

Focus on... Developing primary science in school

In this issue we focus on continuing professional development (CPD) issues – from development ideas for the classroom and school, through touching on more abstract aspects such as pedagogic content knowledge (PCK), all the way to suggestions for practical science lessons.

In recent issues we have reinvigorated our traditional 'In conversation with...' series with some wider representation of contemporary science and science teaching. With this and the new-look format changes in mind, this issue seemed an ideal opportunity to introduce the current Editorial Board.

We agreed that we would all pen something so that you get to know a bit more about us and what interests each of us specifically when it comes to primary science. Each of us has scripted something semi-informal to give a flavour of our individual

areas of expertise and commitment – we hope you enjoy reading this.

As you will also see later in this issue, together with helping 'put a name to a face', it is also hoped that this might help potential writers for *Primary Science* to become more familiar with our Editorial Board members – and perhaps even to identify those members with whom they might share a common science teaching interest. Look out for the open invitation to write for *Primary Science* at the end of this issue, with details of how to do this included!

We also hope to run a meet and greet with *Primary Science* editors at the ASE Annual Conference in January – look out for news of this on our social media nearer the time.

I hope you enjoy reading this issue.

Robert Collins

Meet your *Primary Science* Editorial Board

Robert Collins, Editor

Senior Teaching Fellow in undergraduate and postgraduate initial teacher education at the Institute of Education, University of Strathclyde, Glasgow, Scotland



Prior to joining Strathclyde I was a Senior Regional Development Officer for STEM and Digital Education where I oversaw the authoring and publication of local education authority curricular materials in primary sciences and was also seconded to work on government national

research programmes in Scotland. These days I find it surprising to realise that I now have over 30 years' experience in teaching and research spanning primary, secondary, higher education and commercial sectors at home and abroad. At heart, however, I have always remained an enthusiastic teacher of primary science and am very proud of my

Chartered Science Teacher status that I achieved through ASE.

Ultimately, I think that the biggest challenges facing primary science teaching these days are those that fundamentally challenge society itself, namely those challenges linked to education for sustainable development. To my mind, there can be no greater challenge than to prepare future generations as guardians of the planet and advocates for one another. That is why I am so committed to the support of learning for sustainability and equality, diversity and inclusivity. I feel that science is the context that should lead the way in helping everyone learn about this.

I still teach science in primary schools regularly. It is something I love doing and so I am one of those lucky folk that get paid to do what they love in life. I also like to help others share their passion for teaching primary science. If you have that passion, then I – and the entire Editorial Board – would love to hear from you. All at ASE *Primary Science* will help you achieve that goal, so why not get in touch with an idea, a draft or an article? Consider it an open offer of genuine support!

Paul Chambers

Senior Teaching Fellow (Physics (ITE)), University of Strathclyde, Glasgow, Scotland



Before becoming a module leader and course tutor in undergraduate and postgraduate initial teacher education degree courses at the University of Strathclyde, I spent over a decade as a physics teacher in secondary schools in Glasgow and as a regional staff trainer in sciences.

Maintaining the physics curricular input to the Professional Graduate Diploma in Education (PGDE) is a main focus for me, but more recently I have focused on primary and early years' science, in particular, the use of literacy approaches and play-based pedagogies. This has developed into delivering CPD courses with colleagues in the School

of Education who specialise in these areas but lack scientific curricular expertise. I have also delivered teacher CPD courses in Egypt, Malawi, China and Saudi Arabia, as well as having a long history of CPD in all aspects of primary science and physics in Scotland.

Recently, my development of the particle accelerator apparatus has focused my attention on the pedagogical content knowledge (PCK) approaches in this area. There are two areas of research related to this apparatus currently being investigated. These are about how pupils use it and how the models contribute to understanding the function of electric and magnetic fields, and also on teachers' opinions of the use and viability of the models in a school context.

In general, my interests lie around the development of curricular materials and teaching for all levels of physical science. If you are thinking about writing for *Primary Science*, especially physics, then I would love to hear from and support you in so doing.

Elaine Stockdale

Science and Technology Lead, Pear Tree Federation, and class teacher, Tongwynlais Primary School, Cardiff



After leaving university I worked as a clinical scientist before re-training as a primary school teacher. In 2017 I won a PSTT Primary Science Teacher of the Year award, which both delighted and inspired me to develop my science consultancy work. I have

worked with numerous organisations in Wales and beyond to create science resources for the primary phase. I also work closely with PSTT and have most recently been involved in their Play, Observe & Ask project.

My main area of interest is in early-years science. The curious minds of 3-year-olds excite me and I have spent most of my teaching career in nursery. I

also have a professional interest in developing talk in science and regularly visit the *Explorify* website (<https://explorify.uk>) to find resources to support this. I really enjoy creating bespoke science activities for the children I teach, often based on story stimuli we have shared; you can see some of my work on the PSTT Play, Observe & Ask project webpages.

The legacy of the pandemic plus the introduction of the new Curriculum for Wales (rolled out in the primary sector in September 2022) mean that teaching in Wales is both exciting and challenging in equal measure. Luckily, the teaching profession is blessed with an incredibly skilful and dedicated workforce – but we need to look after it and its members!

I joined the ASE as a student many years ago; *Primary Science* was my bible back then and I cannot tell you how many great science ideas I lifted from its pages! I will always be grateful to those who took the time to write an article and share their wisdom with me. Everyone has something of value to share!

Michael Good

Year 6 teacher and science lead at Stoneferry Primary School, Hull, and Reviews Editor for Primary Science



I have been science lead at Stoneferry for six years and have attempted to develop a positive attitude towards science learning and teaching within my school. It was one of the subjects that was 'deep dived' in an Ofsted inspection in October 2022 and it came out positively. We gained

the PSQM GILT Mark for Science in 2021 and are looking towards gaining Outreach in the near future. I have run a successful Science and STEM Club for a number of years.

I have a particular interest in biology, finding animals and their habitats a fascinating area. I also have an interest in STEM education through extracurricular clubs and how these develop children's interest in the subject.

Current issues in primary schools are science still being viewed as a core subject and the allocation of time in the school timetable. Also, the depth of the curriculum, particularly in biology, needs greater focus so children are ready for their secondary learning. In addition, I think external bodies offering STEM clubs and their affordability needs addressing.

Primary Science is an excellent magazine, celebrating all that is brilliant about primary science. It tackles current issues, addresses specific areas of the curriculum, makes its readership aware of what is important for children to learn in science and helps them become more knowledgeable about science in the wider world.

Melissa Loughran

STEM Lead at St Edward's CE Academy, Leek, Staffordshire



I have 17 years' primary and secondary school teaching experience including senior leadership, following 10 years in business tech management. Being immersed in science all day is absolutely the best job in the world!

I have supported primary school educators across Greater Manchester, Stoke-on-Trent, and Staffordshire to develop curricula and high-quality science teaching and learning. I

am passionate about the importance of building links between STEM Ambassadors and local schools and am always aiming to inspire young people and their families through enriching science capital opportunities.

As a *Primary Science* Editorial Board member, I have written several articles for publication and presented at education conferences. My advice to any aspiring PS writers would be not to panic: start by getting all your thoughts and ideas written down, no matter how disorganised they might be. The next step is to re-order, and then elaborate on the key points so that your article is an accessible and useful read for others. And, remember, if you need any support please get in contact – someone will always be happy to help you.

John McCullagh

Senior Lecturer, Stranmillis University College Belfast, Northern Ireland



I am a senior lecturer in science education at Stranmillis University College Belfast and teach on the primary and post-primary education programmes. I also contribute to the college's postgraduate and professional

development courses for teachers. My teaching and curriculum development work is guided by the view that learning in both college and classroom should be a social endeavour and best supported by pedagogies focused on hands-on experiences and collaboration.

I feel that science and technology should have a much higher profile in primary schools in Northern Ireland and across all regions of the UK and that subject leaders and teachers must be supported in this. If you have ideas for engaging lessons, useful resources or ways to make science fun *Primary Science* would love to hear from you.

Verity Jones

Associate Professor of Education, University of the West of England, Bristol



I love all things science and after university became the Education Officer for the Centre for Alternative Technology in Wales, where my interest in environmental education and sustainability grew. I have had the privilege of working as a teacher

and deputy head in schools in England and Wales. Currently I am part of the initial teacher education programme at UWE, Bristol, where I have the

opportunity of working with pre-service teachers and our partnership schools across the south west – sharing my interest in all things science.

I am particularly interested in social and environmental justice and how science education intersects with this. My research has allowed me the opportunity to work with Friends of the Earth, Fashion Revolution, Global Goals Centre and the BBC in developing age-appropriate pedagogies relating to climate and sustainable education in the UK and India.

As a member of the Editorial Board of *Primary Science* I really enjoy working with new writers and supporting them in sharing their experiences, expertise and insights. I would be delighted to hear from anyone who has an idea they wish to develop.

Ben Rogers

Director of Curriculum and Pedagogy of the Paradigm Trust



I began my teaching career in Berlin in 1992, teaching English as a foreign language. I loved teaching and two years later trained as a physics teacher at Oxford. My first qualified-teacher job was with VSO in Ghana in a senior secondary school where I worked for a

further two years. On returning to the UK, I worked in three London secondary schools before moving with my family to Norfolk. From being in Special Measures when I started, the school I worked at, first as a science teacher and eventually as an assistant principal, was subsequently graded Outstanding.

In 2013 I made the change from secondary science teacher to primary school teacher. I worked in two challenging schools as vice principal. In 2017 I published my book *The big ideas of physics and how to teach them*. Since 2017, I have worked for the Paradigm Trust as Director of Curriculum and Pedagogy.

Paul Tyler

Primary teacher and STEM Innovation Hub Leader at Kirkhill Primary School in East Renfrewshire, Scotland



I began my primary teaching career 16 years ago following careers as a research biochemist and a rugby development officer with Scottish Rugby. I initially went into primary teaching because of the variety and opportunities to teach numeracy and

literacy, two of my other passions, but was soon channelled into a STEM leadership role.

I have led STEM across two large schools for 13 years during which time we gained our PSQM Outreach award, won Education Scotland STEM School of the

Year, twice made the shortlist for TES STEM School of the Year and won the YESC Science Club of the Year twice.

I am a longstanding ASE member and sit on the *Primary Science* Editorial Board and the ASE Scotland Board. I am a Primary Science Teaching Trust fellow and a trustee of SmartSTEMs, a Glasgow based STEM outreach charity.

My particular interests are developing children's science capital, being a certified trainer, the importance of extracurricular science and topical science. I write a free monthly Topical Science Update for schools, write regular articles about a wide variety of primary science topics and speak at conferences across the UK.

I am always ready to support anyone who is interested in writing for *Primary Science* and sharing their expertise.