

## EDINBURGH SCIENCE

Edinburgh Science welcomes this call for evidence looking at STEM experiences of 3 to 7 year olds. Outlined below is the work we have undertaken over the years and still do with young people of this age. Should you need any further information or testimony then please feel free to contact us.

### **About us – our vision and mission**

Edinburgh Science<sup>1</sup> is an international educational charity that inspires people of all ages and backgrounds to experience the wonder of science and technology. Best known for our annual Science Festival and Learning programmes *Generation Science* and *Careers Hive*, which bring science to life in schools year-round, we also share our content, passion and expertise internationally through Edinburgh Science Worldwide.

Through Edinburgh Science Learning we are committed to communicating the excitement and benefits of science in innovative and engaging ways to school pupils, young adults, higher education students and teachers. *Generation Science*<sup>2</sup> visits more than 550 Scottish primary schools and learning settings every year. *Careers Hive*<sup>3</sup> is a reimagined careers event aimed at early stage secondary school pupils to highlight the range of employment opportunities and subject choices linked to STEM industries. We also run various engagement and skills development projects aimed at teachers and students.

Edinburgh Science is passionate about developing Scotland as a STEM nation and that starts with our youngest citizens. The Director and Head of Learning sit on various working groups to implement the Scottish Government's five-year STEM Strategy: Education and Training Strategy for Scotland<sup>4</sup>. These quarterly meetings feed into a high-level implementation group headed by the Chief Scientific Advisor for Scotland.

### **About our projects that are aimed at 3 to 7 year olds**

#### *1. Generation Science for Nursery-P3*

*Generation Science*, our primary school science touring programme, has engaged with more than one million pupils across all 32 local authorities in Scotland since it began in 1991. Through Edinburgh Science Learning's commitment to support equity of high-quality provision of science and

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<sup>1</sup> <https://www.sciencefestival.co.uk/>

<sup>2</sup> <https://www.sciencefestival.co.uk/generation-science>

<sup>3</sup> <https://www.sciencefestival.co.uk/careershive>

<sup>4</sup> <https://www.gov.scot/policies/science-and-research/stem-education-training/>

technology across the country, we developed this programme to support the teachers' delivery of the curriculum. Its inception derived from teachers visiting the Science Festival as parents of their own young people and telling us how this would help the young learners they work with.

We continue this relationship with workshops and shows specifically developed from gaps in confidence and knowledge that teachers, education colleagues and research demonstrate exist. Our current programme has 15 different shows and workshops that cover a wide range of topics embedded at all levels in the Curriculum for Excellence. In 2019, we will have visited around 500 different learning settings, seeing more than 55,000 pupils and 3,000 teachers and school staff.

For children in nursery to P3, we have two story-telling workshops currently touring; *Ella's Wobble* and *Marvellous Magnets*. In 2019, these two workshops have been experienced by 460 nursery aged children. This year's touring programme also includes a stable of workshop for pupils in P1–P3; *Ready, Teddy, Go!*, *Get Fizzy* and *Bricks and Blocks* as well as shows *Little Giants* and *Day or Night?* These shows and workshops have been in our programme for many years. By the end of May 2019, just under 20,000 young people between nursery and P3 will have taken part in these activities across Scotland this year.

Practitioners use *Generation Science* to support, engage and inspire young learners. The workshops and shows also provide examples of different approaches for practitioners to replicate or repeat and inspire their teaching. Edinburgh Science Learning actively encourages this by providing teachers notes, which are free to download from our website, to continue the learning where the teachers see the greatest benefit.

## 2. *Wee Wonder World*

Providing content and experiences for young audiences at the annual Science Festival is a major priority for Edinburgh Science. In 2009, support from the Scottish Government's Festivals Expo Fund allowed us to develop *Wee Wonder World* – a whole floor of our flagship family venue at City Art Centre dedicated to early-years visitors and their families. This exhibition was the first initiative to foster the learning relationship between early childhood (0-6yrs) and adults, providing a platform for investigative play and interaction.

The activities and adventures in *Wee Wonder World* are interactive, engaging and hands-on where visitors explore and discover science concepts like magnetism, light and forces in the immersive environment of 'Auntie Agnes' house. *Imagination Garden* within 'Auntie Agnes' setting nurtures the curiosity

and awe of the environment through free play in the 'garden' where children interact and role-play with other children and their creatures. Through imaginative play they explore the environment they create for their creatures, considering what type of ecosystem would be ideal and how it will survive.

In 2009, around 2,400 children and their parents visited *Wee Wonder World*. Since its creation, elements of *Wee Wonder World* have been used across the annual Science Festival and *Generation Science* activities. The storytelling show format is a successful method of bringing ideas to life for this age group and it was here that *Ella's Wobble* was first created for a public audience.

In 2019, more than 6,000 young visitors engaged in activities in City Art Centre which included additional activities for 3 years old and up such as *Tetracolours* – a hands-on workshop exploring colours – and a version of *Generation Science* show *Little Giants* all about the wonderful life of bees.

### 3. *Science in the Spotlight – Valentina's Galaxy and Melody and Sam: Record Breakers*

Edinburgh Science's experience of working with the youngest learners has lent itself to multiple successful collaborations with Scottish theatre companies and producers specifically aimed at the early years audiences. *Valentina's Galaxy*, presented by Scottish theatre company Frozen Charlotte, was inspired by Valentina Tereshkova, the first woman in space, and is an aspirational experience challenging a gender stereotyping mindset that can occur in children from as young as 2 years old<sup>5</sup>.

In 2019, Edinburgh Science collaborated with various professional theatre makers to develop *Melody and Sam: Record Breakers*. The show debuted at this year's Edinburgh Science Festival before embarking on a tour of community partners Pilton Youth and Children's Project, Citadel and WHALE Arts, finishing off with a short run in schools within Edinburgh. Collectively seeing over 600 young people, *Melody and Sam: Record Breakers* is a hilarious and tender story of friendship and record-breaking success. A central tenet to the tale is sharing the aspects of human impact and its relationship with climate change to support the young people's own ideas on how to live with and on the planet. We look forward to engaging more young people with further performances in and around Scotland in the next few years where it may form part of the *Generation Science* portfolio.

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<sup>5</sup> [www.inspiringthefuture.org](http://www.inspiringthefuture.org)

## About why this matters and the challenges

Edinburgh Science is committed to engaging and informing our young audiences and will continue to seek support to develop and improve what we do with STEM messages and concepts for 3 to 7 year olds. We play a part in the national picture and have invested people, time and money over the past 30 years to do just that. We support young people to actively engage with STEM so they become the problem solvers of tomorrow. We see the building of science capital<sup>6</sup> and cultural capital<sup>7</sup> in our young people as a key part of developing the four capacities outlined in the Curriculum for Excellence; successful learners, confident individuals, responsible citizens and effective contributors. We set out to make the teaching of science and technology interactive, inspirational and relevant for young people and their teachers. *Generation Science* exists to support the teaching of STEM in learning settings and addresses teachers' need to bolster confidence and increase knowledge. Continuing on this path, we have recently undertaken work to create a Science Engagement Skills Accelerator Programme (SESAP) which will include teachers of all stages in their careers in whatever setting they work within. We look forward to engaging with more practitioners through this scheme as it develops.

We are keen to continue working alongside professional colleagues to address the challenges that practitioners working with 3 to 7 year olds face. We work alongside colleagues at Education Scotland and associated programmes to promote STEM in any of the educational or community settings we work in.

We would welcome support to continue to sustainably grow our programmes for young people and their teachers, along with opportunities to use our knowledge and expertise to overcome potential barriers like perceived lack of confidence, geographical barriers to Continuous Lifelong Professional Learning (CLPL) and the ability to share good practice. As an organisation that trains hundreds of people annually in the UK and overseas we are well equipped to support or lead the effort to improve confidence in individuals should the opportunity arise.

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<sup>6</sup> <https://www.kcl.ac.uk/ecs/research/aspires/aspires-final-report-december-2013.pdf>

<sup>7</sup> Sullivan, A. (2001). Cultural Capital and Educational Attainment. *Sociology*, 35(4), 893–912.