of Free School Meals



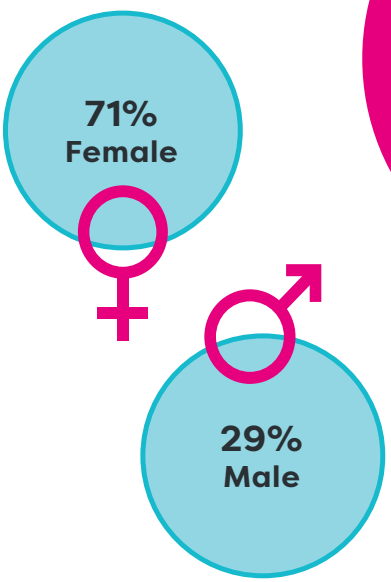
82%

have parents who have not attended higher education



72%

of the young people in the 2021 cohort are from Black, Asian or other ethnic minority backgrounds.



- Asian or Asian British 46%
- Black or Black British 26%
- White 20%
- Other ethnicity 6%
- Prefer not to say 2%

2021 In2scienceUK Programme

This year our young people accessed the majority of the programme activities through the dedicated In2scienceUK online platform. There was also an opportunity for many young people to take part in a one-day placement with their mentor. Each activity was co-curated with our partners and volunteers ensuring every young person completed the programme with the knowledge, skills and confidence needed for future success in the STEM sector and included:

1 Research focussed courses with reading, writing and investigative tasks

Young people accessed cutting edge research modules co-developed by UK researchers and included live lectures, interactive quizzes, pre-reading and a related home-based research task.

2 Online mentoring from STEM professionals and researchers

Young people were matched with a mentor based on their interests. Small group sessions gave them an opportunity to ask questions about STEM careers, latest developments in the sector, university admissions, and life as a researcher. Mentors who were able to also provided one-day placement visits for their mentee groups.

3 Skills, employability, access and careers workshops

Workshops on topics including applying to competitive universities, writing personal statements and applying for apprenticeships. Employability webinars to boost professional skills and confidence, covering topics such as CV writing, interview tips and high quality careers panels to highlight the breadth of STEM opportunities.

4 Several public engagement competitions

Including photo, video and blog competitions to develop writing, communication and public engagement skills.

This year we also offered students the opportunity to be awarded digital badges for completion of aspects of the programme, leading to an In2scienceUK Programme completion award which can be added to their LinkedIn profile. The online platform also provided lots of opportunities to engage with volunteers and their fellow students through discussion boards, where students could ask questions, discuss the programme or share their aspirations.

The 2021 In2scienceUK Programme in Numbers

350
volunteer mentors, research course leads and workshop presenters

31
researcher-led courses

42
skills, admissions and careers workshops

670
young people

218
Mentor groups

Programme engagement:

12,218 student participations across the programme (participations include attending a webinar, completing a quiz, submitting a task, engagement with a discussion board)

1,350
tasks submitted and quizzes taken

1,263
participations in researcher-led webinars

3,274
badges awarded for programme engagement

245
students attended a one-day placement

2,034
participations in workshops

531
hours of mentoring

Students on the 2021 programme were able to gain an insight into an amazing breadth of STEM topics including:

- Biodiversity Loss: UK Insect Decline
- How To Stop Aircraft From Crashing!
- Mathematics under the microscope

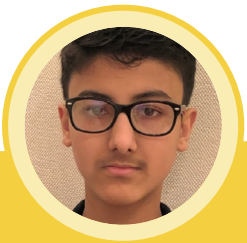
Skills, employability, access and careers workshops covered a wide range of topics, supporting students with the knowledge, skills and confidence to achieve their goals. Our funders and partners generously gave their time to impart their expertise on topics such as:

- Data Science careers: Extracting knowledge from data
- How to study independently and maintain motivation as a University student
- Navigating Student Finance

Our partner universities also provided workshops on accessing and studying STEM degrees at their institution. Students could also access a wide range of careers panels, to understand a range of careers and opportunities from diverse panels of STEM professionals.

"There are so many options out there for things to do and I'm still deciding what path I'd like to go down. However, meeting like-minded students, talking to my mentor, and attending the sessions has helped me feel sure about the subject I want to study."

Nesa, 2021 Student



"The whole programme was really interesting and allowed me to gain beneficial information as well as developing my confidence and skills in research, critical thinking and problem solving. The highlight of the programme for me was the mentoring sessions as they helped me to confirm my decision to pursue pharmacy."

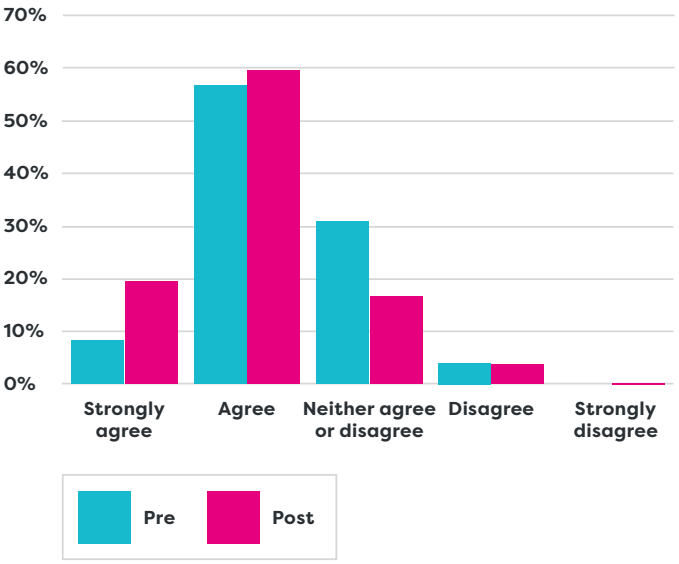
Zafraan, 2021 Student

Programme impact: Science Capital

Science capital is made up of various aspects, summarised as what you know, how you think, what you do and who you know[7].
Research indicates that those with higher levels of science capital are more likely to go on to study or work in a STEM-related field[8].

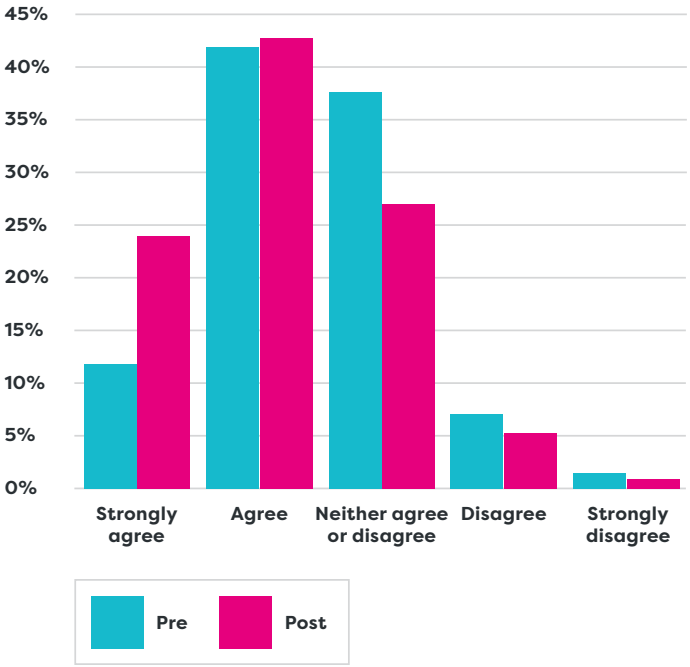
The In2scienceUK programme impacts on and builds multiple aspects of science capital. The programme supports the development of science knowledge and skills, whilst identifying connections between science and everyday life. It is an important opportunity to experience science outside of the school environment, with a 28% increase reported in those who have "Participated in research or a science experiment outside of school". On completion of the programme there was a 14.2% increase in those who "strongly agree" or "agree" that they "know quite a lot about science, technology, engineering or maths":

I know quite a lot about science, technology, engineering or maths



The young people also had the opportunity to meet professionals working in a science-related role and following the completion of the programme there was a 20% increase in those who have met "a scientist, engineer, technologist or mathematician". There was also an 11.8% increase in those who "strongly agreed" or "agreed" that "people who are like me work in science, technology, engineering and maths":

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



[7]Godec, S., King, H., & Archer, L (2017). The Science Capital Teaching Approach: engaging students with science, promoting social justice. London: University College London.
[8]Archer, L., Dawson, E., DeWitt, J., Seakins, A., & Wong, B. (2015a). "Science capital": A conceptual, methodological, and empirical argument for extending bourdieusian notions of capital beyond the arts. Journal of Research in Science Teaching, 52(7), 922-948.

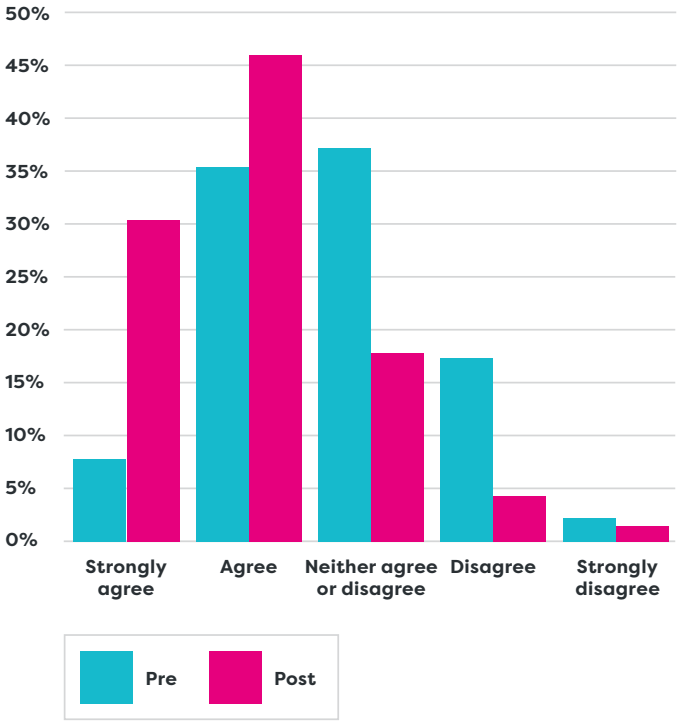
Programme impact: University access

The programme also aims to provide information about university access and to support them in making high quality applications. Understanding the content and structure of a range of STEM degrees is an important factor in young people making informed choices about courses and future careers, as well as understanding the broad range of STEM degrees available.

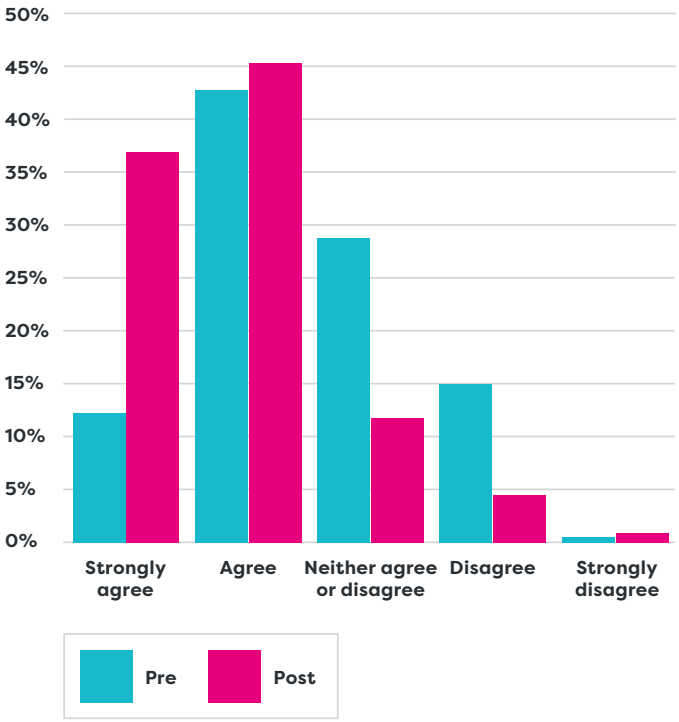
The programme is successful in supporting the young people in gaining advice, guidance and support in relation to university aspirations and intentions.

In particular there were large increases in:

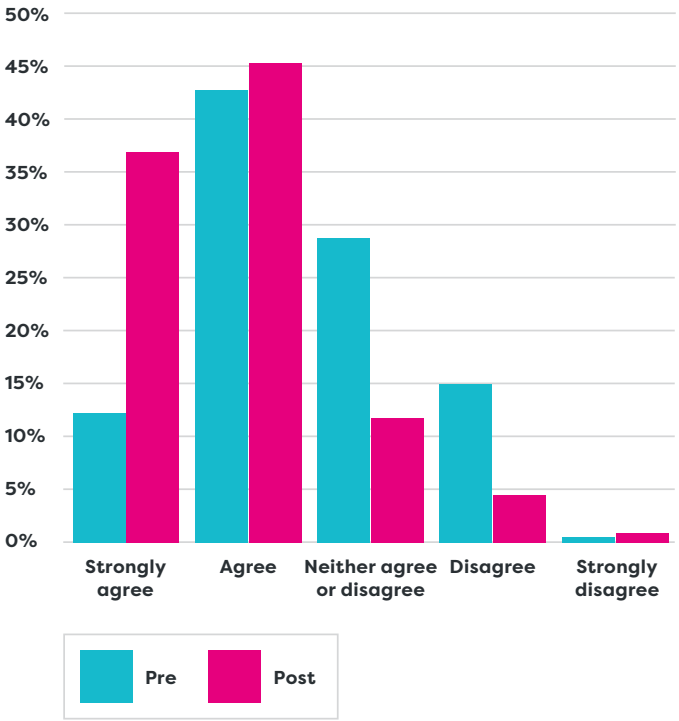
1. Confidence writing UCAS personal statements, with a 33.2% increase in those who 'strongly agree' or 'agree'



2. Knowing where to find support and advice on applications, with a 27.6% increase in those who 'strongly agree' or 'agree'



3. Understanding the content and structure of a range of STEM degrees, with a 33.1% increase in those who 'strongly agree' or 'agree'



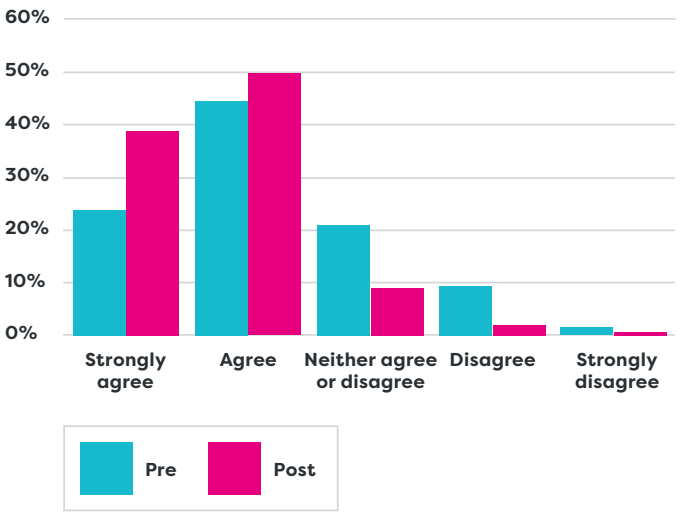
Programme impact: STEM careers

To increase the diversity of the STEM workforce young people need to be confident that there are STEM careers available. Students in the programme have access to high quality advice and information on routes into different STEM careers. As part of the In2scienceUK programme young people heard about their mentors career, as well as attending career panel sessions across STEM subjects.

The programme has fulfilled a different role for the young people in relation to their career intentions depending on whether or not they already had a career in mind. For some, the experience has "consolidated" their intentions and for others it has helped them recognise the broad range of opportunities available to them. There was a 24.5% increase in participants who know "someone who can give you advice about possible careers in science, technology, engineering or maths (STEM)".

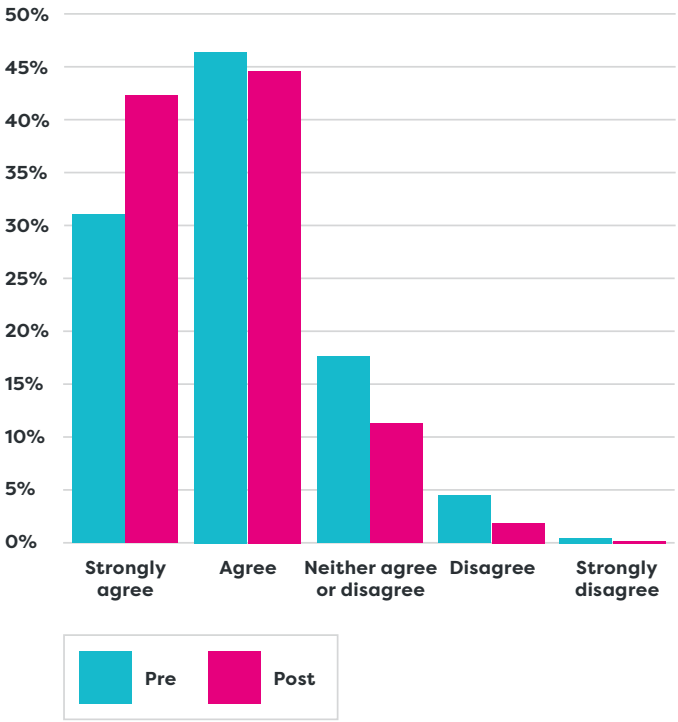
Those who 'strongly agree' or 'agree' that they "know a number of diverse careers I could enter with the degree I am choosing" increased by 20.4%.

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



There is increased confidence around the availability of STEM jobs, with an increase of 11.2% who 'strongly agree':

I am confident there are lots of STEM jobs available to me once I have a STEM degree



2022 and beyond

Over the past two years, In2scienceUK delivered two successful online programmes, continuing our support of students from disadvantaged backgrounds despite the major challenges of Covid-19 and the lack of in-person opportunities as a result of the pandemic.

The online programme, including mentoring, research modules and skills, employability and careers workshops, were designed to ensure that the 2020 and 2021 In2scienceUK cohorts had opportunities which provided as many of the benefits of skills, insight and confidence building experiences of an in-person placement as possible. The team used feedback from the 2020 cohort and volunteers to further develop the programme for 2021. Changes included digital badges awarded for engagement, smaller mentoring groups and smaller groups accessing research modules. The online platform was adapted to make it easier for students to navigate, as well as adding an area for students to socialise with each other through a discussion board. We also provided volunteers an opportunity to attend a workshop on cultural and race literacy delivered by Leading Routes.

Although online delivery was precipitated by the global pandemic, the pivot provided an amazing opportunity to explore the potential of online experiences and to incorporate these into future hybrid programmes.
The 2022 programme aims to see a return to in-person placements. Online learning can provide a lot to our students, but the experience of spending time within a STEM environment and interacting with STEM professionals in person is invaluable. This came through strongly in evaluations, with many students commenting that this is what they missed most from the programme.
The placement will replace the research modules and mentoring aspects of the online programme. Skills, employability, access and careers workshops will continue to be delivered online in the 2022 programme, we have found that online delivery has transformed this aspect of the programme. Benefits include offering the same workshops and opportunities to students across the UK, the ability to offer more workshops across different topics, the opportunity to expose students to a much wider range of STEM professionals, students can meet peers from other areas of the UK and making it easier for volunteers to support in workshop delivery. We are also keen to engage our volunteers more and provide training and networking opportunities online.

We are all really excited to develop and deliver the 2022 programme over the coming year, and welcome a new cohort, as well as working with current and new partners. Alongside this In2scienceUK is taking the opportunity to look to the future and develop our strategy for 2023 and beyond, to ensure our programmes continue to empower students from disadvantaged backgrounds to achieve their potential in STEM.

With thanks to our funders and partners

If you are interested in supporting In2scienceUK
Contact Colby Benari on colby@in2scienceuk.org

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Uptake Strategies

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Front cover photo by 2021 student Matas, taken on In2scienceUK placement day.