Children are naturally curious and interested in the world around them and their exploration of that world starts from day one of their lives. As a child’s linguistic skills develop, the question ‘why?’ will feature heavily and perhaps less vocal, but equally important, the question ‘how?’ These words why and how are part of the Primary Science Teaching Trust’s logo and are key guides to the type of support we provide for the teaching of science at primary school level. We want primary school aged children to ask these questions and be supported in their investigations to find answers; indeed we want these children to continue to ask these questions and seek their answers for the rest of their lives.

Whether a child becomes a scientist, engineer, medic or not, they will need to process and understand information that will affect their health and well-being and some level of scientific understanding will be important. For the UK, it is vital for a healthy economy that we have a continuous pipeline of skilled scientists entering the workforce.

Teachers play a vital role in supporting and encouraging the latent curiosity of primary school aged children but it is not an easy task. We know that there are many great teachers of science at primary school level and we already work with many of them and look forward to working with many more in the future. Through the Trust’s annual Primary Science Teacher Awards, we have found over 150 outstanding teachers (Fellows) who are beginning to shape and influence the teaching of primary science across the UK and so we are very positive about the outlook.

Consequently, the message is clear; we need good science teaching at primary school level. The Trust is seeking to support this by enacting a strategy that puts the teacher at the centre of what we do.

In this overview we describe the aims, activities and achievements of the Primary Science Teaching Trust and the central role played by outstanding teachers of science in primary schools.
Our aim is to improve and support excellent teaching of primary science in every classroom in every school across the UK. We seek to do this through three clear strands of support:

**The Collaborators**
We work with several academic institutions and partners across the UK to support research and development in primary science, and to facilitate collaboration between researchers and teachers.

**The Primary Science Teacher College**
Our network of over 150 award-winning primary science teacher Fellows is a shining beacon of excellence in primary science with a broad collective wealth of expertise.

**The Cluster Programme**
Fellows of the College are supported to lead school science clusters, and we encourage schools to grow their own clusters to develop primary science within their local area.

Each of these three strands has its own funding allocation, but all three strands work together to share expertise and develop relationships between teachers in schools, across schools, with research institutions and Initial Teacher Education providers, and with other external partners.

We use a flower as a model to illustrate the strands and ultimate aim of the Trust.

- **Stage One**: At the centre of everything we do is the College; pictured as the centre of our flower.
- **Stage Two**: Around the centre are the Clusters of schools.
- **Stage Three**: The petals on the flower represent the Collaborators. The Collaborators may change over time, but will always support the Clusters and College in a variety of ways.
- **Stage Four**: All schools are now part of a Cluster. The ultimate aim is that every school has an award-winning primary science teacher, leading and promoting excellent primary science teaching and learning.

Through our website and International Conferences, we also provide free resources, continuous professional development (CPD) and advice to teachers looking to develop their practice in primary science. Visit our website at [www.pstt.org.uk](http://www.pstt.org.uk).
The Primary Science Teaching Trust is the proud sponsor of the Primary Science Teacher Awards (PSTA).

These awards celebrate amazing primary science teaching across the UK, recognising talented teachers in early years, Key Stage 1 and Key Stage 2.

We understand the importance of the role of the teacher. Those who do incredible work by raising standards, excelling in challenging conditions and going above and beyond what is normally expected, deserve to be celebrated.

Teachers who win this award are not only judged to be outstanding practitioners in their own classrooms, they also support and develop colleagues in their own schools and others either locally, regionally or nationally. Award-winning teachers are also innovative, creative, enthusiastic and will have significantly raised the profile of science in their own schools and beyond.

The importance of recognising talented teachers has not gone unnoticed and the Primary Science Teacher Awards have been endorsed by many of the Learned Societies, other educational charities and the Association for Science Education.

We welcome nominations of outstanding primary science teachers for one of our Primary Science Teacher Awards. Nominations must be submitted by headteachers via our website.

New in 2017 is the status of ‘Honorary Fellow’. This is open to overseas teachers of primary school science who have won an equivalent award in their own country. Suitable candidates may contact the Trust for more details.

To nominate a teacher visit www.pstt.org.uk

Do you know an outstanding primary science teacher?
The Primary Science Teaching Trust recognises the importance of not only celebrating, but also continuing to support outstanding teachers in order to achieve our vision to impact positively on primary science education throughout the UK. The College is at the heart of this vision.

All Primary Science Teacher Award winners automatically become a Fellow of the College and have access to support from the Trust for their own professional development and to enable their expertise to be shared beyond their own schools.

We currently invest over £500,000 each year into the College. Fellows can use this funding for a number of initiatives that would normally require funding beyond what is available from their school budget. For example, they can develop the science provision in their own school or a group of schools, create and trial resources, or design and run projects across a group of schools. They can also access professional development for themselves and once a year we bring the College together for a two-day conference just for our Fellows.

The Primary Science Teaching Trust’s support for College Fellows has enabled the development of ideas and resources that are available to teachers throughout the world via our website.

Many Fellows share their expertise by presenting CPD courses through their school networks and other local and national conferences and events. Fellows have worked with our Collaborators and other organisations to develop and promote a wide range of primary science resources.

“Being a Fellow of the College is an amazing privilege...I have the opportunity to directly impact and help shape the face of science education.”

To find out more about the Primary Science Teacher College, or the Primary Science Teacher Awards please contact Programme Director, Sue Martin: sue.martin@pstt.org.uk.
CLUSTER PROGRAMME

Supporting schools to form collaborative communities of practice

The Primary Science Teaching Trust encourages schools to join up into clusters so that they can support one another in their development of science teaching and have more resilience to change of circumstance in any one school.

A cluster is simply a group of schools working together and meeting regularly, with the common desire to develop great science and spread good practice. Science Leaders may find that their schools are already working as part of a cluster for other subjects, such as literacy and numeracy.

Our aim is to provide on-going support to school clusters to ensure that science teaching keeps improving, and the confidence of teachers in each school, in each cluster increases year on year.

Benefits of forming a cluster:
- Creation of a collaborative locality.
- Easier to provide cost-effective CPD.
- Support (in-house) and further afield.
- Potential to share physical resources.
- Create communities of practice.
- Facilitate regular meeting of science leaders.
- Development and sharing of ideas.
- Create a sustainable network which Head-teachers will continue to (and want to) support once funding has gone.

The Primary Science Teaching Trust has funded a number of historical clusters over the last 20 years, learning much from experience. Key lessons learned in the development of successful clusters include:
- The cluster coordinator is key! The most successful clusters have a strong coordinator who is able to drive the group forward, as well as giving ownership to others.
- Groups of 3-12 schools are most successful.
- Funding for teacher time (to meet and collaborate) is always needed.
- Basic science resources are a limiting factor to effective science teaching.
- 1 year of working as a cluster is not long enough to effect change.
- Support of the Senior Leadership Team is vital.
- Teachers having ownership of the group leads to more chance of creating a sustainable network.

Whilst working as a cluster, we encourage schools to undertake the Primary Science Quality Mark (PSQM): A sustainable award programme that raises the profile of primary science across the UK. PSQM drives and supports improvement, celebrates success, and provides accessible and useful data about effective practice to the wider science education community.

A cluster may wish to focus on:
- Increasing the amount and quality of investigative science.
- Improving teachers’ skills and confidence.
- Increasing quantity and correct use of resources.
- Staff training (CPD).
- More emphasis on the use of ICT.
- Disseminating its own work further afield.
- Drawing on local expertise.
- Children with special educational needs and disabilities (SEND).
- Improving teachers’ background science knowledge.
- Strengthening the role of the science coordinator.
- Effect continuity and progression in science teaching and learning across KS2 and KS3.
- Assessment strategies.
- Identifying barriers to effective primary science teaching and working to overcome them.
- Supporting NQTs in science.
- Development of ‘family-learning’ activities.
- Developing effective ways to monitor and evaluate science teaching.

“Our school and cluster have been able to tap into many new resources, and network with numerous organisations that we may not previously have been aware of, or able to connect with!”

“Our cluster of primary schools has really benefitted from PSTT support, from kit boxes to CPD training. Most of all we have been able to support each other and have seen our confidence grow.”
What does our Cluster Programme look like?

The establishment of the College has created a network of 150 outstanding primary science teachers, who are being supported to develop science in their own school and beyond. The next step in the strategy is the creation of clusters, to widen the impact of the College Fellows’ work. By supporting (not just financially) the development of clusters, College Fellows are able to support primary science further afield than before.

Our Cluster Programme is a 5-year programme, providing financial support to primary schools across the UK. The Programme is designed for groups of 3-10 schools, and the group must be coordinated by a College Fellow.

Each year, the cluster will receive funding (see Figure 1 below), which is intended to be used for supply cover for regular meetings, time out of school for CPD, and working on cluster initiatives. The cluster will also have access to a £5,000 resource pot. In addition to funding, we will support those schools in the Programme with resources and CPD for teachers; but more importantly, each cluster will undertake a needs analysis so that the Programme’s support addresses specific needs.

Clusters will be coordinated by a College Fellow and may also include special schools, secondary schools, and other collaborators and partners. The focus here is on the primary school, and including a secondary school or additional partner in the cluster is not essential.

At this time, the Cluster Programme is only open for applications from PSTT College Fellows. However, all teachers can access support (non-financial) in setting up and coordinating clusters by contacting: clusters@pstt.org.uk.

**Figure 1: Cluster Programme funding structure.**
The Primary Science Teaching Trust collaborates with a number of academic institutions and partners across the UK. Through research and development in a particular area relevant to current issues in primary science, each collaborator contributes to the overall vision of the Trust. Longer term funding arrangements are put in place to support this. Our collaborators work closely with the College and its Fellows.

We have supported the development of a manageable and reliable assessment tool for teachers. The Teacher Assessment in Primary Science (TAPS) project, developed by Bath Spa University, is an online interactive resource with an ever-growing portfolio of exemplars of valid formative assessment methodologies.

The development, implementation and review of outstanding models of continuing professional development are at the heart of the work we fund at the University of Manchester. We have also made a long-term commitment to professional development by supporting the Primary Science Quality Mark (PSQM) through a partnership with the University of Hertfordshire. This is a highly reflective programme that enables primary schools across the UK to evaluate, strengthen and celebrate their science provision. Schools are supported through the process by being part of a PSQM hub; many of the hub leaders are College Fellows.

We seek to fund research and development in key areas of primary science. Creativity in science and higher order thinking have both been central to Oxford Brookes University’s work, and their Thinking, Talking, Doing project has been so successful it is now being rolled out nationally with a grant from the Education Endowment Fund. Early years and playful learning in science have been the focus of Queen’s University Belfast and Stranmillis University College’s research.

We work with the Scottish Schools Education Research Centre (SSERC) to develop and support primary science networks. Capacity, confidence and collegiality is built through teacher participation in a programme of highly effective professional development.

In collaboration with the SHINE Trust and the Ogden Trust, the Primary Science Teaching Trust supports the SHINE Labs project. This initiative offers a dedicated support package to enable schools in areas of deprivation to create a science lab in their school. There are now ten established SHINE labs, all currently in London.
The Journal of Emergent Science is a professional, open-access, online research journal that focuses on science for young children from birth to eleven years of age. It is published twice yearly by the Association for Science Education in partnership with the Primary Science Teaching Trust.

Historically, The Journal of Emergent Science focused on the scientific development of children from birth through the Early Years Foundation Stage up to the end of their Reception year. A key element of the partnership with the Primary Science Teaching Trust is that the journal is now extending its remit to include the scientific development of children through their primary education up to age eleven. The partnership with us has also established the journal as open-access; it is now a resource available to anyone through the both the ASE and our website.

Child-centred teaching and learning are at the heart of the Journal’s ethos. It is rooted in the idea that the construction of meaning about the world is a social activity, and that children’s curiosity forms the basis for meaningful scientific enquiry.

Articles published in the Journal are grounded in rigorous research but are accessible and relevant to practising teachers. These support analysis and evaluation of professional practice and consider the implications of research into science practice. The focus is on providing exemplars of good learning and development firmly based in good practice, and therefore The Journal of Emergent Science welcomes submission of articles from teacher researchers as well as from science education researchers.

Download issues of The Journal of Emergent Science for free at: www.ase.org.uk/journals/journal-of-emergent-science

JOIN IN

Our website (www.pstt.org.uk) is home to a large number of free resources and CPD units. These are often updated and new materials added, so it is worth checking regularly.

At the Primary Science Teaching Trust, we aim to respond to all requests for advice about teaching and learning in primary science. If you would like to contact us, please email info@pstt.org.uk.
The Primary Science Teaching Trust has a range of printed materials available to purchase, all of which have been developed by our award-winning teachers through Trust funding. Our website also provides access to free resources and CPD units at www.pstt.org.uk.

For resource related enquiries or to find out about bulk order discounts, please call us on 0117 325 0499.

**LET’S GO! SCIENCE TRAILS**

This resource uses 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.

Including:
- 29 Full Colour Trails
- Curriculum Grid
- Cross Curricular Links
- Full Scientific Glossary
- Biology, Chemistry & Physics

£39.50

**“I can explain!”**

A groundbreaking new approach to introducing and developing scientific understanding.

This resource 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

£20.00

**TITANIC SCIENCE**

Titanic Science 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 also provides material for other curriculum areas, such as creative writing, history and numeracy.

£20.00
SAVE THE DATE!
6-8 June, 2019
Edinburgh International Conference Centre (EICC)

Primary Science Teaching Trust
International Conference

Are you:

- A teacher with a passion for primary science?
- A school leader who wants to improve the quality of teaching and learning of science in your school?
- An academic who wants to engage with primary science research and connect with practising teachers?
- An organisation with a commitment to primary science?

Then this conference is for you!

From 9th to 11th of June 2016, the Trust hosted its inaugural International Primary Science Conference in Belfast.

Over 60 workshops, seminars and presentations were led by world-class teachers, academics, educationalists and outstanding keynote speakers including; Professor Alice Roberts, Dr. Stuart Brown, Professor Danielle George and Dr. Maggie Aderin-Pocock.

We are determined that there should be no barriers to every child receiving an outstanding education in primary science, and we are committed to our vision that teachers are the key to making this happen.

Through crossing boundaries between the classroom and academia, between policy and practice, and between one nation and another, our conference in 2019 will continue to break down the barriers and empower educators to develop excellence in primary science.

Our conferences exemplify the best in primary science from around the world and include:

- Inspirational speakers.
- Practical ideas to take back to the classroom.
- World-class CPD opportunities.
- Networking and practice sharing.

Register your interest today at primaryscienceconference.org

Delegate, Belfast, 2016

"I've never been to a conference where the sessions were so relevant and of such high quality."

Delegate, Belfast, 2016
Why & How? is the brand name of the Primary Science Teaching Trust
Tel 0117 325 0499 • Email info@pstt.org.uk • Web www.pstt.org.uk
Primary Science Teaching Trust • 12 Whiteladies Road • Clifton • Bristol • BS8 1PD