INSPIRING YOUNG MINDS:

unlocking STEM potential in the Highlands and Islands

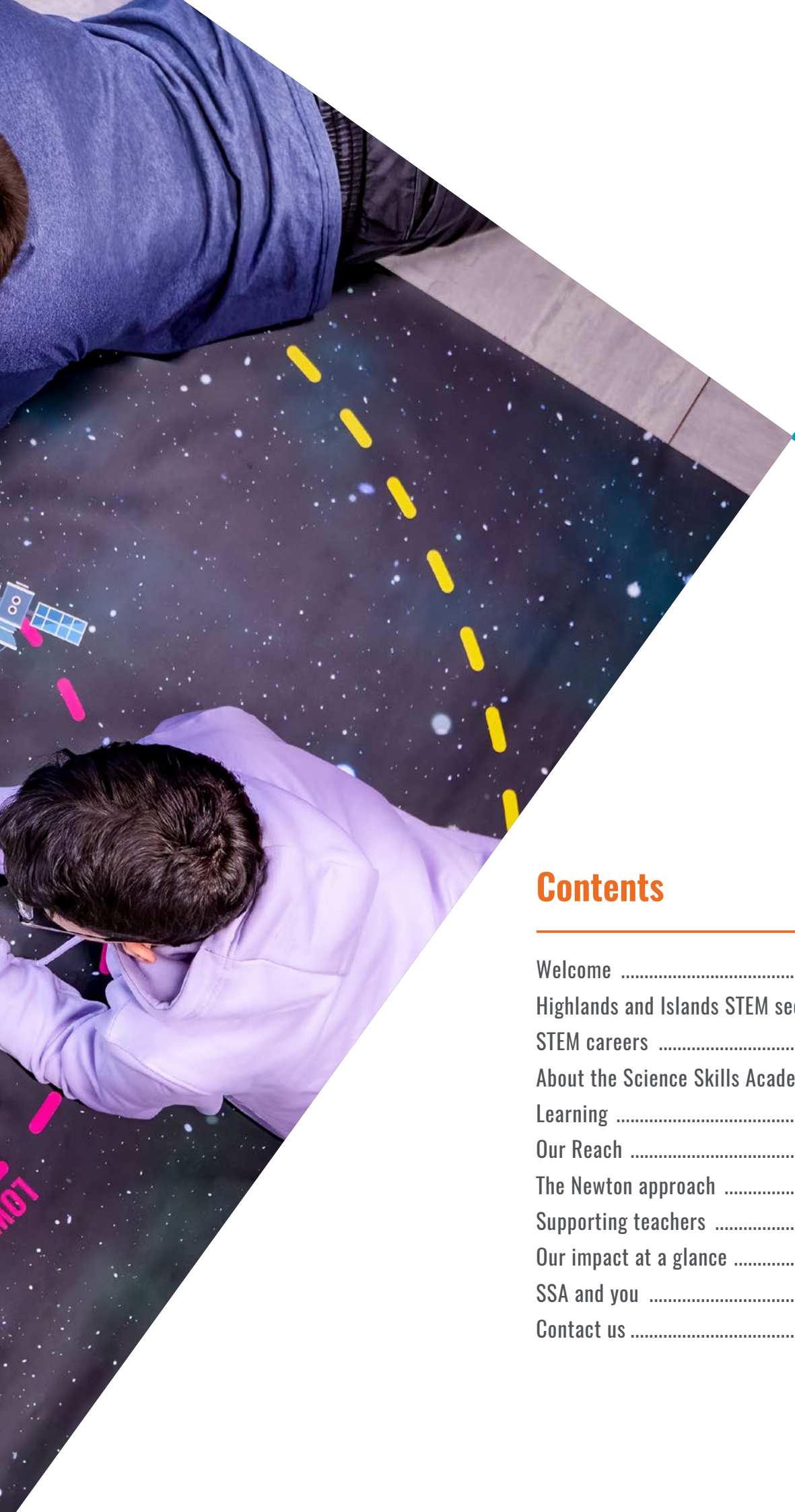
HIE
Highlands and Islands Enterprise
Iomairt na Gàidhealtachd 's nan Eilean

SCIENCE SKILLS ACADEMY

The Highland Council
Comhairle na Gàidhealtachd

City-Region Deal
Cùmhnant Baile-Roinne


EARTH ORBIT



Contents

> The sessions made me think about what my future could be like.

> It was fun, and different to how we learn in school.

> I liked coding the robots the most. It was interesting how you had to use communication skills with others and teamwork.

> I love that both boys and girls from the class said they would love to do something with robotics in the future. Exactly what we want to encourage.

Welcome

Coding robots, generating renewable electricity, creating biofuel, saving our peatlands, and demystifying human health. These are just some of the inspiring Science, Technology, Engineering and Maths (STEM) activities delivered by the Science Skills Academy in our dedicated Newton Rooms.

We've had more than 20,000 engagements with senior primary and early secondary school pupils, their teachers, and families in the Highland region since 2019 - sparking interest in how STEM can change the world. SSA has been praised by industry leaders for the key role it is playing in setting out the pathways for the next generation of scientists, engineers, and skilled workers across a wide range of sectors.

We provide expertise and resources to deliver high quality, full-day STEM project-based learning, connecting STEM activity directly to real jobs in real industries. Five years into the project, SSA has set up the infrastructure, tested the model, and proved it's a successful approach to early STEM skills development. Effectively we have created our version of the 'Science Centre of the North'.

Moving forward, closer ties and further investment from industry and the public sector can support wider reach and ensure a sustainable and effective approach to STEM skills development in Scotland. Businesses yet to explore what SSA offers can find out more in this brochure. You're welcome to visit our Newton Rooms to see how they can help fulfil your own future skills requirements.

STUART BLACK
Chief Executive
Highlands and Islands Enterprise

There has never been a more exciting time for STEM sectors in the Highlands and Islands.

The Highlands and Islands of Scotland has often been at the forefront of new industries, leading the way in hydroelectricity; creating the conditions for marine renewables; developing the aquaculture sector; and responding to the emergence of the oil and gas sector.

Right now, we are on the cusp of unprecedented major investment in offshore wind, hydrogen, space, and other blue economy sectors leading to a significant growth of high-quality green jobs. With these opportunities comes the potential for us to strengthen our communities, more fairly distribute wealth and rebuild our natural capital.

Supported by Highland Council and funded through the Inverness and Highland City-Region Deal, SSA has worked in partnership with other providers including the UHI. Currently delivering in the Highland area we are already making a significant impact on young people's lives and decision-making for their futures and the future of their region.

Moving forward there are a lot of opportunities to expand our delivery:

- reaching out to other parts of the region;
- working with additional age groups beyond our current focus on 10-14 year olds;
- delivering more modules and collaborative learning; and
- showcasing the fantastic STEM industries that exist in the region now, and that will become a feature of our future.

We are looking to industry to support and grow the SSA and its network of Newton Rooms. Partner with us to provide what has become a crucial part of the pipeline to deliver the STEM skills necessary to grow our businesses and economy in the Highlands and Islands.

Green Hydrogen jobs forecast

600

Direct, green, fair, high value FTEs in the Highland region

Space

450

Jobs created across the region - up to 20,000 in Scotland over the next decade

Offshore Wind jobs forecast

2,400

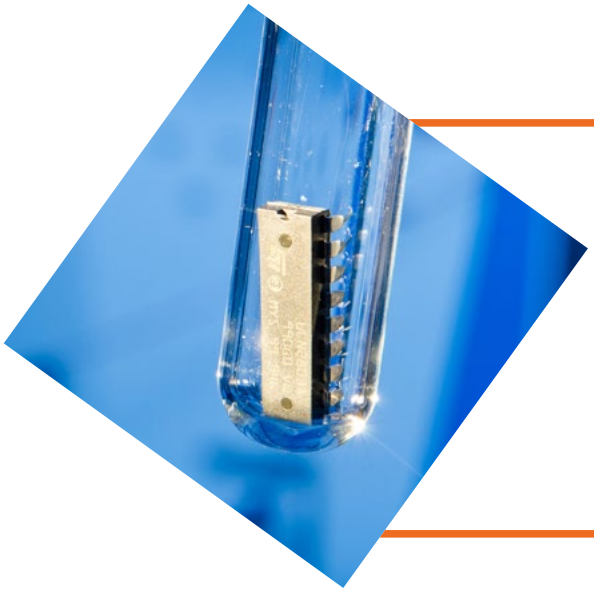
Directed FTEs created by 2035 (conservative analysis)

STEM sectors and careers in the Highlands and Islands

The Highlands and Islands boasts a vibrant economy and a broad range of assets which can support the growth of STEM related business. From energy and health tech, to space, manufacturing and food and drink, find out more and meet some of the people, businesses and projects based here.

Renewable energy

With a strong legacy in the oil and gas industry and an abundance of renewable energy resources, the Highlands and Islands is ideally placed to be at the forefront of the energy industry of the future. The transition to net zero represents an incredibly significant economic, social, and industrial opportunity.



Health and Life Sciences

The dispersed population and unique geography of the Highlands and Islands makes it an ideal location to develop, test and trial new and innovative technologies in healthcare and health tech.

Space

The Highlands and Islands is fast becoming a hub of space sector activity. Our northern geography and low population base provide the perfect conditions to launch commercial satellites. Scotland's space economy is estimated to grow to £4.2 billion between 2021-2030.

Blue Economy

The region is home to some of Europe's greatest marine resources, including 61% of the UK's total coastline. Coupled with our natural resources are three universities based in the region and five innovation centres channelling industrial growth.

Nature Based

Nature-based jobs grew at more than five times the rate of all jobs in Scotland in the period 2015-19 and accounted for one third of all job growth in Scotland in this period. Further growth is anticipated as investment grows to reverse climate change and biodiversity loss.

Food and Drink

We have a world-renowned food and drink industry. Employing around 34,000 people, the Highlands and Islands' food and drink sector has a higher proportion of the total workforce compared to Scotland overall.

See our SSA shorts highlighting career opportunities in our region, and some of the people already putting STEM skills into practice.

About the Science Skills Academy

Our goals

1 **Equality** of STEM provision across the Highland region

2 **Increase of awareness** of STEM careers and STEM pathways

> It made me think Scotland is the place to be in the next few years.

The Science Skills Academy aims to excite and inspire students, through high-quality, hands-on STEM learning experiences. We run sessions in bespoke Newton Rooms, which are tailored to engage P6-S2 pupils with STEM industries and skills within their local community.

Schools and communities in our region are at least 2.5 hours from their nearest national Science Centre, for many it's closer to five hours. We see our role as a Science Centre of the North - providing greater equality for our young people to access STEM learning.

The Newton Room concept was born in Norway, where communities face similar geographical challenges, and has now spread to over 14 countries worldwide.

We work with a range of partners in and outwith the region to ensure our young people and communities can connect with great STEM learning, no matter how remote they are.

Science Skills Academy

We provide high quality STEM learning experiences across the Highland region.

We operate four permanent Newton Rooms in Thurso, Dingwall, Inverness, and Fort William and one touring Pop-Up room. Our aim is to engage every P6-S2 pupil in the Highland region.

Each room has a dedicated STEM Engagement Officer (SEO) working in the local community; each is expert in modern theories of learning.

We set up in the heart of communities engaging all schools in the areas we visit.

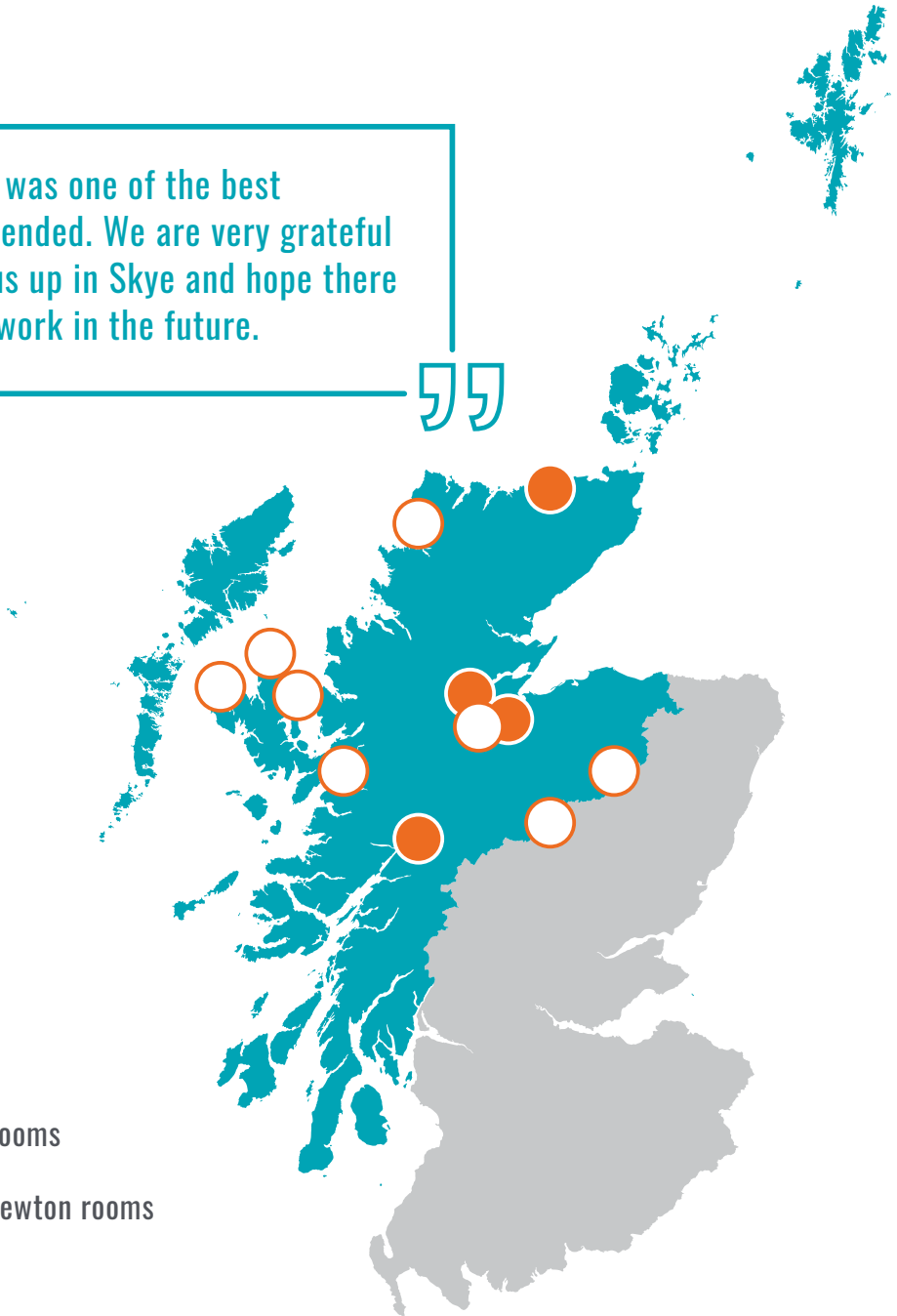
We currently serve 199 Highland primary and secondary schools.

See what happens in our Newton Rooms

School sessions are completely free, and we can sometimes subsidise travel costs.

Our Pop-Up Newton Room travels across the region, serving communities that can't easily reach a permanent room. This map shows where our pop-up visited in the 2021/2022 academic terms.

> "The pupils loved it, and it was one of the best workshops I have ever attended. We are very grateful to have this available to us up in Skye and hope there will be more partnership work in the future."



Our Reach

Statistics (since 2017)

1,000+
Newton Room sessions

22,000+
engagements

500+
teachers trained

98%
of schools engaged in Highland region

The Newton Approach

The Newton concept is owned, developed and managed by the non-profit foundation FIRST Scandinavia.

It was developed in 2003, because of a lack of hands-on activities, outdated equipment and shortage of resources for STEM lessons in the Norwegian schools.

Today, we are part of an international community of 45 Newton Rooms across 14 countries, reaching over 370,000 learners.

Newton Rooms build on the strengths of their local communities, bringing together local schools and education providers with industry partners and local government.

Learning

What's different about learning in our Newton Rooms?

Each of our Newton Rooms has a dedicated STEM Engagement Officer (SEO) who works closely with schools within their area, building relationships with them year on year.

Teachers can discuss learning options and longer-term plans with SEOs. Each module explores topics and skills relevant to STEM industries in their community, as well as supporting delivery of the Curriculum for Excellence.

Newton modules engage with real-world challenges, empowering students with 21st-century skills such as critical thinking, creativity, collaboration, and communication.

A different experience:

Our Newton Rooms feel different to the classroom environment. They are specifically designed to support hands on learning, investigation and collaboration using state of the art equipment.

Engage

Ideal for groups of up to 30 students, our amphitheatres are designed to foster connection and engagement and is used for introductions, discussions, presentations, and reflection throughout our modules.

Discover

Designed for play and movement, our areas give students the ability to work together to explore possibilities that are practical, varied, and exploitative.

Collaborate

We have flexible spaces where students can cooperate on module activities at reconfigurable workstations or on the open floor.

Investigate

Our laboratories have several workstations and ample counter space for students to conduct scientific experiments with innovative equipment.

Supporting teachers

Visiting a Newton Room is much more than a day of hands-on activity.

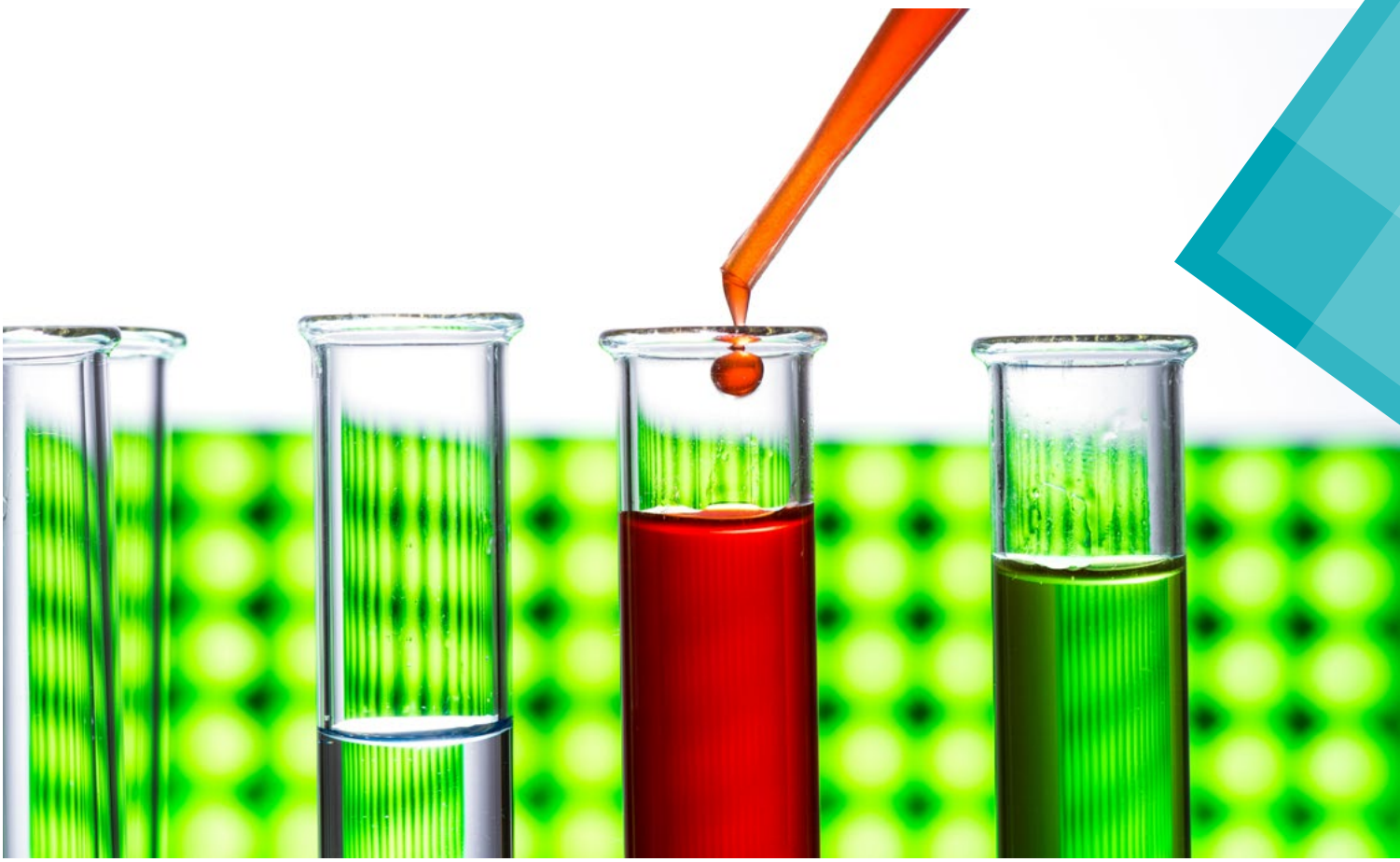
Each module is accompanied by a range of learning materials that the teacher can use to extend learning in the classroom.

Through our partnership with the Glasgow Science Centre, schools can access the ‘Learning Lab’. Developed in partnership with industry, these learning programmes develop key skills and understanding of STEM careers.

- Lesson plans
- Worksheets
- Teacher training sessions
- Opportunities to ‘meet the expert’

The Learning Lab network is currently engaging with 25% of schools across 21 local authorities on a range of topics including energy transition, space, and the human body.

> “Thank you so much for delivering the session and leaving us with so many useful lessons that I will be able to use and adapt for a long time to come. These are exactly the kind of sessions we need, really takes off the pressure of constantly developing resources of our own. So grateful!”



At a glance

- We offer a tried and tested approach – we have had more than 20,000 engagements through our Newton Rooms.
- Over 500 teachers and 5,000 pupils have ‘highly rated’ their learning experience in feedback surveys.
- Our fantastic STEM Engagement Officers are leaders in modern theories of learning.
- We are the only project enabling sustained, face-to-face engagement with pupils in all areas of the Highlands.
- We offer an unrivalled hands-on learning approach complemented by state-of-the-art facilities.
- We provide a learning journey - learners revisit their local Newton Room year on year, building skills and confidence.

We are deeply connected to the region through our partners, including HIE, UHI, the Highland Council and Education Scotland and international partners through Newton. We are a member of the Highlands and Islands Skills Partnership group, working to deliver the Scottish Government’s STEM Strategy in the region.

> This really captured the attention of my pupils. They were so engaged throughout the day and those that sometimes find it difficult to engage in class were amongst the best at the tasks on offer.

SSA and you

We want to forge new partnerships with organisations working in and with STEM industries to create learning and skills pathways into STEM careers in our region. We want to work with you to understand how our programmes and assets can feed into your strategic goals and objectives.

Through the delivery of creative collaborations, well-structured programmes, and inspiring initiatives we can work together to develop a workforce pipeline of the best and brightest people. We are inviting businesses from our key sectors to work with us, and each other, to create this pipeline.

Through this approach, we seek to reduce the burden on individual businesses to commit resource to their own STEM initiatives and build on the unique assets and reach we offer together with our partners.

If you are interested in joining the discussion in your sector to support this work, please get in touch.

What our teachers think:

> Pupils and staff thoroughly enjoyed the whole session. Dissecting the lung at the end was the pinnacle! Hugely recommended to all schools.

> The children participated in an engaging and purposeful learning experience at the Pop-Up Newton Room. Our SEO adapted the session for the small number of multi-composite pupils we had and ensured all were engaged and able to access the material. The pre work and follow up activities add depth to the learning.

> The activities were well planned and paced and appropriately targeted to our pupils. The children loved their day there and are already asking to go back.

What our pupils think:

> I really enjoyed making rockets because we got to use our own initiative and use problem solving skills.

> I liked the blood sample because it made me feel like a real doctor.

> It was really cool, and I really enjoyed it! I'm now quite interested in robotics and mathematics.

> For an organisation like ours, which relies on a steady pipeline of STEM-educated candidates, initiatives like the Science Skills Academy are invaluable. We and other companies in the region should be looking to support the SSA and their Newton Rooms as they provide a great access point for young people across the Highlands to further their STEM education and spark an interest in careers in the sector.
>
> I don't think there could be a better time to be exploring such a career given the growth in the life sciences, renewables and space sectors locally.

Anna Salgado
TECHNICAL DIRECTOR, LIFESCAN

For more information or to discuss this further contact.

DR EMMA PLATO
STEM Engagement Manager - Science Skills Academy
Highlands and Islands Enterprise

Mobile: +44 (0)7717 151696
Reception: +44 (0)1463 245245
Email: emma.plato@hient.co.uk

scienceskillsacademy.co.uk

HIE
Highlands and Islands Enterprise
Iomairt na Gàidhealtachd 's nan Eilean

SCIENCE SKILLS ACADEMY

The Highland Council
Comhairle na Gàidhealtachd

City-Region Deal
Cùmhnant Baile-Roinne