# Real World Science 2017–18

A report prepared for the Nineveh Trust

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NATURAL

HISTORY MUSEUM

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"By being able to experience everyday experiments that would be done in a genetics lab, it definitely makes me more interested in a degree and career in science"

– A-level student participating in Real World Science

# Introduction

The purpose of this report is to update you on the progress of the Real World Science network (RWS) since your support of the programme through a generous £5,000 gift pledged in September 2017. The generosity of our friends and supporters has an enormous impact on our work, and your contribution towards RWS is greatly appreciated.

As you know, RWS was conceived to address the widely reported gap in science, technology, engineering and maths (STEM) graduates in the UK. While technological advancements and the digital revolution drives businesses' need to recruit greater numbers of qualified STEM professionals, the supply of qualified candidates remains low. The issue has been highlighted by the government, NGOs, research bodies and campaigning organisations as a growing cause for concern that calls for urgent intervention.

The STEM gap presents serious risks to the success of on-going scientific efforts to address pivotal global issues such as climate change, the spread of infectious disease, threats to food supply, diminishing mineral resources, the loss of ecosystems and dwindling biodiversity – the very issues that the Natural History Museum's scientific community are striving to tackle through their research. The big ideas that will uncover the solutions to the challenges we face today will rely on the scientists of tomorrow, and this progress will hinge on the continued growth of STEM education.

There is a pressing need to inspire and equip young people to succeed in STEM subjects and, with your support, the Museum is playing an important role in realising this vision.

RWS continues to provide young people and teachers around the UK opportunities to access STEM learning in a welcoming, supportive and engaging environment, and is growing its network across the UK. By capitalising on the strengths of the Museum and our partners – real specimens for hands-on learning, and access to scientists and science educators – we offer a range of learning activities that are suitable for a wide range of ages and educational abilities.

As you will read in this report, the network continues to grow and introduce new programmes and initiatives. We hope that you enjoy reading about the many successes of the RWS programme, and hope we will have cause to welcome a representative of the Trust to the Museum soon.

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# The Real World Science Network in 2017/18 overview

At the point of our funding proposal, RWS had reached 237,290 young people. We set out an ambitious target to inspire a further 100,000 young people by 2020, and can report that we have engaged an incredible 29,060 participating students this year – bringing the RWS total to 266,350.

As the graph below illustrates, with continuing annual growth we are confident that we will reach our target in or before 2020.

#### **Governance and operations**

A steering committee comprising of Learning Managers and Natural History Curators, with representation from all network partners continues to meet once a year. The committee discusses programme development, the delivery of continuing professional development for Learning Professionals through training and engage in sharing sessions and knowledge exchanges.

### **Partner Grants**

Our partners in Cardiff, Glasgow, Newcastle, Leeds, Nottingham, Stoke-on-Trent, Peterborough all receive small grants of £1,350 to participate in the network. These grants may support staff costs or provide additional budget for programme materials. Local authority and non-national museums particularly value this support, and their participation in the network, to signal to their governing bodies the status of their learning programmes and the value they bring to their offer.

#### Conferences

A very well-attended Outdoor Learning seminar was held at our South Kensington site in March 2018. It was attended by 90 delegates representing 50 organisations including schools, wildlife centres and museums. Melissa Glackin, lecturer in Science Education at King's College London spoke with others from the National Trust, the Primary Science Teaching Trust, the RSPB and RWS partners. There were also practical workshops held by Museum staff and external facilitators such as the Woodland Trust.

#### **Continuing professional development**

RWS aims to support museum learning providers with professional development to ensure the best quality of learning in museums. A training needs analysis was completed in July 2017 to shape a supportive programme of training sessions and sharing events across the network. The Continuing Professional Development (CPD) programme is facilitated by The Natural History Museum, with sharing sessions held at different museums participating in the network.



## Young people participating in RWS since your gift, projected to 2020

The network has vast expertise to draw upon, as each museum has knowledge in specific areas of learning. The new network members have been leading sharing sessions on outdoor learning – there is increasing evidence of the benefits of outdoor learning in supporting education, well-being and building confidence in young people.

### Training

Leeds Museum and Art Gallery is the network leader in Special Educational Needs and Disability (SEND) learning programmes. In January 2018, 25 learning professionals from the network, local science centres and museums attended a training course on using objects to raise attainment when working with SEND pupils. The course covered advice on sensitivities around gathering information while booking sessions, and a session on sensory story telling inspired by natural science collections delivered by Totally Inclusive People – a consultant and training agency that previously trained Leeds RWS staff.

### **Sharing events**

Glasgow hosted a sharing event on outdoor learning, during which they ran an activity from the network programme that Kelvingrove Museum delivers in partnership with the RSPB. Presentations were delivered by National Museum Wales on their outdoor programmes across Wales, the Natural History Museum on Citizen Science, and our Peterborough partner on outdoor learning at Flag Fen Archaeology Park. The event was attended by 22 learning professionals, including a representative from the Teaching Science Network – a partner through Dippy on Tour in Norfolk that supports CPD for secondary science teachers across the UK.

A network visit to Langley Academy offered an opportunity for partners to explore relationships between museums and schools. This was also the focus of discussion at the Association for Cultural Enterprises Museums and Schools Conference day, which was facilitated by the team and held at the Natural History Museum.

### **European Researchers Night**

Involvement in European Researchers Night is an on-going initiative that RWS partners and the Natural History Museum participate in. The pan-European event provides opportunities for young people to understand the range of careers in science through meeting inspirational scientists. This year our partners in Stoke and Peterborough joined the celebrations for the first time.



# Feature: Dippy on Tour

# The network's high profile ambassador at large

In 2018, Real World Science gained a high profile ambassador as our iconic *Diplodocus* cast 'Dippy', embarked on his UK-wide tour to eight venues across England, Scotland, Wales and Northern Ireland. Dippy on Tour is introducing a national audience to one of our most beloved exhibits, but the tour is not just about dinosaurs – it's also about inspiring a passion for science and enthusiasm for the natural world in children.

Through Dippy on Tour, the Museum will work with many other museums for the first time. We will ensure these relationships continue after Dippy has moved on by inviting new partners into the Real World Science network. This will ensure the Tour has an enduring legacy on STEM learning across the UK.

Dorset Country Museum, the Ulster Museum in Belfast, Glasgow Museums (including Kelvingrove Gallery and Museum, where Dippy will be displayed in Scotland), and the National Museum Cardiff have all subsequently come on-board – increasing the reach and capacity of the programme, and creating more learning opportunities for young people across the UK. In turn our partners are also building new relationships locally. They intend to continue these into partnerships that enable them to expand their offer of STEM activities. Birmingham intend to continue working with local wildlife trusts to deliver bioblitzes that were trialled as part of Dippy on Tour.

#### **Natural History Adventures**

Supporting Dippy's display at each partner venue, a broader range events and activity sessions are being hosted across each region under the 'Natural History Adventures' banner. These events aim to spread enthusiasm for and engagement with science and the natural world as broadly across the UK as possible.

Partners who are hosting Dippy on Tour receive additional support for their programme of Natural History Adventures. The Potteries Museum in Stoke-on-Trent has also been given some additional budget through RWS to participate in the Natural History Adventure programme in the west midlands benefiting from the publicity for these activities.

The additional budget paid for 'The Tiny Dinosaur Show' – a free show about Tiny, a 125 million-yearold dinosaur brought to life by the wonders of modern science. Children and families could pet her, feed her and talk to her in dinosaur language, while a palaeontologist was on hand to present an informative natural history show exploring how dinosaurs like Tiny and Dippy lived and why they disappeared. The show attracted 3,391 visitors to the Museum – around 10 times their normal visitor numbers – and had a phenomenal Facebook reach of 70,838.



# New STEM learning initiatives in 2017/18

In addition to our on-going programme activities in collaboration with our partner institutions, RWS has launched several new initiatives over the past year:

### The STEM Careers initiative

The Natural History Museum has secured funding for the 'STEM Careers for All' project at Leeds Museums and Galleries. The team at Leeds will develop a new approach to STEM work experience for young people with special educational needs and disabilities, including students with autism.

### **Citizen Science**

Partnerships, either existing or those being forged through the Natural History Adventure programme, with wildlife trusts and scientific institutions will help to deliver future ambitions of enquiry-based learning exploring urban biodiversity and leading to the open creation of citizen science project by school pupils.

The Natural History Museum is in the process of securing further funding for this programme and a pilot will commence in January 2019.

### **Real World Science Leadership initiative**

Led by the Great North Museum: Hancock in Newcastle, the RWS Leadership initiative is pioneering an innovative model of teacher training. The initiative has delivered a pilot of six sessions that will be used as a model for Newcastle and the Natural History Museums training output, and has been accredited by STEM Learning Ltd. – the UK's largest provider of STEM education support.

The goal of the new teacher training model is to more effectively address the growing STEM skills gap in the UK. It was developed to support teachers in delivering 'enquiry-led' national curriculum content linked to 'wicked problems' – complex real world issues such as climate change or the loss of natural resources.

Research has shown that confident teachers who engage and excite students with relevant science

are much more likely to inspire their students to pursue STEM studies, while the new curriculum set out in 2014 presented challenges for teachers when it came to delivering science learning creatively. Our training sessions were developed to directly address these challenges.

Through the programme of teacher training we have developed, we hoped to:

- engage children and young people in science, both in the classroom and outside of it;
- increase the confidence of teachers and their ability to develop and deliver authentic and inspirational science;
- change perceptions of natural history collections and the role of museums through partnerships between local schools and museums;
- provide greater access to natural history collections in the UK for teachers and students.

The pilot recruited eight subject leaders from participating schools who collectively work with 150 teachers and 3,500 young people. One of a number of topics covered in the sessions involves disseminating their learning to their institutional colleagues, while the learnings will also be disseminated through the Real World Science network of natural history museums – furthering the reach and impact of the programme.



# The next steps for the Real World Science network

RWS has had an eventful and successful year, and the Network will continue to grow. National Museum Northern Ireland will join the network this year and have already participated in sharing and training sessions. Birmingham Museums Trust has recently come on-board, and is already benefiting from the Natural History Museum's expertise.

We have advised the Trust ahead of their first two bioblitz events – a 24-hour race against the clock to identify all the species in one area – which were held as part of the Natural History Adventures programme during the West Midlands leg of Dippy on Tour. The two events were a great success, reaching 236 participants, and demonstrate how collaborative working within the network benefits its partner institutions. The RWS partners will continue to work together, and learn from each other, to create more impactful programmes for students and teachers.

Next year will also bring new initiatives to the network. Our Citizen Science pilot will kick-off in

2019, which will focus on outdoor learning, continuing professional development for teachers, and authentic science experiences where students will come up with their own research questions.

Our on-going programme of continuing professional development for museum learning professionals will continue, meeting the needs of the sector and raising the quality and provision of museum learning opportunities for students.

The Museum remains committed to RWS, and to its mission to build capacity amongst museums with natural history collections and to reach large and diverse audiences, connecting them with nature and inspiring the next generation of scientists.

We thank you once again for your ongoing and generous support of the programme. Your £5,000 gift has helped us reach almost 30,000 young people, engaging them in STEM learning through unique educational experiences.



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