Three days, four Keynote Speakers and over 60 workshops, seminars and presentations, all focussed on primary science!

JOIN IN ON TWITTER! #PSTTBelfast

Primary Science Teaching Trust
INTERNATIONAL CONFERENCE
NO BOUNDARIES. NO BARRIERS.

CONFERENCE BROCHURE

Thursday 9 to Saturday 11 June 2016 at the Belfast Waterfront

KEYNOTE SPEAKERS

Prof. Alice Roberts
Dr. Stuart Brown
Prof. Danielle George
Dr. Maggie Aderin-Pocock MBE

THURSDAY 9TH JUNE
FRIDAY 10TH JUNE
FRIDAY 10TH JUNE
SATURDAY 11TH JUNE

Find out more about the work of the Primary Science Teaching Trust at www.pstt.org.uk
PSTT is a fantastic Trust and has introduced me to a wide range of people with similar interests. It has helped improve science in my school and area.
At this inaugural International Conference, the Primary Science Teaching Trust (PSTT) will bring together dedicated teachers, school leaders, subject specialists and academics. Through this rich community of primary science expertise, the conference will be a catalyst for transformational change in the teaching and learning of primary science.

‘No Boundaries’ reflects our key aim to bring practice and academia together. Through our ‘CONNECTING RESEARCH AND PRACTICE’ sessions academics and practitioners will share their joint expertise through a range of seminars, presentations, discussion groups and workshops.

The Primary Science Teaching Trust (PSTT) puts teachers at the heart of all that we do. Teachers are the innovators, the inspirers and the encouragers in the classroom. Primary School Teachers have a huge responsibility to guide young learners and to encourage their latent desire to understand and experience the world around them through a range of disciplines. At this conference we focus on science and hope that teachers go away encouraged, enthused and have a confidence building experience. The title of No barriers, No boundaries covers a wide range of themes but one that the PSTT wish establish is between practicing teachers and educational researchers, research informed and evidence based practice is so important. Hence, in this conference we will see workshops and sessions from both and we encourage you to attend both and break down barriers that may exist.

We are delighted to have four amazing keynote speakers at this conference. Another of the key messages in the No boundaries, No barriers theme is the power of play, and we have one of the leading exponents of play in education, Dr. Stuart Brown from the USA, present at this conference. We look forward to hearing this inspiring and insightful speaker on how play is a natural part of our learning journey. We are also joined by three outstanding UK scientists, Prof. Alice Roberts, Prof. Danielle George and Dr. Maggie Aderin-Pocock. All three are household names appearing on radio and television who are able to explain the complex in a way that makes this information accessible and inspiring. The workshops and other talks are equally impressive and the PSTT team have had a very hard job putting this programme together trying to fit all the excellent contributions into the time slots available.

There is no doubt that there will be something of interest for everybody at this conference. We are delighted to welcome delegates from the UK but also from North America, Europe and even New Zealand and hope that your stay in Belfast is an excellent one. Finally, we would like to thank the Trustees of the PSTT for their support of this conference, the Fellows of the Primary Science Teacher College and PSTT staff who have worked so hard for so long to make this conference a reality and for the many organisations that have contributed in so many ways to support this conference.
WELCOME TO BELFAST

Belfast may be a small city but don’t let the size fool you - it’s big on excitement. Once the home of the Irish linen industry, tobacco production, rope making and the world famous Harland and Wolff shipbuilders, Belfast lays claim to a unique history. And there’s something for everyone to love. Shopping, tours, world-class dining, block rockin’ beats, you name it - it’s got it.

From the birthplace of the Titanic to the iconic City Hall, you’ll find a cornucopia of historic landmarks and fantastic attractions in Belfast, including; Ulster Museum, W5, Crumlin Road Gaol and only a short drive away, the Giant’s Causeway. We’re particularly excited to be hosting our Inaugural International Conference in the Belfast Waterfront, which has recently undergone a £29.5 million refurbishment and expansion.

There is so much to do in this beautiful city, so why not experience more of what Belfast has to offer by joining us on our social nights.

OH YEAH MUSIC & SCIENCE NIGHT
15-21 Gordon St, Belfast BT1 2LG
Friday 10th June 2016 @ 7.30pm - 11pm

How about a magical winning combination of Science and Music? Join delegates for a totally unique experience at Belfast’s famous Oh Yeah Music Centre and Exhibition. Dip in to the ‘Exotic Fruit & Vegetable Orchestra’ interactive workshop and hear about their fun educational work. The digital artists will then DJ into the night for us. Guinness and wine on arrival, Hog Roast, BBQ food and fun! This charity is based in a former Whiskey bonded warehouse and their work with young musicians is ground breaking. Enjoy the fascinating exhibits from Van Morrison, Snow Patrol and more!

BUY TICKETS IN THE REGISTRATION AREA ON FLOOR 0.

MCHUGHS IRISH NIGHT
29-31 Queen’s Square, Belfast BT1 3FG
Friday 10th June 2016 @ 7.30pm - 11pm

Come and meet other delegates for a night of Irish ‘craic’ at McHughs, the oldest pub in Belfast! Enjoy a Guinness or glass of wine on arrival and a 3 course meal of traditional Northern Irish gourmet delights. After dinner be entertained by folk music from a local ‘Trad’ band.
Prof. Alice Roberts is a clinical anatomist, Professor of Public Engagement, broadcaster and author. She studied medicine and anatomy at Cardiff University, qualifying in 1997 and went on to work as a junior doctor in South Wales, before becoming a lecturer at Bristol University, where she taught anatomy on the medical course for over ten years. She also pursued research in biological and physical anthropology, looking at what ancient skeletons can tell us about human evolution, the diversity of the human species, and about diseases that have affected us over time. Her research led to a PhD in Palaeopathology (the study of disease in ancient human remains).

As Professor of Public Engagement in Science at the University of Birmingham, Alice is involved with encouraging dialogue between University researchers and the wider public along with undertaking teaching and research.

Her television debut came as a human bone specialist on Channel 4’s Time Team, in 2001. She went on to become a science presenter for various projects on BBC2, focusing on her expertise and passion for science, medicine and anthropology. As well as being part of the original presenting team on BBC2’s Coast, she has fronted several series and programmes, including Don’t Die Young, The Incredible Human Journey, Wild Swimming, Neanderthal Autopsy and Digging for Britain. She has written five popular science books and writes a regular column for The Observer.

Alice is a Patron of the Association of Science and Discovery Centres, a member of the Council of the British Heart Foundation and a Trustee at the Oxford University Museum of Natural History. She is an Honorary Fellow of the British Science Association, and of the Society of Biology.

KEYNOTE SPEAKERS

The Primary Science Teaching Trust is delighted to confirm four inspirational Keynote Speakers across our three-day event. We are also excited to announce that along with their Keynote sessions, our speakers will also be leading their own workshop, presentation or seminar.

Prof. Alice Roberts
Anatomist, Author and Broadcaster
THE MIKE RANCE LECTURE

Dr. Stuart Brown
Medical Doctor, Psychiatrist, and Founder, National Institute for Play
THE HUGH LAWLOR LECTURE

Trained in general and internal medicine, psychiatry and clinical research, Dr. Stuart Brown first recognised the importance of play by discovering its absence in the life stories of murderers and drunken drivers. His years of clinical practice affirmed the importance and need for healthy play throughout the human life cycle.

Dr. Stuart Brown’s broad-based evaluations of highly creative individuals revealed the centrality of playfulness to their success and well-being. Following a fellowship which allowed focused study on the origins and prevention of human violence, Dr. Stuart Brown broadened his scope of interest to include the evolution and nature of play behaviour, and its manifestations in human story and art. This led to a long-term affiliation with mythologist-scholar Joseph Campbell, and to his being active as the originator and executive producer of 15 hours of PBS and BBC programming, including a popular nationally broadcast for-credit telecourse, Transformations of Myth Through Time.

His independent scholarship and exploration of the evolution of human and animal play have led to the establishment of the National Institute for Play. The Mission of the National Institute for Play (NIFP) is to bring the realised knowledge, practices and benefits of play into public life. Dr. Brown was the Instigator and Executive Producer of the three-part US television series, The Promise of Play. His experience as a medical administrator, producer, and scientific consultant or creator to numerous other productions plus his scientific and popular writings have identified him as the foremost “practical champion of the knowledge of play.” Dr. Brown’s recent book is the title of his keynote: Play: How it Shapes the Brain, Opens the Imagination, and Invigorates the Soul.
Dr. Maggie Aderin-Pocock is a scientist and broadcaster referred to as the BBC’s ‘face of space’. She is the presenter of the astronomical institution The Sky at Night, has fronted a number of space documentaries, and regularly appears on science and non-science programmes.

From a modest background and diagnosed with dyslexia, Maggie overcame the neighsayers to study at Imperial College where she obtained her degree in Physics and a PhD in Mechanical Engineering. After her studies, she toured the UK speaking to inner-city schools about what scientists do and why, and how to be one with the aim of inspiring the next generation of physicists. Since then she has spent her career developing novel, bespoke instrumentation in both the industrial and academic environments. These instruments have ranged from hand-held land mine detectors to an optical subsystem for the James Webb Space Telescope (the replacement for the Hubble space telescope). She has worked for the Ministry of Defence on missile warning systems, and for aerospace giant EADS on a range of projects to monitor the earth’s atmosphere.

Maggie is a Research Fellow and an Honorary Research Associate at University College London, and continues her work to engage the public with science. She augments her ‘Tours of the Universe’ presentations to young and old with regular TV and radio appearances.

An engaging and passionate speaker, Maggie’s enthusiasm for science and learning is infectious. As well as looking at the wonders of space and what it can teach us, she also tackles the education of science and public understanding, and women in science and engineering.
PERSONAL PROGRAMME PLANNER

Use the three-day planners to make your own personal timetable. If you wish to make, change or check your session choices, please come and see us at the Primary Science Teaching Trust stand in the Exhibition Hall on Floor 1.

THURSDAY 9 JUNE

CPD | Research and Practice | Outdoor Learning

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<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tr>
<td>10:00 - 11:30</td>
<td>Arrival, Registration and Exhibition (Exhibition opens at 10:30)</td>
<td>RIVERSIDE ENTRANCE FOYER, FLOOR 0</td>
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<tr>
<td>11:30 - 12:00</td>
<td>Welcome</td>
<td>MAIN THEATRE 1D, FLOOR 1</td>
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<td>12:00 - 13:00</td>
<td>Mike Rance Lecture</td>
<td>MAIN THEATRE 1D, FLOOR 1</td>
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<td>“The Incredible Unlikeliness of being”</td>
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<td>Professor Alice Roberts</td>
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<td>13:00 - 13:45</td>
<td>Lunch and Exhibition Talks</td>
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<td>Session Two</td>
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<td>16:00 - 16:45</td>
<td>Exhibition and Exhibition Talks</td>
<td>EXHIBITION HALL, FLOOR 1</td>
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<td>16:45 - 17:30</td>
<td>Panel Discussion</td>
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<td>“Evidence-informed practice — the rewards and the challenges.”</td>
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<td>Chair: Angela McFarlane, Professor, CEO of the College of Teachers</td>
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<td>17:30 - 18:30</td>
<td>Exhibition</td>
<td>EXHIBITION HALL, FLOOR 1</td>
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DON'T FORGET!

Our Conference dinner will be held at Belfast’s City Hall on Thursday 9 June. It’s only a 10 minute walk from the Waterfront (see map on page 36). The drinks reception will begin at 7.30pm. Dress code: Smart.
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<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Room</th>
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<tbody>
<tr>
<td>08:00 - 09:00</td>
<td>Arrival and Registration</td>
<td>RIVERSIDE ENTRANCE FOYER, FLOOR 0</td>
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<td>09:00 - 10:15</td>
<td>Hugh Lawlor Lecture</td>
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<td>“Learning Science Through Play: What Nature Provides, If We Let Her”</td>
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<td>Dr. Stuart Brown</td>
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<td>10:15 - 10:30</td>
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<td>10:30 - 11:30</td>
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<td>11:45 - 13:00</td>
<td>Caroline McGrath Lecture</td>
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<td>“Tinkering-for-Learning: engineering the curriculum for future innovators”</td>
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<td>Professor Danielle George</td>
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<td>16:30 - 17:00</td>
<td>Highlights Session</td>
<td>MAIN THEATRE 1D, FLOOR 1</td>
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<td>17:00 - 17:30</td>
<td>Panel Discussion</td>
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<td>“STEM – how do we raise the profile and make classroom experiences meaningful?”</td>
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<td>Chaired by: Dan Davies, Dean of School of Education, Cardiff Met University</td>
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<td>17:30 - 18:30</td>
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<td>EXHIBITION HALL, FLOOR 1</td>
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HAVE A LOOK AT OUR FRIDAY NIGHT SOCIAL EVENTS ON PAGE 2.
## SATURDAY 11 JUNE

**Space | Big Ideas | Creativity | Science for All**

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</tbody>
</table>
| 09:00 - 10:15 | **Keith Bishop Lecture** “Tour of the Universe”  
*Dr. Maggie Aderin-Pocock* | MAIN THEATRE 1D, FLOOR 1         |
| 10:15 - 10:30 | **Break**                                                    |                                  |
| 10:30 - 11:30 | **Session One**                                              |                                  |
| 11:30 - 12:00 | **Exhibition and Exhibition Talks**                          | EXHIBITION HALL, FLOOR 1         |
| 12:00 - 13:00 | **Session Two**                                              |                                  |
| 13:00 - 14:00 | **Lunch and Exhibition Talks**  
(*Exhibition Talks are first come, first served*) | EXHIBITION HALL, FLOOR 1         |
| 14:00 - 14:30 | **Highlights Session**                                       | MAIN THEATRE 1D, FLOOR 1         |
| 14:30 - 15:30 | **Panel Discussion and Closing Ceremony**  
*“STEM – Science for all: overcoming barriers”*  
*Chaired by: Michael Reiss, Professor of Science Education, IOE at UCL* | MAIN THEATRE 1D, FLOOR 1         |

### Where’s the Science in that? The Beach

Free videos and activities from the BP Educational Service linked to the topics of Rocks, Fossils and Evolution and Inheritance.

Download free resources at [www.bp.com/bpes/beach](http://www.bp.com/bpes/beach)
FULL DAILY SESSION SYNOPSES

Our three-day conference programme is packed with an exciting range of different sessions and activities. Your delegate package includes access to all of these: keynote talks, seminars, presentations, workshops, the exhibition and any associated talks, highlight sessions and the end of day panel discussions.

Over the three days there are a number of sessions where you will need to make a choice about what to attend. Synopses of everything on offer in each of these sessions are contained within the next few pages of this brochure. It is possible to sign up for and change sessions at the conference, to do this please visit the Primary Science Teaching Trust stand in the Exhibition Hall on floor 1. You will also see that for each session the relevant age range of children is given, plus as an indication of the target audience. The different sessions types are outlined below.

S SEMINAR

These sessions are led by our daily Keynote Speakers. The presenters will invite audience involvement, questions and discussion. There will also be an opportunity to follow up some of the ideas presented in their Keynote talks, allowing for further discussion and questions. The maximum number of delegates that can be accommodated in a seminar is 80.

P PRESENTATION

In these sessions, presenters will share practical ideas and projects. There will be opportunities for audience involvement, questions and discussion. Two of our presentations offer updates and training in two resources developed by the PSTT: the TAPS (Teacher Assessment in Primary Science) project, and ‘Let’s Go!’ Science Trails. The maximum number of delegates that can be accommodated in a presentation is 80.

C CONNECTING RESEARCH AND PRACTICE

This conference is an ideal time to take a step back from your own practice and reflect .... Our ‘CONNECTING RESEARCH AND PRACTICE’ sessions are designed to facilitate deeper reflection about your own practice. They are intended to be enjoyable and thought provoking opportunities to update yourself with some recent research in primary science education. They will inspire you to think beyond identifying good practice and adopting new strategies, and to engage with WHY these practices and strategies are effective, and HOW they can best be implemented into your own practice.

Some of these sessions are workshop style, i.e. they have a practical element linked to the presenter’s own research. Others are joint sessions where two or three presenters in turn will share outcomes of their own research and how this relates to practice. All sessions will offer opportunities for discussion with other delegates and the presenters. The maximum number of delegates that can be accommodated in these sessions is 30.

W WORKSHOP

These sessions present classroom ideas and resources, using a practical hands-on approach. They are all facilitated by presenters with recent and relevant classroom experience. Three of our workshops offer opportunities for training and familiarisation with resources developed by the PSTT: Titanic Science, Growing Music and ‘I can explain!’ The maximum number of delegates that can be accommodated in a workshop is 30.

K KEYNOTE TALK

Our keynote speeches are being delivered by world renowned experts. They can accommodate all delegates. Nothing else is timetabled to happen at the same time as the keynote speeches and you do not need to sign up for them.
It’s the closest we ever come, as humans, to a transformation as profound as that from a caterpillar into a butterfly. In the first two months of our existence, each of us changed from a single egg to a flat disc, to a tiny worm-like creature. Then we grew minute arms and legs, and changed into something that looked recognisably human.

The origin of a new human, or in fact any organism, was one of the great scientific mysteries until really quite recently. The ancient philosophers struggled with the question of how complexity could arise from simplicity. It took the invention of the microscope before the mystery could start to be unravelled. And even though we now know the secret of conception, and can even read the genetic code, it’s still amazing to think that each one of us started off as a single cell: a single, fertilised egg.

In the course of embryological development, as the single cell multiplies and diversifies to make a human body, there are astonishing echoes of earlier stages of evolution, harking back to very ancient ancestors - ancestors we share with other living mammals, with reptiles, amphibians, fish and even insects.

Alice Roberts takes you on a fascinating journey around your body and into your past, using the latest research to reveal the evolutionary story hidden in all of us: from secrets visible only in our embryos to those hidden in adult anatomy and deep inside our genetic code. Millions of years of evolutionary history have left traces in each of us. You just have to know where to look.

**EXHIBITION TALK 13:00**

**Empiribox**

Come and participate in some hands-on, thought-provoking physics and chemistry experiments that will show you how to teach scientific skills, and have fun playing with some “wow” equipment. You will see how easy it is to enthral your pupils with inspiring science investigations in your classrooms, and ensure that science becomes the best lesson of the week (for both pupils and teachers!). And you may even help generate a big “bang” or two.

**SESSION ONE 13:45 - 14:45**

**Common misconceptions in evolution**

**PROF ALICE ROBERTS**

Evolution works in an entirely random way. Evolution is like a ladder of progress, where primitive organisms evolve into more advanced ones. Evolution produces organisms which are perfectly suited to their environments. All biological traits are adaptations. Each single gene is linked to one adaptation. Humans have stopped evolving. Evolution is just a theory. The missing link is still missing... Alice Roberts will tackle all of these misconceptions and more! Do come armed with questions.

**KEYNOTE 12:00 - 13:00**

**1D FLOOR 1**

**Prof. Alice Roberts**

**The Incredible Unlikeliness of Being**

**EXHIBITION HALL**

**FLOOR 1**

**Co-teaching in school science**

**COLETTE MURPHY**

This seminar will comprise of a discussion and demonstration of how co-teaching has led to improvements in science learning for children in nursery and primary schools. Delegates will have the opportunity to discover how to make the most of co-teaching, whether this is with a school teaching colleague, co-teaching between pre-service and inservice teachers during school experience, or co-teaching between a visiting expert and a school teacher. Presented by one of the world’s top experts on co-teaching, this session will include practical science activities, critical discussion, and an introduction to the theoretical basis of co-teaching, which centres on the work of Vygotsky on child development.

**Is Darwin the missing link? Using the lives and work of famous scientists to model the nature of science and approaches to inquiry**

**AMY STRACHAN AND ALEX SINCLAIR**

Are we embracing the opportunity to link science past, present and future? This workshop will explore how children’s understanding of the nature of science can be developed through the study of the lives and work of famous scientists. Different approaches that scientists have used in their inquiry will be shown in exemplar lessons as models for scientific inquiry in the classroom. Learning in this way will enable children to see how scientists have developed scientific understanding and how this has contributed to our approaches to science today. Participants will be given a supporting pack of sample resources, ideas and strategies.
This workshop introduces the Microscope Activity Kit: a free resource to primary schools developed by the Royal Microscopical Society and used by over 30,000 children nationally to support science learning. It comes with ready made activities, worksheets and resources. This hands-on, interactive workshop will illustrate the use of microscopes within and beyond the primary science curriculum. The overall aim is to use the microscope’s power to engage and its ‘wow factor’ to promote the exploration of everyday things in a different context, maximising the impact in STEM subjects and exploring how creative approaches can incorporate other disciplines, including art and literacy.

Co-teaching and outdoor learning, co-teaching and initial teacher education and scientist-teacher collaboration through STEM placements

Co-teaching can be described as teachers sharing the responsibility for all aspects of professional practice. John McCullagh will describe how co-teaching is an ideal methodology for developing and enhancing the reflective practice of teachers, both in initial teacher education and in continuing professional development.

Karen Kerr will build on the co-teaching model by presenting findings of a study using co-teaching to deliver outdoor learning. She will explain how this can be used to address issues around primary to secondary transition. The study looks at the impact on children’s interpersonal skills and behaviour as well as their cognitive progress.

Sophina Choudry will share her research into another kind of teacher-scientist collaboration. She will present the findings of a project where STEM volunteers (professional scientists and engineers) and teachers collaboratively planned and delivered activities/workshops that had creative and meaningful implications for STEM learning experiences.

Growing Music is a very practical, cross-curricular project, aimed at 9 – 11 year olds, but adaptable for different ages, which explores the links between culture, climate, science, music and our environment. It brings opportunities for children to actively engage with the ideas and processes involved in cultivating plants, making them into musical instruments, investigating how sounds are made and changed and actually playing music. Delegates will discover the practicalities of creating pan pipes and explore ways to run the project in their own school.

Why you’ll never catch smallpox: developing key skills for working scientifically through immersive cross-curricular resources

This session will introduce teachers to the ‘Why You’ll Never Catch Smallpox’ resources and will share feedback, including impact on children’s learning and engagement, from some of the teachers who took part in the trials of these resources. Transport your pupils back to a time when smallpox stalked the world and introduce them to Dr Jenner, James Phipps, and the experiment that has probably saved their lives. Through this innovative set of resources, pupils learn about Dr Edward Jenner’s pioneering work with smallpox vaccination and the impact of vaccinations today, using a variety of cross-curricular approaches including data analysis, exploring primary and secondary history sources, art appreciation, creative writing, simulations, role play and film-making.

Striving for a deeper, immersive experience of outdoor education

What sort of learning experiences can help trainee teachers recognise the potential of the outdoors as a teaching context for primary science? What factors contribute to the disengagement of teachers with outdoor learning? What can we do to address these? How effective are innovative tools, such as forest schools, gardening and geocaching, in promoting outdoor learning and primary science? In this workshop, we will share some of the approaches that we are currently trialling to help provide a deeper, immersive experience of outdoor education. We will also facilitate an open discussion around the questions associated with embedding outdoor learning within primary practice.
SESSION TWO 15:00 - 16:00

C

**Immersive professional development, Developing teachers as leaders of science and Developing scientific literacy through science based media**

LYNNE BIANCHI, JULIA MACINTOSH, BILLY MCCLUNE

**Age Range:** All  ■  **Target Audience:** All

**BOARDROOM 1  FLOOR 2**

Lynne will describe an immersive professional development model involving collaboration between primary science teachers, scientists and science educators, and explain how this approach stimulates teachers to undertake short action-research cycles of experimentation within their own professional practice.

Julia Macintosh explores the development of teachers as leaders of science in primary schools. She will report on the outcomes of a study of the impact of the PSQM programme, and draw on perspectives of teachers involved in the programme.

Billy McClune will describe the findings of a study of how science reports in the media present opportunities for teachers to develop critical reading skills as well as provide a stimulus for scientific discussion and inquiry.

C/W

**Evidence informed practice in primary science**

ALI ELEY, JO MOORE, KATE REDHEAD AND CRAIG EARLY

**Age Range:** All  ■  **Target Audience:** All

**ROOM 2A  FLOOR 3**

This session examines how teachers can engage in evidence-informed practice through working collaboratively with other schools in research learning communities. This approach has been shown to empower individual teachers and to drive effective school improvement and change. Examples of a range of research learning community projects will be shared and discussed. Participants will be encouraged to identify and discuss areas for improvement in science in their own schools, and how they might address these through a supported research project as part of a research learning community.

W

**Primary science for all**

JOELLE HALLIDAY AND ANDY BULLOUGH

**Age Range:** 4-11  ■  **Target Audience:** All

**ROOM 1C  FLOOR 1**

This interactive workshop will share the findings of The PSTT PS4A scoping exercise. The aims are to: identify expertise particularly within PSTT in provision for pupils with SEN; engage with key stakeholders to identify elements of effective practice; identify needs for CPD to improve science learning and teaching for pupils with SEN. Collectively we will explore the idea of invisible differences and what this means for you. We will consider the challenges for teachers and TAs working with pupils with communication differences, relate this to experiences of teachers in the scoping study, and reflect on the implications for your practice.

P

**“Let’s go!” Science Trails**

JEANNETTE MORGAN

**Age Range:** 4-11  ■  **Target Audience:** classroom practitioners, science subject leaders, school leaders, consultants

**ROOM 3B  FLOOR 3**

In this session we will look at how the immediate environment around your school can enhance the science curriculum for your children. Trails can be used as a Stunning Start or a Fantastic Finish to a topic. The workshop will give an overview of the Trails project: where it all started and the trails that have already been created. We will go outside and look at the environment around the Waterfront Hall as a way to inspire us to generate a trail so we can create our own trails back in our schools. Finally we will look to the future to see how the Trails project can continue to grow.

W

**Magnificent microbes: a transition project**

DEBBIE JONES AND SARAH GREENWOOD

**Age Range:** 7-11  ■  **Target Audience:** classroom practitioners, science subject leaders

**ROOM 1B  FLOOR 3**

Three years ago, the Four Oaks Cluster in Sutton Coldfield developed ‘Magnificent Microbes’ - a bridging project from KS2 to KS3. The aim was to lend structure and focus to the Year 6 post-SATs curriculum and to provide liaison opportunities for the smooth and enthusiastic transition from Primary to Secondary schools. The project gives children the opportunity to look at micro-organisms, make plasticine models of them and culture micro-organisms in a controlled environment. It looks at helpful and harmful micro-organisms and explores the growth of yeast in a variety of conditions. This work is then built on when they move to secondary school.
Open Air Laboratories (OPAL) outdoor classroom activity: completing a bug count survey
GRETTA MCCARRON
ROOM 3A FLOOR 3
Age Range: 4-11 n Target Audience: classroom practitioners, science subject leaders, school leaders

Open Air Laboratories (OPAL) is a citizen science project that provides free resources that cover aspects of the science curriculum requirements at Key Stage 2 and Key Stage 3. In this workshop, participants will complete an OPAL Bug Count survey to find out more about these resources, how they can be used for teaching science in schools and to build an awareness of the local environment amongst school children. Completing the survey within school grounds develops practical scientific knowledge, scientific skills and teamwork capacity.

Rocks and fossils of the Jurassic coast
ANJANA FORD
ROOM 2B FLOOR 3
Age Range: All n Target Audience: classroom practitioners, science subject leaders, academics

The Jurassic Coast World Heritage Site is home to some of the most spectacular geology and varied coastal landforms and landscapes in the world. The different rocks tell a fascinating story from ancient deserts to tropical seas throughout the Mesozoic era, between 250 million and 65 million years ago. In this workshop we will explore the science behind the rocks and fossils of the Jurassic Coast and how it can enhance cross curricular learning from EYFS to KS2.

DO YOU KNOW AN OUTSTANDING PRIMARY SCIENCE TEACHER?

Are they innovative and creative in teaching science? Do they inspire pupils and colleagues and contribute to developing science in their school and beyond? Celebrate their passion for primary science education by nominating them for a PRIMARY SCIENCE TEACHER AWARD today.

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PANEL DISCUSSION 16:45
Evidence-informed practice – the rewards and the challenges
Chair: n Angela McFarlane, Professor, CEO of the College of Teachers
Panellists: n Natasha Serret, Primary Teacher Fellow, Nottingham Trent University
 n Alex Sinclair, Senior Lecturer in Primary Science, St Mary’s University
 n Debbie Myers, Senior Lecturer in Primary Education, Canterbury Christchurch University
 n Peter Sainsbury, PSTT College Fellow

Delegates will be given the opportunity to write questions on post it notes which will be placed at various points around the venue.
Play, at any age, is what deeply engages us and sustains joyful motivation. This is true for both teacher and pupil. Stuart Brown MD, Founder/President of the National Institute for Play, will provide a sweeping review of what constitutes authentic play as it emerges developmentally and environmentally. Dr. Brown will also emphasize play’s profound innate contributions to implementing the scientific method.

A close look at playful students encountering nature’s mysteries shows that nature prods them to explore the possible. As playful students are encouraged to encounter the bounties of nature, whether a 4-leaf clover in the grass, a chrysalis becoming a butterfly, or a songbird warbling melodically on a spring morning, if in a safe and exploratory environment, they joyfully and spontaneously develop from within their own intrinsic play natures the desire to formulate hypotheses, explore through trial and error and develop and innovate through iteration. The resolutions from what they encounter result in the establishment of their own growing personal internal narratives that make sense of their world. If fear of ridicule or failure, and excessive adult pressure for results lessen joyful exploration, the enthusiasm and intrinsic motivation of young scientists-in-the-making can be defeated.

In order to provide a “Play Science” background and context for the audience, evidence from early attunement play to later strength and poise outcomes as play becomes more complex will be reviewed. Since in its essence play is pre-cognitive but nonetheless a foundational aspect of learning, memory, curiosity and overall social competency, this broad but necessary neuroscience-based review will be underscored. Many mainstream cultural assumptions about play (it is trivial) not being central to exploration of the possible (the essence of science) will be also addressed.

The real-life clinical research by the presenter from his lifetime explorations of the consequences of major serious play deprivation and further detailed evaluations of the nature and benefits of healthy play across ages and cultures through his reviews of 6000 individuals will be summarized. From this research, the importance for educators to understand and honour the unique details of their own play natures as they reinforce classroom joyful learning, as well as offering methods for identifying the individual play talents of their students will be included in this presentation.

The objective neuroscience in controlled studies of animal play that has established the circuits that evoke play as a fundamental survival drive as well as its presence as a necessity for social mammal competency will also be part of this keynote presentation.

An in-depth understanding of play is a foundational contribution to effectively engaging students becoming lifelong playful student-scientists.

Dr. Stuart Brown
Learning Science Through Play: What Nature Provides, If We Let Her

SESSION ONE 10:30 - 11:30

Playful approaches to science and technology and Developing creativity in scientific inquiry through video stimulated reflective dialogue
ANDREA DOHERTY AND REBECCA DIGBY

Andrea Doherty describes how a playful pedagogy can support scientific understanding, engaging children in the exploration of difficult, but authentic concepts through a familiar activity that they find enjoyable. She will discuss how playfulness facilitates the scientific process, particularly scientific questioning and how engaging in play has the potential to develop proficiency in science.

Rebecca Digby examines the role of creativity within scientific inquiry. She will describe how using reflective practitioner dialogue stimulated through the use of video, facilitates a greater understanding of the role of creativity in science in early years.

CONNECTING RESEARCH AND PRACTICE

Developing pedagogy for primary school engineering
JONATHAN CHIPPINDALL

Computational Thinking – working as an engineer - relies on a set of thinking skills and habits of mind. The Tinker Tailor Robot Pi project has illustrated that the habits of mind are similar to those being taught in the new computing curriculum, computational thinking. This workshop will explore these similarities and provide delegates with a range of unplugged activities to develop these skills. Delegates will also explore the fit between computational thinking and programming as they code a program in Scratch.
This workshop uses a range of photographic images to engage interest and to invigorate science as a subject in our schools. A variety of ideas and activities will be outlined using images as hooks, stimuli for talking and writing, aids for explanations, activity start points and assessment opportunities. The use of photos in subject leadership in a variety of areas of the school will also be examined. This will be a fun session where teachers are asked to think, talk, take part, reflect and take ideas back to their schools to develop further.

The Teacher Assessment in Primary Science (TAPS) project aims to develop support for valid, reliable and manageable teacher assessment, which can have a positive impact on children’s learning. Design-Based Research collaborations with local project schools, the Primary Science Quality Mark and PSTT College Fellows led to defining and exemplifying teacher assessment at child, teacher and whole school levels in a pyramid-shaped model. This session will consider how schools have developed their teacher assessment in response to use of the TAPS pyramid self-evaluation tool. We will also consider examples of focused assessments and explore methods for moderation.

The Seminar content will delve more deeply into play theory and its universality as a contributor to our science-grounded contemporary post-classical quantum relativistic universe. The seminar will also personalize the need for educators to integrate play into their daily individual lives for their own professional and health reasons, as well as to produce greater “freedom to learn science” for their students. Since we all play differently, a deeper dive into play patterns will be explored. Play behaviour is a necessary but often elective self-organizing emergent phenomenon in all of us. Another more recognizable biological system also emergent and self-organizing over evolutionary time is sleep and dreaming. The parallels and similarities to play when viewed in this perspective becomes compelling, though this generally is not how play has been viewed historically. The natural extension of this “deep” play view is to see its contributions to cognition, (new connections) emotion (resiliency and competency) and its intricate connection to establish a more authentic optimistic and joyful, meaningful life.

An exploration of potential new science-based teaching curricula that combines the digital age with hands-on science learning will also be offered. One example will rely on a synopsis of the current research organized through the Stanford Center for Games and Interactive Media, which has crafted a Human Biology Interactive Game, “Trap It!” The novelty of Trap It! is in its embodiment of real-time one-to-one interaction between human and microbe.

Living organisms can be incorporated into digital systems to function as sensors, controllers or the interface by the enabling power of emerging electronic and bio-technologies. Such hybrid digital-biological systems address the human tendency to interact with other living organisms and have been shown to evoke empathic emotions (play-based) that lead to positive behavioural changes. This review should stimulate discussion of contemporary playful science learning curricula design.

Foundation stage children are passionate explorers of the world around them. The job of their teachers is to support their explorations so that they develop sure foundations of the big ideas of biology, physics and chemistry and the initial skills of working scientifically. In this workshop EYFS practitioners and science subject leaders can explore at first hand activity plans for Foundation Stage classes which link story, practical activities and all EY learning goals as children answer questions about the world around them. Is everything green? What do works do? Does it mix?

Three PSTT College Fellows will demonstrate how they organised a science/technology activity to make contraptions that set off a mechanical chain reaction, starting from an introductory homework activity and ending in the climax of an inter-schools’ release! Come and see how we organised the event and the science and fun we shared. Make your own mini-contraption and take away lots of ideas for running your own event. The workshop includes planning and organisational notes, ideas, resource hints and links, and a practical activity.

All schools in the UK will have received a fantastic free kit in early summer 2016, packed with really useful science equipment, to enable them to explore The Crunch - an exciting year of activities, experiences and discussions about our food, our health and our planet. This session looks at the materials and resources provided for schools by the Crunch and explores how using the kit will help science leaders and class teachers develop their children’s science skills through exciting hands-on inquiry activities. We’ll also look at how we can track progress and how we can embed assessment for learning in our teaching.
Engineering is everywhere! But it is woven into the fabric of everyday life and so we sometimes don’t see it. I will explore what engineering means to me and to ask what it means to others.

In my research I use both my science and engineering knowledge to help solve one of the World Engineering Grand Challenges – I engineer the tools for scientific discovery. There are around 2.8 billion people around the world still affected by water scarcity. And that number will only increase as the need to feed a growing population also increases. This is a very real challenge that we need our future innovators to solve. Currently most of these innovators are in an education system being inspired and influenced by you. If we need them to solve the challenges of the future are we encouraging them to start today?

Making is at the heart of engineering; it looks towards encouraging children to play with the science that they know and to apply it to a challenge to work out how this knowledge can make a difference. Engineering makes us take our learning from thinking processes to making processes. It makes us as teachers encourage an increasingly creative approach, and value new ideas.

Prof. Danielle George
Tinkering-for-Learning: engineering the curriculum for future innovators

EXHIBITION TALKS 13:00 AND 13:30

"STEM experts in the classroom” - Martin Brown
Overview of some local programmes which enable upper primary classes to interact with STEM practitioners from industry, academia and government. These include STEM Experts in Primary Schools and similar programmes, and Medics in Primary Schools.

"Kite building and STEM education” - Go fly your kite
Go Fly Your Kite - STEM Kite Workshop;
History of flight How does a kite fly? Learn how to design and construct a kite Building confidence & understanding for each pupil in a ‘can do’ attitude. Promoting exercise with a reusable piece of art & science. Complementary kite for all delegates attending the talk If you need any further information, please do not hesitate to get in touch.

“I can explain!”
A groundbreaking new approach to introducing and developing scientific understanding.

The resource, developed by teachers, contains beautifully illustrated, high-quality picture cards and language prompts to facilitate rational discussion. Children work in small groups to explore scientific concepts, developing skills to learn effectively through group talk, and using these they make cognitive gains in science.

The activities include:
1. Generating simple explanations
2. Challenging the ideas of others
3. Sequencing, generating more complex explanations
4. Grouping and classifying
5. Describing, using scientific vocabulary
6. Justifying a new idea

The resource pack contains:
Ten sets of eight ‘sound’ pictures
Ten sets of eight ‘hot and cold’ pictures
Ten copies of a pirate ship (floating and sinking)
Ten copies of a garden habitat picture (plants and animals)
46 page Teachers’ guide

£50 + VAT inc. P&P*

*Free postage in the UK only, additional charges may apply for postage outside of the UK. Free postage does not apply when ordering using the delegate offers above.
SESSION TWO 14:00 - 15:00

**W** Ready, steady, tinker: engineering young minds to embrace the challenge
PROF. DANIELLE GEORGE AND DR. LYNNE BIANCHI

This STEM focused workshop aims to provide participants with insights from the Tinker Tailor Robot Pi project that focuses on exploring the relevance and resonance of engineering education in primary schools. It will provide minds-on and hands-on activities to engage the participants collaboratively to debate the pedagogical implications of an engineering curriculum in their settings. Participants will engage with the current research into engineering habits of mind and explore the implications for primary children. Delegates will need to bring a laptop with [https://redfernelectronics.co.uk/crumble-software/](https://redfernelectronics.co.uk/crumble-software/).

**W** Delivering science through drama
MARY HAUGHEY

Primary Six children from St John’s Primary School Carnlough will demonstrate through choral speaking, drama and song how they learned about the body, the rainforest, energy and wind power. The children will demonstrate how effective it has been for the whole school to have undertaken this strategy to deliver Science in a fun and creative way. By using Active Learning methodologies the children have a deeper knowledge of their topics and their motivation and enthusiasm is palpable. Teachers are delighted by the results of this innovative work and keen to continue to embed it in future Teaching and Learning.

**W** Think physics: developing science capital in the classroom
CAROLE DAVENPORT

Young children are fascinated by science in the world around them. However, only a small proportion of children go on to study science, particularly physics. Many children (especially girls) see science as something that is done by other people, and not by ‘people like me’. Many children effectively make the decision not to study science at a higher level even before they have left primary school. Participants will hear about current research into Science Capital, consider the role of primary schools in providing careers information for children, and discuss possible methods of introducing ‘careers in the classroom’.

**W** Curiouser and curiouser: part two
DEBBIE MYERS AND MARIA MCGRORY

A practical, hands on workshop enabling participants to consider the findings of a PSTT funded research project that transformed learning at Hudson Road Primary School by focusing on ‘inquiry as a way of knowing’ about scientific phenomena. Learn how children have worked more authentically as scientists using their own questions as a compass to navigate the wonderland of scientific phenomena all around them. The presenters will explain how transferring responsibility for decision-making from teachers to children, during open ended investigations, better aligns with children’s natural dispositions of playfulness and curiosity, increasing their access, participation and engagement in science.

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**JUNIOR GEO**

Junior Geo’s classroom resources enable teachers to deliver outstanding lessons for KS2 Science topics: Rocks & Fossils and Evolution & Inheritance. Our classroom products include:-

- Ready-to-paint fossil plaster casts
- Silicone moulds to make your own fossil
- Fossil identification activity kits
- Replica fossil handling collections and dig box.

For further information about our products visit www.juniorgeo.co.uk or ring 01305 751669.
Titanic Science is designed to support, empower and inspire KS2 teachers to deliver high quality, fun science investigations. The story of the Titanic remains as compelling today as it did over one hundred years ago when she captured the imagination of the world. Titanic Science tells the story of the greatest ship ever built, and uniquely places science at the heart of her epic story. By working through the investigations in the resource book, children will learn how science played a pivotal part at the key moments of her story, from her construction to the tragedy of her sinking. Primary school teachers, do not require any specific scientific expertise to be able to make use of these practical ideas linked to stories.

Lab_13 Gillespie is a space where children are invited by their Scientist / Inventor in Residence Carole Kenrick to explore and investigate their questions about science, and turn ideas for inventions into reality. “It gets more science in me, makes me do more experiments, and makes me want to be a scientist!” - Y4 child. "Lab_13 develops communication, collaboration, debate, leadership and resilience... The key strength, however, is evident in the high level of technical and academic science experimental work." - Brian Cartwright (Science Lead for OFSTED). Come and find out what Carole does, and take away ideas to try yourself.

The Teacher Assessment in Primary Science (TAPS) project aims to develop support for valid, reliable and manageable teacher assessment, which can have a positive impact on children’s learning. Design-Based Research collaborations with local project schools, the Primary Science Quality Mark and PSTT College Fellows led to defining and exemplifying teacher assessment at child, teacher and whole school levels in a pyramid-shaped model. This session will consider how schools have developed their teacher assessment in response to use of the TAPS pyramid self-evaluation tool. We will also consider examples of focused assessments and explore methods for moderation.

Clare Warren will outline the nature of teacher questioning that promotes engagement and elicits children’s understanding, and discuss the value of this in the context of effective assessment for learning in primary science. Natasha Serret will present outcomes of research into supporting teachers with introducing more open approaches to dialogue in their inquiry lessons. She describes how these structures equip teachers with strategies to facilitate children’s discussion which leads to better sharing of ideas.
Sally Howard explores the views that primary and secondary teachers hold about enquiry. Consideration of these differences perceived by teachers will be discussed and suggestions made about how this affects children’s experiences in the transition from primary to secondary school. Liz Coppard discusses the ideas that children hold about the particulate nature of matter and substances. Much is known about this, although there is little evidence about effective pedagogies that can help children better grasp the important and abstract ideas associated with this area of the curriculum. This presentation offers suggestions about ways of identifying and sharing effective practice.

There is increasing evidence that teaching science in context, or topics, can positively impact engagement and achievement. This session will allow participants to discuss the pros and cons of this approach, to discuss good practice and to consider examples of different approaches. You will also look at a method for planning and preparing a context led approach, using history, and look at how you can make the most of cross-curricular opportunities. The free resources you will be given, from the Royal Society of Chemistry and written by teachers, will be discussed and used to support this method.

The new National Curriculum for KS1 and 2 Science is clear about what children should be taught to know, understand and do in science. However teachers report concerns over knowing firstly what the NC statements mean exactly and what evidence they need to confidently make a judgment that a child has achieved the statement. In other words how can you be sure that a child has ‘got it?’ This workshop will consider how to break down the NC statements into clear descriptors and participants will explore short, fun activities to use with small groups of children where they just want to check, ‘have they got it?’
PANEL DISCUSSION 17:00

STEM – how do we raise the profile and make classroom experiences meaningful?

Chair:
- Dan Davies, Dean of School of Education, Cardiff Met University

Panellists:
- Stuart Brown, Founder of National Institute for Play
- Andrea Doherty, Lecturer in Early Years Education with STEM, Stranmillis University.
- Holly Aiston, Science Lead, St. Anne’s Catholic School, Southampton
- Jeannette Morgan, PSTT College Fellow

Delegates will be given the opportunity to write questions on post it notes which will be placed at various points around the venue.

EXHIBITION TALK 17:50

“Go fly your kite - STEM Kite Workshop

History of flight How does a kite fly? Learn how to design and construct a kite Building confidence & understanding for each pupil in a ‘can do’ attitude Promoting exercise with a reusable piece of art & science Complementary kite for all delegates attending the talk If you need any further information, please do not hesitate to get in touch.

TITANIC SCIENCE
WHERE THE STORY OF TITANIC MEETS SCIENCE ENQUIRY

TITANIC SCIENCE has been written by teachers for teachers, therefore it is designed to support, empower and inspire teachers to deliver high quality and engaging science lessons.

The story of Titanic remains as compelling today as it did over one hundred years ago when she captured the imagination of the world. Titanic Science tells the story of the greatest ship ever built and uniquely places science at the heart of her epic story. By working through the investigations in the resource, pupils will learn how science played a pivotal part at the key moments of her story, from her construction to the tragedy of her sinking.

It will also provide material for other curriculum areas, such as creative writing, history and numeracy.

Contains 15 science investigations related to the story of Titanic, introduced by real life characters through engaging narrative. Also includes a Topic Web, Curriculum Maps and a full Scientific Glossary.
Dr. Maggie Aderin-Pocock is a space scientist and a science communicator. Over the past seven years she has visited many schools and interacted with around 250,000 children. In her keynote talk, “A Tour of the Universe”, Maggie takes us on a journey through space. We start by looking at our own planet and the proportion of land to sea. We then travel further out, looking at the moon and at other planets, comparing and contrasting conditions found on each of them. Travelling even further out we visit a star and then look at the whole of our Milky Way galaxy, using analogies and physical experiments to interpret what we see and to consider the numbers involved. As well as journeying through the universe, the presentation brings in Maggie’s personal experience of becoming a space scientist as she describes how, against the odds, a dyslexic child with divorced parents fulfilled her childhood ambition. She also discusses the power of science teaching in her life. From being a primary child disengaged with school, Maggie tells us how she reconnected through science to become a science practitioner faced with the challenge of recruiting the next generation of space scientists. She will finish by describing the kinds of techniques she has used to engage thousands of children with the wonders of science, and in particular how she encourages girls and members of ethnic minorities to consider careers in science today.

Helen and Bridget will be sharing a wealth of proven strategies and resources from their recent Education Endowment Foundation (EEF) funded project, “Thinking, Doing, Talking Science”. The project involved teachers from 42 Oxfordshire primary schools and over 1200 children. It focused on the development of lessons that encourage children’s thinking, through talking and doing science. The result was a win-win-win scenario: strategies for primary science lessons that teachers enjoy more, children enjoy more and are proven to improve children’s attainment in the subject. As a result the EEF is providing funding to extend the project to involve over 180 schools in 7 different areas of England in 2016-18.

Creative exploration is an organic, interactive approach to science teaching and learning that mirrors many aspects of the ways in which scientists work. It requires both the teachers and children to make the science and scientific processes involved explicit. It is about “children’s science”: children personalising their science activity leading to the development of creative explanations of natural phenomena. It requires the teacher and learners to experience, explore, observe, create and test their explanations of natural phenomena before sharing and making connections to enhance their learning. The inquiry is often ignited by aesthetic experiences that promote affective dispositions such as awe, wonder, and interest. The learning process is enhanced when the use of literacy and mathematical strategies are made explicit throughout the inquiry journey. An overview of the approach and its critical features will be explored using examples of the speaker’s work with primary science champions and in class support over the last five years. Inquiry frameworks for developing and creating personal understanding in primary science will also be shared.

Dr. Maggie Aderin Pocock is a space scientist and a science communicator. Over the past seven years she has visited many schools and interacted with around 250,000 children. Maggie believes space science and primary education are a match made in heaven. In this workshop Maggie demonstrates the techniques that she uses to engage younger audiences with science. She will share a range of resources that are available through the European Space Agency and NASA. The workshop will also outline ways of providing stimulation, understanding and inspiration through effective use of role models and topical, hands on materials. Suggestions for space themed assemblies will be shared, and Maggie will discuss ways of presenting the topic in cross-curricular contexts to help bring some of the more challenging concepts in physics to life.
Delegates need to bring two 1 - 2 litre empty bottles with them.

Young children are very inquiring; they want to know how things work and they love to do experiments. This is why it is so important to catch their interest and give them the motivation to pursue science explorations and experiments. During this workshop, participants will try for themselves some physics experiments proven to work with children from 3 to 11 years. In addition they will make some simple teaching aids (science toys) that they can take away and use directly in their classes. The topics covered will mainly be water and air.

Delegates need to bring two 1 - 2 litre empty bottles with them.

This session provides a guide to the importance of early and primary education in addressing issues around gender stereotyping and unconscious bias, with a particular focus on strategies for increasing the number of girls choosing STEM subjects. Delegates will have the opportunity to reflect on the research in this area and to try activities for use in the classroom.

The second half of this workshop will look at W5’s interactive series of Destination Spacel workshops which bring space exploration into the classroom, introducing children to the range of jobs that astronauts and other space scientists do. Aiming to inspire the next generation of astro-explorers, W5 will show teachers how to use hands-on activities, engaging challenges and video to bring the excitement of space travel to their children.

The focus of the workshop is to ‘take’ the participants on an imaginary journey (similar to Mestral) and learn about the (possible and real) uses of plants along the way.

Think Physics has been working to promote family engagement in STEM learning in primary schools. We have created a series of 6 session that help parents and children explore science together. Through a series of demonstrations and experiments (using only equipment you’d find in your kitchen), families are challenged to answer some big scientific questions. This session will explain the development process behind Science for Families and provide you with hands on experience of some of the activities which you can use in your school.

Primary teachers are bombarded with initiatives and interventions that they are told will make a significant difference to the learning of the children in their classes. Using examples from schools that have achieved Primary Science Quality Marks this workshop will enable teachers to evaluate and maximise the potential effectiveness of actions, and to write and implement successful subject leader action plans. Your time is too important to waste!
SESSION TWO 12:00 - 13:00

C Using drama to develop inquiry skills and appreciate the nature of being a scientist, and Teachers’ perspectives on creativity
DEB MCGREGOR AND SARAH FRODSHAM

Deb McGregor reports on a project where the same drama strategies were used in primary classrooms, by the same teachers, in both New Zealand and England. The findings suggest how teaching using drama can support children in different countries in similar ways when working scientifically.

Sarah Frodsham will describe the results of a survey of over one hundred primary teachers’ views of creative strategies within science lessons. She explores how teachers perceive what they and the children do to generate creativity in primary science, and considers how teachers can identify and develop creative practices in their science lessons.

P Creating suspense and surprise in primary science
PAUL MCCORRY

Suspense and surprise are two of the teacher’s most potent weapons to engage, enthuse and educate children. This interactive presentation will provide teachers with an overview of the key evidence-based research in this area, and explore a range of intriguing emotional engagement techniques designed to foster curiosity, uncertainty, anticipation and surprise in the primary science classroom. These practical techniques will be exemplified through their application to a range of activities – eg investigations, demonstrations, discussion activities, and general lesson planning.

W Light: think it, talk it, be it
JASON HARDING AND RUTH SHALLCROSS

This is a hands-on workshop where we will take you through a scheme of work which we collaboratively devised to teach Y6 children about light, sight, reflection and how periscopes work. During this interactive session you will experience some of the activities we used to help children develop deep and secure understanding of the concepts. Integral to developing the children’s understanding were a range of literacy strategies: role play, speaking and listening, developing vocabulary and high quality writing.

W Unconscious bias in the primary classroom
JOE SHIMWELL

Recent government statistics show a significant gender gap in the STEM workforce with women making up only 13% of STEM workers. Women are still, on average paid less than men in equivalent jobs. Is it possible that the teaching we do in the primary classroom could be fuelling this inequality? This workshop explores and challenges our own unconscious bias regarding gender and how it affects educational outcomes in our classrooms. Through evidence-informed discussion we will examine our classroom practice and discover the changes we need to make to create a fairer classroom and ultimately a fairer society.

W Keeping on top of topical science
PAUL TYLER
AND
Exploring science in flight
JUNE MURPHY

The first half of this workshop takes a closer look at using topical science to engage primary children and bring science to life. It will showcase resources and strategies for bringing the latest science and technology into your classroom to help develop children’s scientific behaviours, scientific literacy and curiosity about the world around them. Delegates will find out about the best ways of keeping up with the latest scientific advances, the benefits of participating in Citizen Science projects (to develop scientific behaviours) and how to use the big science issues to develop scientific literacy.

The second half of this workshop is concerned with exploring science in flight. It aims to show the wide horizon and breadth of a topic in the world around us, and how science can provide a range of opportunities to develop scientific-based inquiry skills and creativity to this topic at primary school. This workshop will provide practical activities to explore science in flight. It will also aim to encourage fair tests and investigations in teaching science. Exploring science in flight will also increase teachers’ understanding of the statutory requirements, and skills in science. Above all, it will bring fun and creativity into the teaching and learning of science.
This workshop uses a large number of simple science demonstrations. They are carefully designed to give children an opportunity to be active in their learning. Participants will be encouraged to participate in the demonstrations in the manner that children in the classroom would be. The workshop seeks to build on the natural curiosity of the child and to stimulate it further. Many of the demonstrations have surprising outcomes. Possible interpretations are teased out and the demonstrations are often repeated to validate the interpretation. Concepts are developed and misconceptions are discussed. It is a characteristic of the demonstrations that they involve inexpensive equipment (often household or commonly available items).

Creative explanations: creating, testing and sharing explanations in primary science
IAN MILNE

This workshop introduces and creatively explores a range of engaging contexts suitable for enhancing primary age learner’s innate sense of wonder, curiosity and explanation of the natural world. As each set of activities is explored the presenter will justify his intentions by making explicit links to the philosophical perspectives and frameworks presented in his earlier talk. Together the participants and the presenter will co-create, test and share explanations for the phenomena being explored. Activities cover a range of topics and include questions like: What were the gingerbread man and the fox thinking as they stood beside the river?

What on Earth? Earth science for KS2
JOHN SANDFORD

This workshop will provide a ‘whistle-stop’ tour of materials recently produced and made available in Northern Ireland. Many of the issues covered are not only very topical in the media but of great interest to children. There are four units which encompass 14 lessons as summarised: Planet Earth: Rock observation; Rock properties and Rock types; Dynamic Earth: Rock breakers; Rocks on the move and Environmental impacts; Violent Earth; Plate tectonics; Volcanoes; Earthquakes and Environmental impacts; Future Earth: Rocks in our lives; Fossil fuels; Renewables and Water. The ideas presented are easily transferrable and not specific to Northern Ireland.

Panel Discussion 14:30
STEM – Science for all: overcoming barriers
Chair:
- Michael Reiss, Professor of Science Education, IOE at UCL
Panellists:
- Helen Wilson, Principal Lecturer, Science Education, Oxford Brookes
- Ian Milne, Primary Science Education Consultant, Auckland
- Joe Shimwell, Primary Science Outreach Specialist, Think Physics
- Michele Grimshaw, PSTT College Fellow and Area Mentor

We also have the following daily sessions on offer:

Highlights Sessions
To enable some of the oversubscribed sessions to reach a wider audience, we will ask some of the presenters to give a brief summary to all delegates at the end of the day on Friday and on Saturday. The highlights sessions can accommodate all delegates and you do not need to sign up for them.

Panel Discussions
We will finish each day with a panel discussion. The theme of the day’s discussion can be seen in this brochure and will also be displayed throughout the conference venue. All delegates will be able to submit questions to the panel and these will be collected during the course of the day. The panel discussions can accommodate all delegates and you do not need to sign up for them.

Exhibition Talks
Some of our exhibitors and presenters will be sharing ideas and resources at their talks in the exhibition area. These can accommodate up to 30 people and will happen during the refreshment and exhibition time breaks. They are open to anyone but please note that places cannot be reserved.
SCIENCE MATTERS
www.sciencematters.io

Science Matters works to assist in the development of Primary Science. Science Matters has developed materials (pupil booklets, powerpoints, animations and equipment) all to enable the delivery of teachable and enjoyable science. Teachers are busy, but with these complete topic packages - the work is done and in many ways teachers and pupils are able to explore and enjoy Science together.

WHALEFEST
www.whale-fest.com

WhaleFest organises the world’s largest marine festival. Recently, they have launched their schools’ outreach programme, Incredible Oceans, which aims to support the existing National Curriculum while “accidentally” teaching pupils and teachers about the wonders of the marine environment. With an array of artefacts and an inflatable killer whale at their disposal, come and visit the stand to find out how the oceans can make even the hardest of science topics fun and enjoyable.

Contact: doormat@planetwhale.com

RDS PRIMARY SCIENCE FAIR
www.rds.ie/primarysciencefair

The RDS Primary Science Fair is expanding to Belfast for the first time in 2017. Now going into its eighth year, Belfast has been added to RDS Primary Science Fairs in Dublin and Limerick which take place in January 2017, with the Belfast Fair happening in June 2017. Developing numeracy, literacy and scientific skills in the primary school classroom in a fun and creative way is what the RDS Primary Science Fair is all about. As a non-competitive forum, the RDS Primary Science Fair showcases STEM investigations undertaken by primary school classes across Ireland. It brings together teachers, parents and students who showcase their class projects, share experiences and learn from each other. The investigations encourage the children’s innate curiosity to explore the science behind the everyday.

Contact: primarysciencefair@rds.ie

INSTITUTE OF PHYSICS
www.iop.org

Exciting Light Waves with the Institute of Physics Glasses

People wear glasses to help them see better – to receive and analyse the light waves that are entering their eye. Light waves are everywhere in daily life: in electronic devices (barcode scanners, DVD players, TV remote controls) the internet (fibre optic broadband), health (medical diagnostics and treatment), industry (laser cutting and machining), security (infrared cameras, remote sensing) and entertainment (holography, laser shows). Physicists use light waves to peer into stars, look into the cells of your body, help cure diseases and even solve crimes. At the Institute of Physics stand you can try out (and take away) special glasses that help us to see some of these exciting light waves.

Contact: Liz.Conlon@iop.org

CCEA
www.ccea.org.uk

CCEA is the Northern Ireland Council for the Curriculum, Examinations and Assessment. We place learners and those who have a concern for their educational and personal development at the forefront of our thinking. Our mission is: “To enable the full potential of all learners to be achieved and recognised”. Visit CCEA staff on our trade stand to view and discuss resources and support available from CCEA in the area of primary science.

Contact: info@ccea.org.uk

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Contact: info@ccea.org.uk
The future of food is one of the biggest challenges on our plate. Food and drink are fundamental to our lives, connecting everything from our health to the world around us. It’s time for us to take a fresh look at our relationship with food, and be inspired to create the recipe for a happier, healthier future.

The Crunch is an exciting year of free activities, experiences and discussions about our food, our health and our planet. Schools throughout the UK will receive a free kit of equipment and resources. Everyone’s invited to join in and help create the recipe for a happier, healthier future. Come and visit The Crunch Bike, take part in some activities and be part of the conversation.

Contact: l.stubberfield@wellcome.ac.uk

Armagh Planetarium is a leading centre for STEM education where visitors can enjoy amazing shows about the wonders of the Universe. The audience sits back in comfortable seats to watch as stars, planets and spacecraft are shown in full-colour on the surface of the planetarium’s dome-shaped screen taking the audience on a journey through space by one of the most advanced full-colour projection systems in the World. We have an enthusiastic team of expert presenters who can lead visitors through fun workshops and introduce planets, stars and galaxies with an engaging hands-on approach. They can show off satellites, demonstrate how astronauts live in space and pass around 4.5-billion-year-old meteorites. Visiting Armagh Planetarium is a thrilling and unforgettable experience. Call us on 028 37523689 to find out how we can bring outer space to your class.

Contact: info@armaghplanet.com

DATA HARVEST
www.data-harvest.co.uk

Suppliers of ICT Science data logging equipment. Whether it’s hardware or software; Data Harvest brings technology to the forefront, offering multi award-winning, high quality, innovative and affordable educational products.

EasySense Vu Data Logger
With an easy to use menu and just four buttons, this clever box of tricks makes data logging child’s play! (Age 5-14). Capturing data has never been easier, simply start ‘EasyLog’ recording and data from all 3 of the built-in sensors plus up to 2 plug-in sensors is recorded automatically. A complete solution including the Logger, Sensors, Software & Teaching materials in a robust carry case.

K’NEX Education Coding sets
The STEM K’NEX Control sets introduce computer control, programming and robotics.

Contact: sales@data-harvest.co.uk

TTS
www.tts-shopping.com

TTS has over 30 years’ experience of supplying high quality educational resources to schools across the UK and around the world. We spend our lives talking to teachers and advisors in order to develop exceptional classroom resources that meet our customer’s needs. Our self-developed, electronic science resources are well known for being innovative, robust, value for money and easy to use. Visit our stand to see our time saving, rechargeable stopwatches, torches and electricity hubs. Or come and marvel at the amazing detailed images produced by our Easi-Scope microscope and our hand held pocket microscopes.

TTS are proud to continue to support the Primary Science Teachers Trust and to provide the inspirational teacher of the year winners with a collection of our most popular science resources.

Contact: ctyler@tts-group.co.uk
Education Harbour Ltd launched diffraction glasses for children in 2008 and are delighted to report this line has enjoyed great popularity amongst primary school pupils and science communicators alike; including a feature at the Royal Institute Friday Discourse. 2012 heralded the launch of Science Superstar hologram glasses designed as a science prize with a very cool special effect. In 2015 we launched Eclipse Viewers and thousands of children across the UK were able to enjoy our partial eclipse last year with our glasses and then see them on the BBC News and Stargazing Live later that same day.

Newton’s Colour Wheel and Octagon Studio 4D Augmented Reality Flashcards will be available to try, and to buy.

Contact: alan.sheridan@educationharbour.co.uk

Empiribox
www.empiribox.org

Our economy needs more scientists. Empiribox’s inspiring science lessons help Primary School teachers to nurture tomorrow’s scientists through practical lessons that meet the NC requirement to develop pupils’ science skills.

A subscription includes:
- building teacher confidence through regular inspirational, hands-on training with CPD every term
- all the equipment for pupils to work in pairs every week of the year
- exciting and challenging Schemes of Work and Lessons Plans, and
- ongoing technical and teaching support, delivered by experienced teachers.

Enthusing young children about science by doing practical investigations every week isn’t just about science - the additional benefits in numeracy and literacy progression and general enthusiasm are also impressive.

Nick Hutchings, head teacher of St John’s Primary School in Colchester says that “These resources are so important and the children and staff get so much from Empiribox, that I can’t afford NOT to find the funds to pay for it”.

Contact: ivortucker@empiribox.org

Sentinus
www.sentinus.co.uk

Sentinus is the home of STEM outreach in Northern Ireland, engaging more than 60,000 young people, aged 5 – 19, annually, in programmes designed to excite and enthuse them about science, technology, engineering and maths, support their development and enhance their life skills.

Working with every post-primary school and about 400 primary schools each year, and linking with business and industry, the organisation supports classroom learning through engagement in activities which bring the STEM subjects to life and demonstrate their relevance to the world outside school. All of Sentinus’ work focuses on practical engagement of pupils and the development of STEM skills and knowledge, through project based learning and problem solving. Participation boosts confidence, self esteem and communication skills.

In addition, our programmes support the delivery the World Around Us area of learning and offer support and professional development opportunities for teachers.

Contact: bill.connor@sentinus.co.uk

St Patrick’s Primary School, Mullanaskea and Bombardier.
www.bombardier.com

St Patrick’s Primary School, Mullanaskea worked through the STEM CCEA thematic unit – “flight.” Children studied flight and nature taking part in the RSPB bird watch. They then studied the science of flight and took part in the Bombardier high flyers project.

Contact: tony.monaghan@aero.bombardier.com
ROYAL ASTRONOMICAL SOCIETY
www.ras.org.uk

The Royal Astronomical Society (RAS), founded in 1820, encourages and promotes the study of astronomy, solar-system science, geophysics and closely related branches of science. The RAS Organizes scientific meetings in Burlington House, its London HQ, and throughout the country, recognizes outstanding achievements in both science and education by the award of medals and prizes, maintains an extensive library, supports education through grants and outreach activities and represents UK astronomy nationally and internationally.

Pop along to our stand to find out more about how you can incorporate space into all areas of the curriculum. On Thursday we will have a focus on Rockets for all ages, on Friday we will have a focus on Space, Art and Literacy and on Saturday we will be focusing on investigative space activities.

Contact: Tel: +44 (0)20 7734 4582

MILLGATE HOUSE EDUCATION
www.millgatehouse.co.uk

Millgate House Education is a small publisher with a big reputation. We work with teachers in the UK and internationally, providing ideas, insight and inspiration through resources and courses for teachers and learners. Our books and CD-ROMs cover science, maths, English, music, history, geography and sport & fitness for learners age 3-16. We are dedicated to improving the quality of teaching, learning and assessment in classrooms, and our expertise is in creating resources and approaches that are quick, simple and effective.

Our latest publications include two new resources to support the teaching and learning of evolution in primary schools and a range of children’s books that explore science, history and STEM careers. We have also launched a new range of history resources that use augmented reality to bring history to life. Come and talk to us on our stand to find out about these resources and many more!

Contact: keepintouch@millgatehouse.co.uk

NORTHERN IRELAND FOREST SCHOOLS ASSOCIATION
www.nifsa.org.uk

The Northern Ireland Forest School Association (NIFSA) was set up in 2008 as a registered charity in Northern Ireland to inspire teachers and youth leaders to use the great outdoors as a natural classroom. NIFSA has developed a range of nationally accredited training programmes to provide the skills and instil the confidence to successful engage and enthuse children outside. NIFSA has trained and accredited over 40 nursery and primary school teachers to become Forest School Leaders and involved over 15,000 children in Forest School activities across Northern Ireland. Forest Schools fulfil all aspects of the Curriculum, especially such themes as the World Around Us. A mature forest is not required and in the majority of cases the school grounds or local Park will facilitate a Forest School programme. A Forest School Starter Kit Bag is also included as part of the package to ensure there are no barriers to learning.

Contact: brian.poots@gmail.com

GO FLY YOUR KITE
www.goflyyourkite.com

Go Fly Your Kite specialises in the construction and design of kites as a means of engagement, learning and therapy for people of all ages. From providing an introduction into the history of the kite, their design and construction to actually flying them, this exciting business venture brings fun and individual expression into an educational environment through STEM.

Now in its third year, Managing Director Glenn Heasley has delivered numerous Go Fly Your Kite workshops targeting a wide audience from schools, youth groups and charitable events to corporate boardrooms; the business has already established a large customer base and has plans for continued growth.

“The idea of the business came from my son flew kites. After a number of kites succumbed to the rather harsh conditions, my son said he would really like to design his own kite - and that’s how Go Fly Your Kite originated,” said Glenn.

Contact: goflyyourkite@hotmail.co.uk
Earth Science Ireland promotes interest in general Geological matters in Ireland and a subsidiary committee of interested teachers and geologists is involved in promoting an awareness of Earth Science issues in schools and colleges. This work is actively supported by the Geological Survey of Northern Ireland (GSNI).

A working group was set up to develop resources to support the teaching of the ‘World Around Us’ theme in the curriculum. The materials are available in all primary and secondary schools in Northern Ireland and there are four main Units including fourteen lessons based on Earth Science.

Contact: rbazley@btinternet.com

The Association for Science Education (ASE) is an active professional community that has been supporting all those involved in science education from pre-school to higher education for over 100 years. Our members include teachers and technicians who are passionate about their profession. We are a Registered Charity with a Royal Charter, owned by our members, independent of government and therefore a powerful voice for science education.

What’s included in primary membership?
As a primary member you will receive our magazines including Primary Science and Education in Science offering classroom tips, policy updates, suggested resources and shared practice. There are lots of other benefits including member-only resources, email updates, CPD, networking events and discounts on all our publications.

Come to our stand to talk to one of our field officers or join our professional network today at www.ase.org.uk/join

Contact: info@ase.org.uk

Developing Experts provide a primary science learning solution which reduces workloads and improves learning outcomes. We do this through providing:
- Hundreds of inspiring lessons with presentations, hands-on experiments, videos, handouts, lesson plans and risk assessments
- Quizzes which respond to how well each student is performing and revisit lessons until the content is mastered

Visit our stand for a demonstration and to discuss how we can help your school.
**PSTT ACADEMIC COLLABORATORS**

**PSTT supports a number of Academic Collaborators spanning the UK.** The groups are usually found in higher education institutions and benefit from a longer term funding relationship with the Trust. While each Academic Collaborator is distinct, focusing on different aspects of primary school science, all share the core purpose of supporting and developing Trust activities.

**UNIVERSITY OF MANCHESTER, SEERIH**

www.fascinate. manchester.ac.uk

The University of Manchester’s Science & Engineering Education Research & Innovation Hub offers a portfolio of continued professional development opportunities for in-service teachers aimed at enhancing the teaching and learning of Primary Science & Engineering. SEERIH’s CPD model seeks to demonstrate its core mission to provide ‘the right CPD for the right teacher at the right time about the right issue’.

It’s aims are to:

- Engage in-service teachers with innovative continued professional development opportunities. SEERIH believes that ALL teachers should have access to professional development that helps them to thrive, and their pupils to succeed.

- Enhancing the interaction between the University’s academics and students with whole school communities in Greater Manchester. SEERIH has a key role to make research accessible, understandable, meaningful, and relevant to teachers, senior leaders, and policy makers, and to connect researchers with contemporary effective practitioners in classrooms.

- Stimulating research, discussion and debate about excellence in primary science and engineering education across the education community sector. SEERIH fosters connections to reflect upon and respect shared goals to influence progress in Primary Science & Engineering Education. Collaborations seek to develop beyond that which can be achieved alone.

Contact: l.m.bianchi@shu.ac.uk

**QUEEN’S UNIVERSITY BELFAST**

www.qub.ac.uk

Project 500 (Schools) Boost science and literacy links! Project 500 (Schools) is an exciting science reading challenge which aims to encourage children to read science books for interest, enjoyment and even fun! The project is designed for pupils in Key Stage 2 (upper primary school) and those who have recently transferred to post-primary school, however it has also been used with younger children. Named after the Dewey Decimal Book Classification for ‘Science’, it is a school-based, school-planned programme involving a ‘Launch’ designed to catch the interest of the children and a ‘Reading Challenge’ in which participants read a number of science books and take part in activities designed to promote creative interaction with them. The programme can be used with year groups, class groups, science clubs, book clubs or even individual children. Project 500 (Schools) is based at the School of Education, Queen’s University Belfast and funded by the Primary Science Teaching Trust.
At Stranmillis we seek to support primary schools in providing engaging, relevant, and exciting opportunities for enquiry and exploration in Science teaching and learning. To achieve this our projects aim to:

- Develop the practice of in-service teachers.
- Raise the profile of primary science within initial teacher education curriculum.
- Inspire and nurture potential subject leaders in primary science.
- Research the effectiveness of coteaching as pedagogy for teacher education.

Our work develops the practice of both pre-service and in-service teachers, and employs coteaching as a method to enhance teacher agency and autonomy at and across each phase of teacher education. Our projects include:

- Playful Approaches to Science
- Playful Technology
- Playful Chemistry
- Digital Storytelling in Enquiry-based Science
- The Titanic Project
- Greenpower
- The Stranmillis Student Teachers’ College

Contact:
J.McCullagh@stran.ac.uk
A.Doherty@stran.ac.uk

For over 50 years SSERC has been supporting and enhancing Scottish school science and technology at all stages. The work of SSERC is funded by a variety of sources including all 32 Local Authorities in Scotland, the Scottish Government, the National STEM Learning Centre (NSLC), the Scottish Qualifications Authority (SQA) and the Primary Science Teaching Trust (PSTT). SSERC is the lead organisation in the delivery of the Scottish Government-funded project Support for Science Education in Scotland through CPD, which during the period April 2012-March 2015 delivered training to some 5600 teachers - representing over 99% of the secondary and 25% of the primary schools in Scotland. Supported by PSTT and in partnership with Local Authorities, SSERC is now developing models to sustain and extend the impact of participation in the SSERC Primary Science and Technology Cluster Programme by supporting cohorts of primary science mentors throughout Scotland.

Contact: hayley.sherrard@sserc.org.uk

Primary Science Quality Mark is a national award programme to develop and celebrate the quality of science teaching and learning in primary schools, established in 2010. There are over 80 PSQM hub leaders across the UK and beyond supporting subject leaders in over 500 schools per year to achieve the award. They carry out a rigorous yearlong process of school evaluation to improve science leadership, teaching and learning. The profile of science is raised in each primary school that achieves the award.

Since 2013 has been led from the University of Hertfordshire in strategic partnership with PSTT. PSQM identifies and develops great primary science leaders, many of whom have gone on to become Fellows of the Primary Science Teaching College. PSTT College fellows and cluster schools are encouraged to gain PSQM awards to support and evidence their activity to improve science. Several PSTT College fellows have become PSQM hub leaders. PSQM collaborates actively with other PSTT Academic Collaborators on research and development initiatives.

Contact: j.turner@herts.ac.uk
This group is evolving as a beacon of creative excellence for science education. It aims to promote imaginative ways to develop higher order thinking to inform teaching and learning in science. Current evidence indicates the pedagogic approaches developed improve pupil engagement and attainment. Outcomes of the Dramatic Science and Thinking Talking Doing project are also being disseminated across the UK and overseas too.

Contact: dmcgregor@brookes.ac.uk

Bath Spa Institute for Education works in partnership with schools, teachers and trainees across the South West of England. Bath Spa is the home of PSTT’s Teacher Assessment in Primary Science (TAPS) project led by Sarah Earle. TAPS aims to develop support for valid, reliable and manageable teacher assessment, which will have a positive impact on children’s learning. The TAPS team have created a pyramid-shaped school self-evaluation tool whereby ongoing classroom formative assessment is utilised to inform summative reporting. TAPS resources can be found on the PSTT website. As well as TAPS, the Academic Collaboration includes working with local schools, clusters, PSQM and PSTT Fellows to develop primary science. We also host the West of England Association for Science Education annual conference.

Contact: s.earle@bathspa.ac.uk
The PSTT is grateful for the enormous support provided by the following organisations who have provided bursaries to allow these teachers to attend this event.

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<tr>
<th>Bursary Recipient</th>
<th>School Name</th>
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<td>Jon Board</td>
<td>Mauldeth Road Primary School</td>
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<td>Sarah Boxall</td>
<td>Riverside Primary School, Hullbridge</td>
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<td>Michelle Holland-Washington</td>
<td>Haylands Primary School, Ryde, Isle of Wight</td>
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<td>Amanda Lambert</td>
<td>Holy Trinity CE Primary School, Richmond</td>
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<td>Sarah Robertshaw</td>
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<td>Lesley Archdeacon</td>
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<td>Naomi Culbert</td>
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<td>Padraig Egan</td>
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<td>Eleanor-Rose Smith</td>
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<td>Louisa-Jayne Scott</td>
<td>Harpur's Hill Primary School</td>
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<td>Keith Wysner</td>
<td>Knockloshrim Primary School</td>
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<td>Esther Fairburn</td>
<td>Lamberhurst St Mary's CEP School</td>
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<td>Pete Goodman</td>
<td>Goudhurst &amp; Kilindown CEP School</td>
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<td>Peter Allen</td>
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<td>Lorraine Delaney</td>
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<td>Jennifer Jones</td>
<td>St Patrick's RC Primary School, Liverpool</td>
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<td>Nina MacKay</td>
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<td>Tracey Woods</td>
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<td>Gemma Barton</td>
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<td>Rachel Scott</td>
<td>Albourne CE Primary School, Bournemouth</td>
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<td>Melanie Jones</td>
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<td>Nina Boden</td>
<td>March CE Primary School</td>
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<td>Maria Ford</td>
<td>West Rise Junior School</td>
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<td>Marlena McCrory</td>
<td>Killyman Primary School</td>
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<td>Amanda Sadler</td>
<td>Jessie Younghusband School</td>
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<td>Yvonne Swinton</td>
<td>Milton Mount Primary School, W Sussex</td>
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THE PRIMARY SCIENCE TEACHER COLLEGE

The PSTT is the proud sponsor of the Primary Science Teacher Awards (PSTA). The PSTAs celebrate amazing primary science teaching across the UK and recognise talented teachers at early years, key stage 1 and key stage 2 levels. The PSTT understands just how important teachers are, and those that are doing incredible work, raising standards, excelling in tough conditions and going above and beyond what is expected deserve to be celebrated. Teachers who win the award support colleagues in their own school and also colleagues in other schools either locally, regionally or nationally. They are also innovative, enthusiastic and raise the profile of science in their own schools and beyond.

The awards (sponsored by the Trust) have been running since 2003, with up to 25 teachers being awarded every year. One award, the Keith Bishop Award, is a special award recognising the achievements of a teacher working in challenging circumstances. Recipients receive two monetary prizes of £500 for their school and £1,000 for personal use and they also receive a set of science resources from TTS. The teachers’ achievements are celebrated at an awards ceremony at which family, friends and colleagues can gather together to watch their friends and loved ones be recognised for their outstanding achievements.

The importance of recognising talented teachers has not gone unnoticed and the awards are now endorsed by five Learned Societies; The Royal Society of Chemistry, The Royal Meteorological Society, The Royal Society of Biology, The Geological Society and The Institute of Physics. In addition Educational Charities (The Comino Foundation, Shine Trust, Ogden Trust and National Science Learning Network) also endorse PSTAs. In 2010, as part of the Trust’s new strategy, all winners of the award were drawn together to develop a virtual network, known as ‘The Primary Science Teacher College.’

The Primary Science Teacher College inducts
- All winners of the award as Fellows.
- Invited teachers as Associates

There are now over 150 Fellows and Associates of the College. Fellows have access to funding in excess of £500,000 a year to develop new projects, undertake professional development and to disseminate best practice from their own work and that of the Trust’s funded work. The College has its own annual conference which aims to facilitate collaboration of teachers across the UK, as well as encouraging Fellows and Associates to deliver CPD.

“Since winning the Primary Science Teacher Award in 2010 life has changed enormously. I thought I had a rich and full career before, but it has been a wonderful journey since.”

To find out more about the College, please contact us on info@pstt.org.uk
The local environment is currently an underused resource. Science Trails is not just about taking science lessons outside, but using the outdoor environment to discover and understand science concepts in primary school. The Science Trails in this book are designed to enthuse, inspire and support any teacher to deliver science in thought-provoking ways. The Trails have been developed and written by practicing teachers, who have created an invaluable CPD resource with a huge range of materials and ideas to promote outdoor learning throughout your primary school.

Contains 29 individual Science Trails covering Biology, Chemistry and Physics. Also includes a Curriculum Grid, Cross Curricular Links and a full Scientific Glossary.

* Free postage does not apply when ordering using the delegate offers above. Max. 5 items per delegate.
The Primary Science Teaching Trust (formerly known as the AstraZeneca Science Teaching Trust) was fully endowed with a grant from AstraZeneca PLC in 1997. £20 million was provided to ‘improve the education of children and young people in science.’ The Trust focused on providing financial assistance to help improve the teaching of science in the UK, with particular emphasis initially at primary school level and the continuing professional development of teachers.

With this focus in mind, the Trust set up annual grant rounds, which schools, universities and other institutions could apply for. In the first four years (academic years 1997/98 to 2000/01), the Trust invested £1.8 million in primary science alone, then a further £1.5 million in the years 2001/02 to 2006/07 on primary and transition level science. In 2007, the Trust began to support key stage 3 level projects, investing on average £500,000 per annum into project funding.

In 2012, the Trust changed direction, moving into a new phase, with a new strategy, building on the excellent work of the Trust from the previous 15 years. After funding in excess of 150 projects since its initiation, the Trust no longer has an annual grant round and has re-focused its funding to primary science alone. The AstraZeneca Science Teaching Trust underwent a change in name and brand to reflect our shift in focus, the new name being the Primary Science Teaching Trust (PSTT).

The structure of PSTT support has three very clear strands:

**The Primary Science Teacher College** – A virtual network of over 150 award winning primary science teachers, which in the short time since its inception, has become a shining beacon of excellence in primary science and a wealth of expertise.

**The Academic Collaborators** – Recognising the importance of research to underpin classroom activities, the Trust is supporting six different groups of Academic Collaborators across the UK, two are also classed as strategic partners (see later).

**The Clusters** – PSTT is supporting pre-existing clusters, as well as encouraging schools to grow their own clusters to develop primary science across, and in partnership with other schools.

Each of these three strands has its own funding allocation. However, all three parties are encouraged to work together to share expertise and develop relationships between teachers in schools, across schools, with Higher Education Institutions, as well as other external partners.

The Trust strives to facilitate the development and dissemination of excellence in primary science, be that via ideas, resources or continuing professional development, with the main aim of raising the profile of primary science across the UK.

The flower is used to illustrate the strands and ultimate aim of the Trust. At the centre of everything we do is the College; pictured as the centre of our flower. Around the centre are the Clusters of schools.

The petals on the flower represent the Collaborators, both Academic and other. The Collaborators may change, but will always support the Clusters and College in a variety of ways. The second stage of the model shows the College and Clusters growing in number and in the third stage, all schools are part of a Cluster being supported by and working with the College and Collaborators. The ultimate aim (stage four) is that every school has an award winning primary science teacher, leading and promoting excellent primary science teaching and learning.