



PLANET POSSIBILITY



IMPACT REPORT



FOREWORD

“Do different things” has been the mantra of this exciting three-year programme. Planet Possibility has brought together grass roots charities, universities and partners from across the UK to champion diversity in physics and inspire the next generation to see physics as a career option. Through the power of relatable role models, outreach and digital interventions the project sought to show all young people ‘someone like me’. It also sought to upskill practitioners, and bring organisations together to challenge and develop our approaches to inclusion and diversity.

As we reflect on the impact of our project, we share this report so that other organisations may build on it. There is real power of consortium working. We were and continue to be more than the sum of our parts.

Sue Riley, Chair, Planet Possibility and CEO, Future First





OVERVIEW OF THE PROGRAMME

Planet Possibility was a 3-year consortium-led programme aimed at increasing awareness and engagement in physics careers, particularly among underrepresented groups. Funded by the Institute of Physics (IoP), through their Challenge Fund, the programme has now reached its conclusion.

This report outlines its key achievements, learnings, and legacy plans.

Intended Outcomes of the Planet Possibility Consortium

The programme, aligned with the IoP Challenge Fund, aimed to:

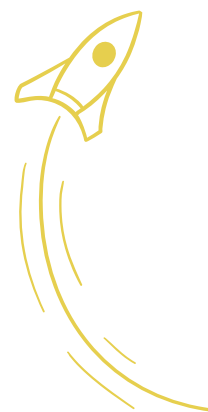
- Improve talent recognition
- Establish appropriate employability metrics
- Increase awareness of physics-related opportunities

Short-term goals included:

- Raising awareness of physics careers among teachers
- Increasing student aspirations for physics careers
- Making physics more accessible and engaging

Key activities focused on:

- Expanding physics outreach across the UK
- Increasing diversity in physics pathways
- Enhancing opportunities for underrepresented students



CONSORTIUM PARTNERS



Future First (Lead Partner)

Managed programme governance and delivered:

- Physics Workshops & Career Insight Workshops in 60+ schools
- Alumni networks & virtual work experience platform
- Interactive physics careers game
- Subcontracted CPD training for teachers and disability-inclusive physics activities

"It made me realise it opens up so many more doors, and I was barely considering it before now. I'd love to go into volcanology and now I realise physics could help!" Future First workshop participant



The Blair Project

Engaged young people in STEM through:

- STEM Truck: Mobile classroom for hands-on workshops
- Physics Clubs: Online and in-person experimental clubs
- ProtoEV Challenge: Converting petrol go-karts into electric racing vehicles
- Created physics-focused TikTok content with guest speakers

"We often study using more textbook methods rather than practical, and it was really engaging to learn this way" Pupil from Northfield School for Girls



UNIVERSITY OF
BIRMINGHAM

University of Birmingham

Contributed through:

- Recruiting/upskilling PhD students as Physics Champions
- Developing outreach content (videos, podcasts, articles)
- Hosting outreach events, including STEM Truck sessions

"I used to spend hours watching the stars from my bedroom window and wondering why they twinkled. That simple question led me down a path of discovery that turned into a passion for physics. I never thought someone like me—who didn't even know a single scientist growing up—could one day be studying astrophysics. Now, I love sharing that spark with others and helping them see that physics isn't just for a certain 'type' of person—it's for anyone who asks questions and wants to understand the world better." Physics Champion, University of Birmingham



CONSORTIUM PARTNERS



University of Southampton

Focused on supporting neurodiverse students by:

- Recruiting employers for physics placements
- Recruiting mentors for neurodiverse students in university
- Delivering skill-building workshops

"I was nervous at first as I didn't know what kind of help to ask for but my mentor was very supportive and suggested lots of support. It's nice to speak to someone working in STEM fields and to hear about their journey, to get advice from someone who has experienced post graduate work. It was nice to know that there are people in the field happy to support neurodivergent students and applicants." Student Mentee, University of Southampton



AllAboutGroup

Specialised in early careers engagement by:

- Managing and updating the Planet Possibility website
- Creating engaging content for events and role models
- Exploring online strategies to widen physics engagement



Lightyear Foundation

Specialised in engaging young people with disabilities in STEM through:

- Explorer domes
- Virtual labs
- Work inspiration trips
- Teacher CPD

"It was epic! It was like a magical story. My favourite thing was when we welcomed the planets. Did you know the moon is billions of years old? All my friends went 'wow!'. It made me think I was in actual space. I want to learn more about it." Student



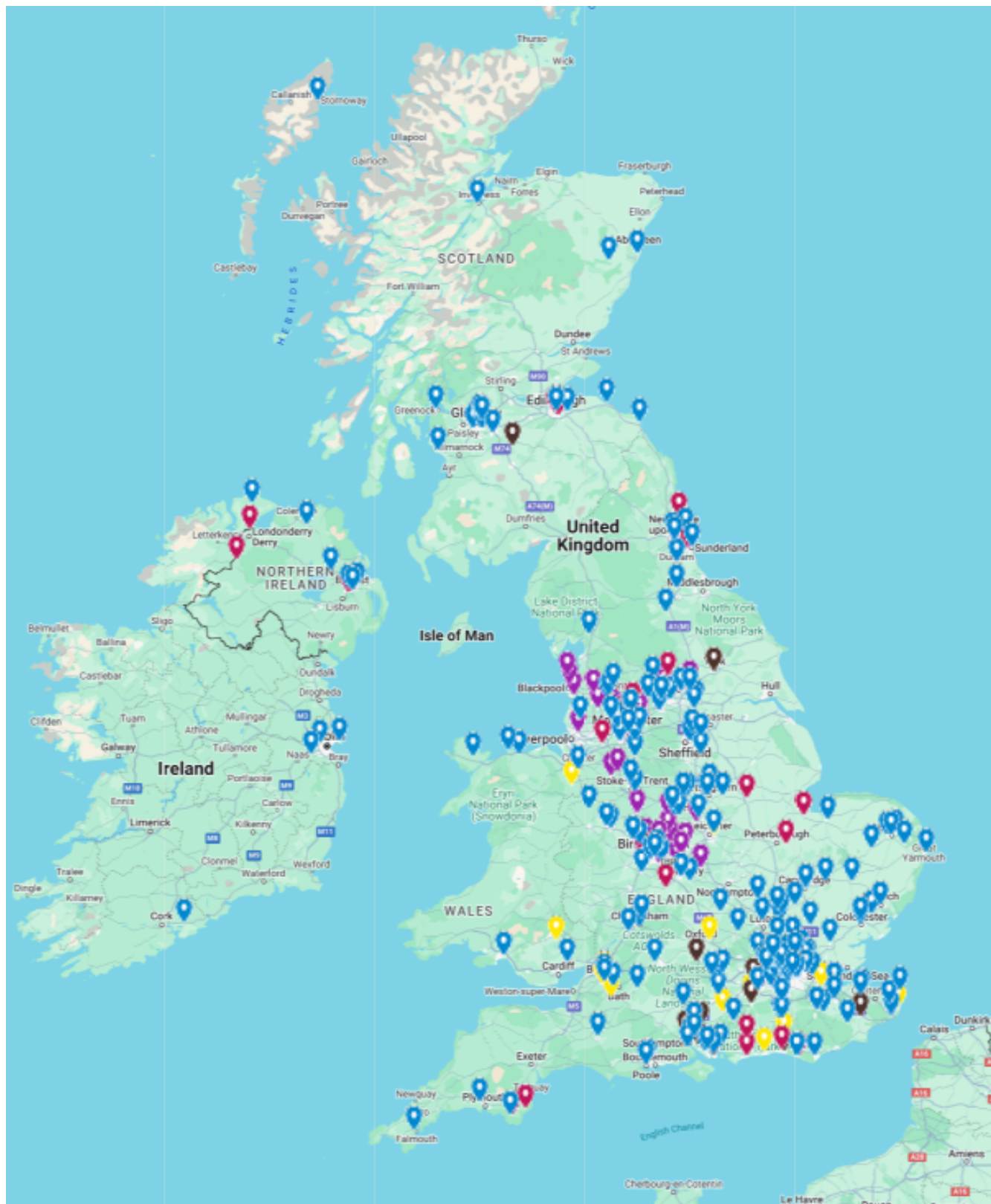
Physics Partners

Contributed through:

- Delivering career CPD to teachers
- Delivering physics topic based CPD to teachers
- Supporting with the development and delivery of Future First's Physics Career Teach Pack and student session

"It was a brilliant session full of practical tips to convey a difficult concept. I understood better why we use certain practicals and ... will promote and pass on the knowledge gained today to our teachers." Teacher

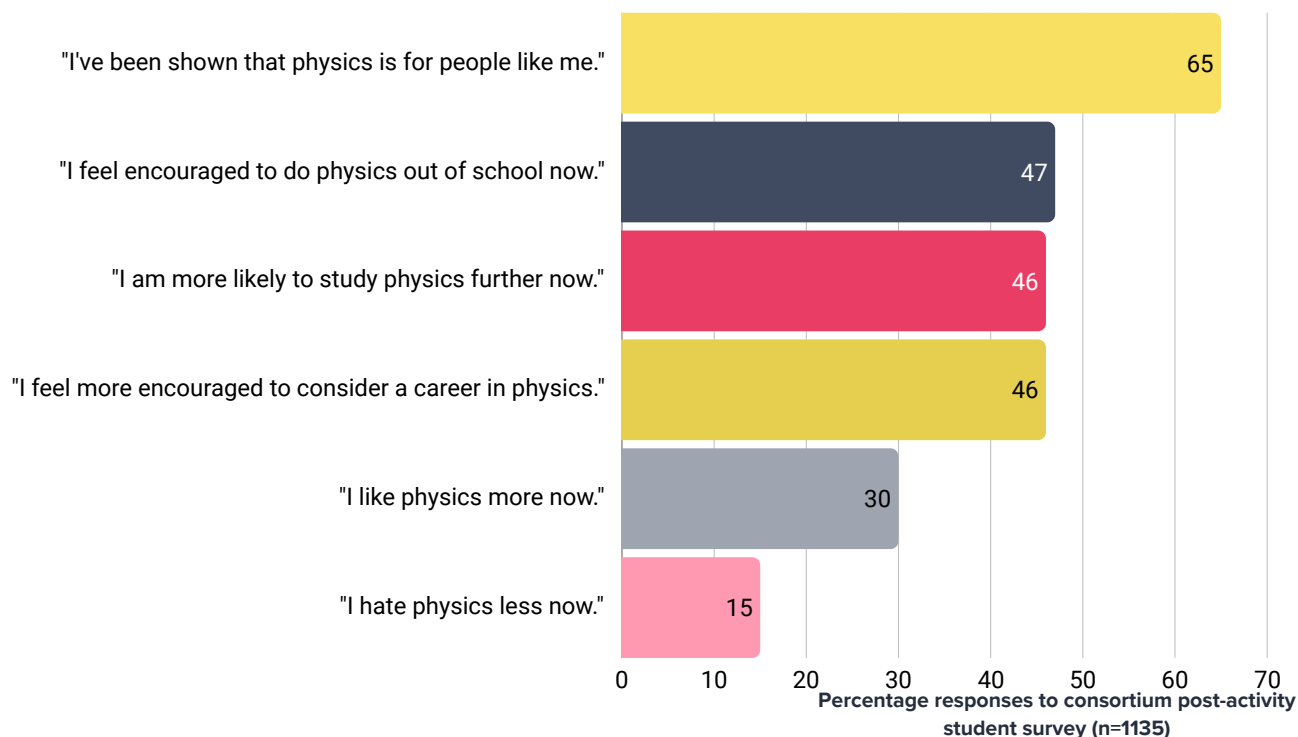
PLANET POSSIBILITY REACH



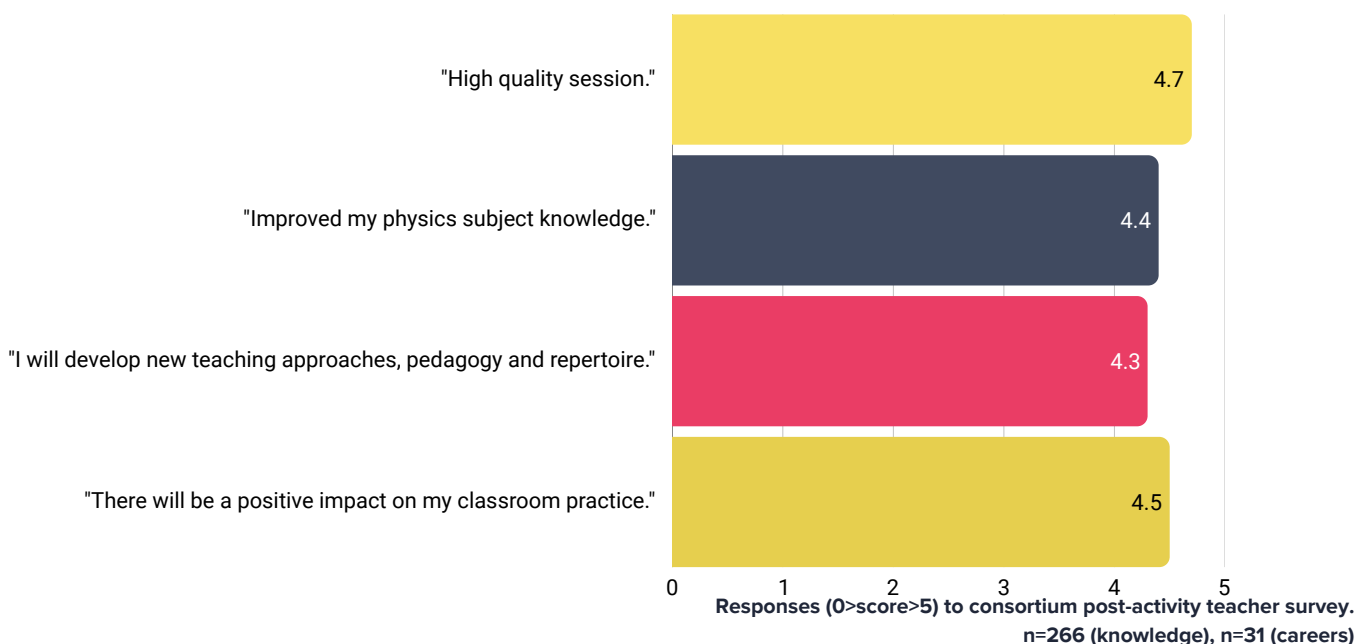
PLANET POSSIBILITY IMPACT

Young people taking part in consortium activities changed their beliefs and behaviour.

After working with a partner, young people were most likely to report they now see **physics is for people like them**.



Influential adults play important roles in opening up physics to all. Consortium partners worked with teachers and role models to amplify the message that **"physics is open"**.



PLANET POSSIBILITY KPIS

KPI Achievements



94,955

people reached across the UK.



446

pieces of physics related content produced (incl articles, podcasts, videos).



209

engagement activities delivered (incl workshops, events).



876

students received virtual and in-person work experience.



1,009

teachers have received training.

Programme delivery reach

Each partner had their own focus and specialism on the programme, which was key for maximising impact, however, this meant that no aggregate target was set for KPI 3. The section below provides, where relevant and notable, a breakdown of each partner's reach.*

Future First (Workshops)

Students on Free School Meals (FSM) (24.6% national average): **506**

Students identifying as female (56%): **1,166**

BAME young people (31%): **645**

Students declaring a disability (5%): **104**

LightYear Foundation

Young people with a disability directly reached: **272**

University of Southampton

Neurodiverse students attending a workshop, placement, or mentoring: **82**

Female students reached via outreach (17%): **52**

Students from low socio-economic backgrounds (13%):

36

The Blair Project

Female students reached via outreach (48%): **2,052**

Students on Free School Meals reached via STEM Trucks (FSM) (34% average): **3,733**

BAME young people directly reached via outreach (39%): **4,275**

BAME adults directly reached via STEM Trucks (100%): **679**

Students declaring a disability (3%): **128**

University of Birmingham

Physics Champions recruited from BAME backgrounds (80% of total recruits): **8**

*These figures are based on available data, as it was not made mandatory for schools and participants to provide information on protected characteristics.

SUCCESSSES



The website: Ongoing website developments including the Events and Physics Role Models section's on the Planet Possibility website has provided an accessible and engaging way for a variety of audiences including teachers and young people to learn about careers in physics.

In numbers

88,660 unique users have visited the Planet Possibility website.

5,822 interactions on the Infinity Game.

10,978 young people engage with the Blair Project's STEM Truck.

31 events delivered by The University of Birmingham's Physics Champions.

69 subscribed members on the Physics Diversity Network.

And more...

- **Physics Partners** successfully delivered CPD training and piloted **Future First's** Career Insight Pack, which received positive feedback from schools and students.
- **The Lightyear Foundation** successfully delivered work inspiration trips and CPD sessions, ensuring inclusive STEM outreach.
- **The University of Southampton** arranged and supported inspiring work experience opportunities and mentoring for neurodivergent students.



SUCCESSSES



Physics Partners developed and released high-quality CPD videos and physics career resources, ensuring lasting impact beyond the programme's duration.



The Blair Project's TikTok videos amassed over **205,000** views, while their podcasts received **3,130** listens, demonstrating the popularity and reach of digital media in STEM engagement.



The AllAboutGroup released articles that can be found on the [Planet Possibility site](#).



The University of Birmingham produced articles, soundbites, and video clips - published and available on the [Planet Possibility site](#) and [UoB websites](#) as well as dedicated social media platforms.





KEY LEARNING

➤ Shift to In-Person Engagement:

- Post-pandemic, student and teacher preferences have moved away from online activities towards in-person workshops and interactive sessions. This shift necessitated adapting delivery methods to fit within school schedules and ensure engagement.
- Outside of classroom engagement is challenging, however, was successfully carried out by The Blair Project by engaging with Youth Groups, where young people were already engaged and had support to engage with Physics Clubs - arguably a traditionally hard to reach and underrepresented cohort of young people.

➤ Role Model Impact & Challenges:

- Alumni and role models play a crucial role in inspiring young people. Securing volunteers with specialist physics knowledge proved challenging, particularly outside major cities. It was a challenge to get access to networks of potential volunteers throughout the programme - this may be in part because of the wide range of organisations working in this space all running individual programmes. The demand from schools remained constant.
- To mitigate volunteer shortages, Future First adapted its workshops by incorporating digital volunteers and pre-recorded content, improving accessibility, diversity and potential ongoing reach. In-person role models should be prioritised where possible.

➤ Tailored Content & Interactive Learning:

- The success of bite-sized digital content, such as podcasts and social media videos, highlights the need for engaging, on demand, digestible formats.
- Hands-on activities, such as physics experiments and STEM workshops, proved highly effective in capturing students' interest.

➤ Funding & Sustainability:

- In-person outreach is resource-intensive, and many schools lack funding for STEM activities.
- Future First and partners are exploring local employers and grant funding to support regional initiatives and maintain momentum.

Future Considerations

The Planet Possibility programme has demonstrated impactful engagement with young people and educators, sparking interest in physics careers through interactive and digital content. While challenges such as volunteer shortages and funding constraints remain, key learnings have informed sustainable approaches for future initiatives.

74% of young people reached through the programme had a positive attitude towards Physics after receiving an intervention from a consortium partner. By combining in-person workshops, digital content, and employer partnerships, the programme's legacy can continue to inspire and support young people in exploring physics careers.



THE PLANET POSSIBILITY LEGACY

6,000

young people from BAME backgrounds influenced by **The Blair Project** using Planet Possibility funding.

100%

of employers offering a placement to a **University of Southampton** neurodivergent student rated their student's performance as good or excellent.

"It's an outstanding scheme. (Placement student) is working with one of my PhD students; we are hoping that the work she's doing will feature in one of the top journals in astrophysics!"

Neurodivergent student employer

5,800+

people have interacted with the **Infinity game**.

"The game really helped me realise the amount of variety and that a large range of physics related jobs are accessible to me" Student workshop participant, *Future First*.

5,000

unique users each month on the **Planet Possibility website**.

200

articles on the Planet Possibility website, many written by University of Birmingham Physics Champions.

And...

Physics Partners have launched **8** GCSE short videos covering key topics in the GCSE curriculum. From debunking common misconceptions to providing step-by-step instructions for experiments, these videos equip teachers with effective strategies to engage students and enhance their understanding.

The success of the **Lightyear Foundation physics labs** provided a blueprint for developing adaptable and inclusive labs in other STEM disciplines, including chemistry, astronomy, technology, and engineering. The benefits of the Lightyear Labs programme will reach new audiences.

Partners collaborated on a **Career Insight Pack** for schools and organisations to use to lead their own inspirational physics workshops in schools. The Career Insight Pack contains session plans, presentations and recordings from inspirational volunteers working in Physics and are now available to schools.

Future First created inspirational alumni posters for schools receiving a workshop. Young people identified with successful scientists who had attended their school. Posters were proudly on display in the case study school that was visited.



THE PLANET POSSIBILITY LEGACY

Ongoing Legacy

Planet Possibility Website:

- Currently exploring legacy and resource potential moving forward.

Careers Insight Pack:

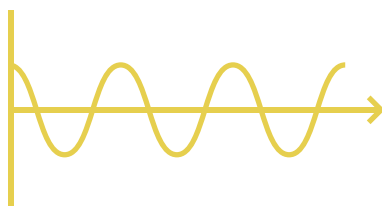
- Will be made available to career leads, ensuring continued use in schools.

Physics Powered Futures:

- Future First has further developed its Physics Workshops for ongoing use, adapting to regional priorities and industries.

Physics Diversity Network (PDN):

- Now has 69 subscribed members across education, academia and industry. Exploring key priorities and sustainability of this group.



CASE STUDY: FUTURE FIRST INFINITY WORKSHOP

Future First's Planet Possibility offer includes 'Infinity workshops' held in schools led by alumni volunteers. Students learn about diverse opportunities within physics and consider how they might contribute to solving physics challenges of the future.

Future First led a Physics workshop in an urban area of Southeast London, with 20 year 10 students at a co-ed 11-16 community school - three-quarters of the students in school were from a Black, Asian or Minority Ethnic background and the proportion of students with Special Educational Needs, speaking English as an Additional Language or eligible for Free School Meals were double the national average. The morning workshop, organised by the school careers teacher, was led by a Future First employee and six alumni volunteers.

Session 1: The World of Physics

gave the volunteers a voice to discuss their own career, and stimulated the students to ask questions
Students matched the skills and subjects learnt at school physics-related careers.

Session 2: Physics and me

included playing the Planet Possibility funded online 'Infinity' game. Students learnt about the range of physics-related careers, including some 'surprise' ones.

Session 3: Physics in the future

gave students a chance to consider and present their solution to a 'problem in physics' such as shortage of skills and lack of diversity.



CASE STUDY: FUTURE FIRST INFINITY WORKSHOP

Expert session design and leadership gave the volunteers time to describe and reflect upon their career pathways. Sessions stimulated discussion and students were clear on the intended outcomes of each session. Students were enlightened to see the wide range of physics careers available 'for them'.

Future First's facilitation raised the profile of the volunteers supporting as the 'industry experts' so that students were engaged and inspired, their comments were interesting and specific. The volunteers attended included data scientists and optical engineers

The volunteers were able to engage and inspire the young people they worked with.

A student identified a career path matching one of the volunteers during the Infinity game and the student spoke to them there and then about the specifics of their career pathway. One of the volunteers studying at a prestigious university was an alumnus of the school; the young people were visibly impressed.



The workshop explicitly referenced and addressed Planet Possibility. All young people engaged with the Infinity Game and enjoyed discussing their results. All young people left with a Planet Possibility card and a challenge to 'spread the word' to their friends.

'There was no 'elephant in the room' session 3 was designed for young people and volunteers to discuss why some people were not yet adequately represented in physics careers and how this can change.

CASE STUDY: INCLUSIVE SCIENCE LESSON FROM THE LIGHTYEAR FOUNDATION

A visit to a virtual science class in a special school was rooted in the scientific method and the importance of observation.

The Lightyear Foundation beamed science into a special school in Sussex in November 2024. The session was held as part of an after school science club. During the session students investigated the size and shape of soap bubbles made with different types of bubble wands.

Prior to the session the school received the instructions and equipment needed, and technicians prepared the experiment in advance. The students were taught online by a scientist and followed their instructions.

The scientist facilitator immediately set the tone for the lesson.

“Hi, I’m Hetty, and I’m an autistic scientist. Today, you are the scientists, you are in charge. Your teachers are your lab technicians.”*

“We’re going to learn an important word today... prediction. Can you predict what shape your bubble will be? Can you draw the shape you predicted? Now can you draw the shape that your test showed?”



Students made predictions, set up their experiments, observed what happened then recorded their findings as appropriate to their needs. Hetty introduced the activity. *“We are going to make some bubble wands and some bubbles.”*

Before the students started the experiment, they needed to **think scientifically** about what they thought would happen. *“We’re going to learn an important word today... prediction. Can you predict what shape your bubble will be? Can you draw the shape you predicted? Now can you draw the shape that your test showed?”*

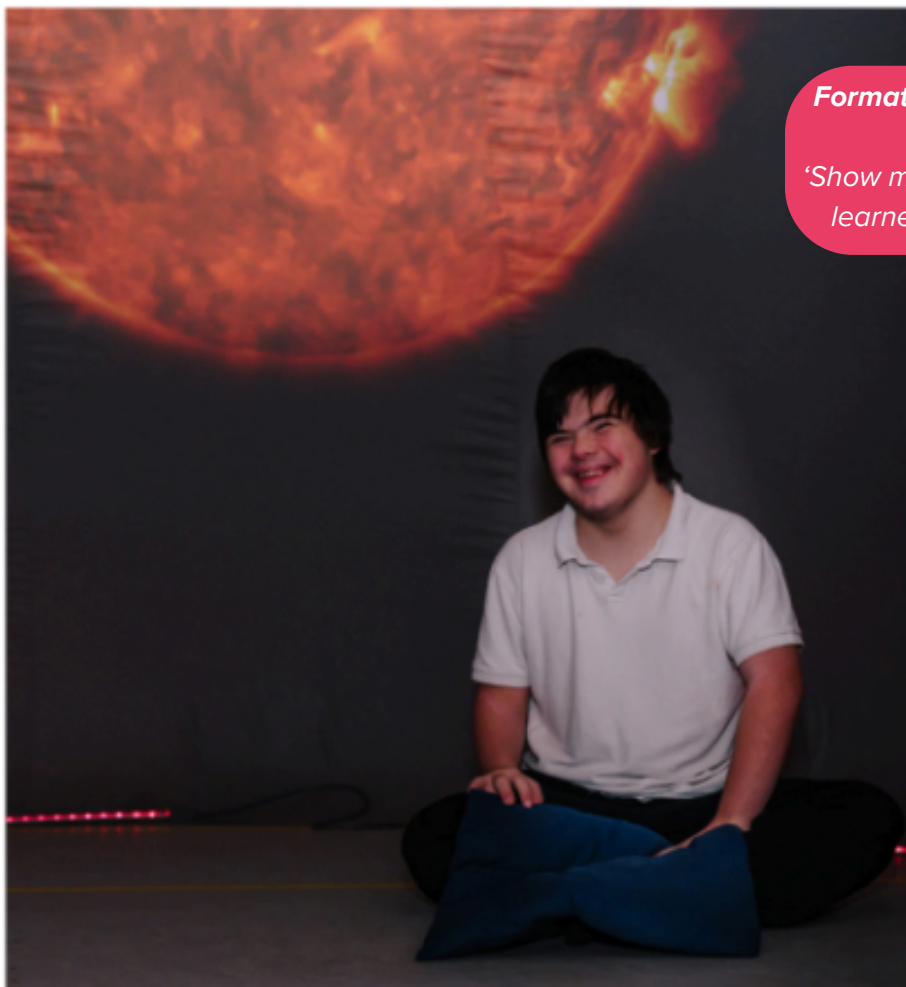
CASE STUDY: INCLUSIVE SCIENCE LESSON FROM THE LIGHTYEAR FOUNDATION

The young scientists were then shown how to make **different shaped bubble wands** and blew soap mixture through each wand to make bubbles. They were encouraged to record their findings in a table in an appropriate way and discuss their predictions and findings. Following this, they repeated the method by comparing bubbles made with **different-sized wands**.

The last experiment was blowing bubbles through the tiny holes in a washcloth attached to a toilet roll. The young people found this very exciting, some had seen it before on social media and were **thrilled to be doing the experiment 'in real life.'**

The session was organised by the Head of Science who had 15 years teaching experience in Special Needs schools.

"I've worked with the Lightyear Foundation for a while... the planetarium dome was amazing. I had the physics role model posters on my wall. Some of the boys (in the session) were getting carried away but they're really curious, they're just so keen to find out what they're being asked to do. In another session there is a student who cannot always cope in class but in the session they are so calm and just enjoy it. It's nice to have other scientists having an input."



Formative assessment was used extensively.

'Show me your green stick if you've learned something new today.'

CASE STUDY: THE BLAIR PROJECT STEM TRUCK

“See Me Be Me.” Planet Possibility funding helped The Blair Project STEM truck travel to schools and communities where a high proportion of young people have BAME heritage. A visit to a school in Birmingham highlighted how The Blair Project inspires young people and builds meaningful partnerships with other organisations who share their vision.

The Blair Project STEM truck is an accessible alternative to a ‘museum visit’ for schools with limited funding or staffing, particularly in STEM subjects. Planet Possibility funding enabled eligible schools to receive free STEM truck visits.

The STEM truck activities and facilitators inspired students who had not previously been enthusiastic about science.

Across the day a group of year 9 girls stood out with their enthusiasm and curiosity: they made an electric motor out of paperclips, built electric circuits and used augmented reality to build an electric car. The head of science acknowledged the girls could be hard to engage in lessons. Everyone was proud when the girls became the only group to complete the electric car challenge within the allotted time.

*The head of science who organised the day said making sure all students in year 9 could take part was ‘100% worth the hassle’. Altering timetables for the day was challenging but there had been so much positive feedback from a previous visit. ‘**Students went home and did science with their parents, who took the time to email the headteacher.**’*



CASE STUDY: THE BLAIR PROJECT STEM TRUCK

The visit highlighted effective collaboration between Planet Possibility partners to enhance collective reach and impact.

At the end of the visit each student was given a business card with a QR code linking to Future First's Infinity game and were challenged to find their ultimate physics career.

The school had been recommended The Blair Project when departmental science teachers had taken part in professional development organised by Future First. The Blair Project had also partnered with the University of Birmingham's physics champions to facilitate workshops and attend science festivals. The champions had been excellent role models and had 'brought physics to life' in their interactions.

The STEM truck workshop facilitators included female and BAME individuals who were **proud to be role models**.

The facilitators had high expectations for all students, which were realised through thoughtfully planned activities, targeted praise and a spirit of healthy competition. There was a lot of **'yeah, now I get it'** heard across the hall.



CASE STUDY: UNIVERSITY OF BIRMINGHAM'S PHYSICS CHAMPIONS

The 10 PhD students recruited as Physics Champions included students from Columbia, China and India. The Champions created digital content specifically for underrepresented groups in physics.

The Champions were enthusiastic to share their own love for physics and journey to being a scientist.

One champion explained:

"Coming from a very tropical region in India, the most fascinating question during summers was, 'Why the seemingly existing pool of water suddenly disappears when we get closer?'. Much later I learnt that this was called 'mirage' and not 'magic' as I thought of. Studying science, especially physics, seemed to be the best way to ask more questions and get more answers! I pursued a Master's in Applied Physics in Sweden, which was a huge decision for a girl from a small town family in India."



The Champions produced a diverse range of content. They wrote articles about their own research, including:

Light and photonics, History of physics and the Scientific Revolution, Lasers and Supercomputers.

They also secured interviews and podcasts with physicists who inspired them: how they ended up on their career paths, the impact of their research, and what this means for the world we live in.

The Champions filmed themselves conducting exciting experiments such as exploring the properties of Oobleck or considering the reason why there's a yellow line on train platforms.

CASE STUDY: UNIVERSITY OF BIRMINGHAM'S PHYSICS CHAMPIONS



The Champions reported key learnings as:

- Bite-Sized Content Works
- Authenticity Matters
- Visuals Are Key
- Interaction Drives Interest
- Tailored Messaging is Crucial
- Feedback Fuels Improvement

The Champions brought their own stories and enthusiasm into the sessions, showing students that physics is about curiosity, creativity, and real-life experiences.

One champion shared:

"I used to spend hours watching the stars from my bedroom window and wondering why they twinkled. That simple question led me down a path of discovery that turned into a passion for physics. I never thought someone like me—who didn't even know a single scientist growing up—could one day be studying astrophysics. Now, I love sharing that spark with others and helping them see that physics isn't just for a certain 'type' of person—it's for anyone who asks questions and wants to understand the world better."

The Champions have taken part in, and led, cross partner collaboration across the consortium:

Champions supported The Blair Project at the Big Bang Fair and on STEM truck school visits. They were praised as excellent role models and had 'brought physics to life' in their interactions.

The University of Birmingham invited young people from underrepresented groups into the university for outreach visits which were facilitated by the Champions.

CASE STUDY: UNIVERSITY OF SOUTHAMPTON NEURODIVERSE STUDENT WORK PLACEMENT

The University of Southampton focused part of its Planet Possibility funding to facilitate work placements for neurodivergent undergraduate students. A case study of Elliot's* placement at a university found they grew in skills and confidence. The university and employers better understood reasonable adjustments they could make to welcome neurodivergent employees.

'Doing physics' was a relentless focus in the placement. The placement mentor was passionate about projects having a physics specialist. *"Under-represented groups often move from physics to other science disciplines, so a very specific physics focus is necessary to retain talent in the field."* Elliot stated their passion for physics and that *"a relevance to physics skills and knowledge"* was important for them.

The placement mentor researched the needs of neurodivergent students to design a project for Elliot that reflected *"real work life"* and that was routinely completed by the PhD students.

Elliot exceeded expectations: they quickly understood the work set and the computational requirements. Elliot worked proactively and independently but was not afraid to ask for guidance when required.

The placement was mutually beneficial for both universities.

The placement university acknowledged *"Elliot did not interview like a neurotypical student... their ability to answer technical questions was higher than expected from their CV. It is important to be open-minded."* The placement mentor described neurodivergent students as *"a community that is often overlooked"*.

The University of Southampton changed their post-placement feedback activities: *"We used to ask all placement students to do a two-minute oral presentation, we have changed this to a poster presentation so all nervous students, including neurodivergent students, to feel in control of how they speak about their work."*

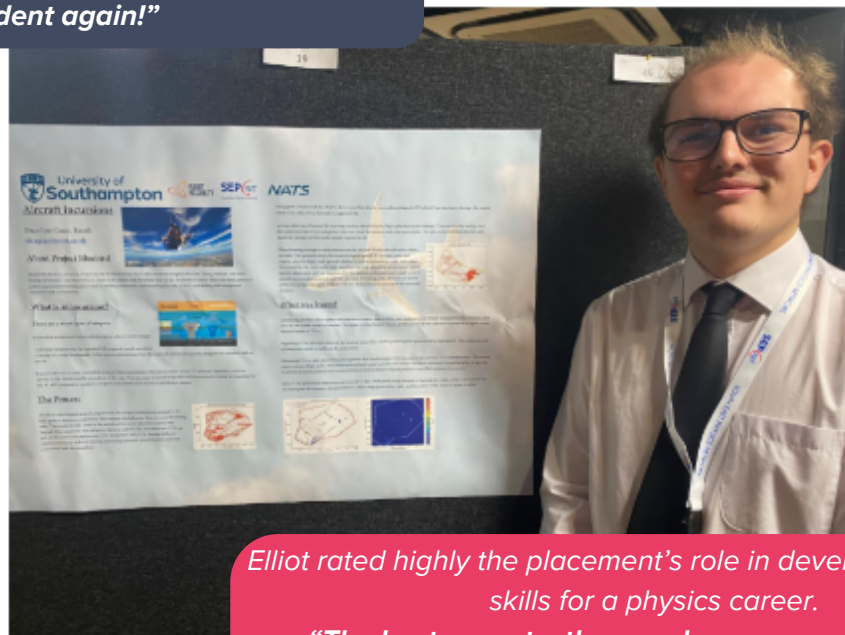
"Being able to pull together our skills has made a real impact".



CASE STUDY: UNIVERSITY OF SOUTHAMPTON NEURODIVERSE STUDENT WORK PLACEMENT

Elliot's placement university rated them as having 'excellent' problem-solving skills by the end of the placement. Elliot's work would be used in the undergraduate labs.

"We would be 100% up for hosting a neurodivergent student again!"



Elliot rated highly the placement's role in developing necessary skills for a physics career.

"The best aspect... the people were very helpful and supportive and responded quickly."

Elliot acknowledged they had needed to step out of their comfort zone and that they now understood that working effectively with others was necessary and beneficial in a successful physics career.

Elliot described how the placement had improved their communication, problem-solving, self-management and confidence.

"I feel better able to deal with project challenges."

The Planet Possibility consortium linked up demand for, and supply of, opportunities to increase reach, opportunity, and diversity in Physics. The University of Southampton has made other links with Planet Possibility partners, with lecturers speaking at events and contributing to professional articles.

"We have made links with partners of partners... you almost grow the connections."



CASE STUDY: PHYSICS DIVERSITY NETWORK

The Physics Diversity Network was established in 2023 as a Planet Possibility consortium legacy. The network is gaining momentum, holding ambitious round table discussions to clarify its vision and aims.

The Physics Diversity Network serves as a **'collaborative force for change'** to champion diversity, equity, and inclusion within the physics community, address systemic barriers and foster opportunities for underrepresented groups. Its projects include identifying skills gaps, sharing innovative outreach models, and celebrating diverse role models in physics.

The Physics Diversity Network has committed itself to:

- **Harnessing** the skills, talents, and expertise of its members to deliver meaningful and impactful change within the physics community,
- **Advocating** for best practices to address systemic barriers and create opportunities for underrepresented groups,
- **Facilitating** knowledge sharing and collaboration to empower members and stakeholders,
- **Amplifying** the voice of diverse communities within the physics sector to influence change and foster inclusion.

Membership of the network includes representatives from schools, universities, private organisations and the third sector. Individual members celebrate their own diverse backgrounds and racial heritages. Representatives include people who are disabled and people identifying as trans, queer and LGBTQ+.

A round table seminar held in October 2024 was attended by over 30 experts from education, outreach, academia and industry. All were united by the mission of the network and agreed to **'do different things, not to do things differently.'**

A follow-up meeting in January 2025 established Terms of Reference, proposed a Chair and Vice Chair, and secured secretariat support.

An initial survey of network members found that **82% believed it was important that the Physics Diversity Network continued beyond the formal conclusion of the Planet Possibility programme.**

Most respondents suggested there was no equivalent network in existence, suggesting that the Physics Diversity Network is fulfilling a unique and much-needed role within the physics community.

"The leaky pipeline is sometimes concerned with the pipes... this network will concentrate on the liquid."

Chair, Physics Diversity Network