

The Primary Science Podcast: lessons from the voices who inspire



Podcast host, **Tim Holford**, reflects on his journey over two seasons of capturing the voices of leading researchers, teachers and science leaders



If you had told me 15 years ago that I would trade a lab coat (used for electrochemical immunosensor research) for a lanyard, a year 4 classroom and a podcast mic, I might have carried on pipetting without a second thought. But here I am: a proud primary teacher and science subject lead at a top international school in Southeast Asia, endlessly fascinated with one question: *How do we teach science brilliantly?*

In the summer of 2024, during a moment of professional curiosity, I launched *The Primary Science Podcast*. I was neck-deep in a primary science textbook but felt something was missing. I needed real voices, real stories and honest reflections from researchers and teachers in classrooms beyond my own. At the same time, I knew that science is often seen as a nuanced subject, one that leaves many teachers feeling unsure. I wanted to help change that. So, I went straight to the source and started reaching out. Every expert I reached out to – professors, researchers, science leaders – responded not just with willingness but with genuine excitement. It felt like discovering a secret society of primary science lovers, all eager to share what they know.

Over the past year, *The Primary Science Podcast* has welcomed a diverse range of voices from classroom teachers to science leads and YouTubers to university researchers. Each guest brought something special to

the conversation, sharing insights that have shaped the way we think about teaching science in primary schools. Box 1 shows who has joined me so far.

Two seasons and twelve episodes later, here is what I have learned: brilliant primary science does not just happen. It is intentional and built on trust, collaboration and creativity. While each episode offers something distinct, a number of golden threads began to emerge across the series. These recurring themes have transformed the way I plan, teach and lead science at my own school and they may offer a useful lens for anyone working in primary science today. I have gathered these threads together below, not as a checklist or a formula but as seven shared lessons that resonated across the voices of our guests and that just might help us all turn good science lessons into great ones.

Make it personal

Alex Farrer challenged us to rethink where our lessons begin:

*Start with the child, not with your bright idea.
What are the children going to bring to the lesson? What experiences have they got already?
What interests have they got already?*

Box 1 Contributions of guests

Season 1: Enquiry-based science education

- **Dr Anne Forbes**, Lecturer in Primary Science Education: *An enquiry-based approach to science in primary schools*
- **Alex Nixon**, Head of Secondary Science: *Strengthening primary science practices*
- **Paul Tyler**, Primary Science Consultant: *A practical guide to science enquiry*
- **Tracy Tyrrell**, PSQM Hub Leader: *Helping students build their own enquiry toolkit*
- **Prof. Sarah Earle**, Professor of Primary Science Education: *Assessing the enquiry skills in primary science*

Season 2: The science leader's toolkit

- **Prof. Jane Turner**, Associate Professor at the University of Hertfordshire: *Excellent primary science teaching through effective leadership*
- **Alex Farrer**, Primary Science Quality Mark Regional Lead: *Making science inclusive with the Science Capital Teaching Approach*
- **Prof. Lynne Bianchi**, Professor of Science Education: *Asking great science questions and communicating evidence*
- **Bryony Turford**, Primary Science Quality Mark Hub Leader: *What does the perfect primary science lesson look like?*
- **Dr Alex Sinclair**, Senior Lecturer in Primary Science Education: *Transforming primary science*
- **Matt Baker**, Head of Science at Bangkok Patana School: *Lessons, leadership and legacy from the ASE conference 2025*
- **Dr Jo Montgomery**, KS2 science specialist: *What's the point of primary science?*

If there is one message that came through loud and clear, it is this: science needs to mean something to the children in front of us. That is the heart of science capital: the idea that all children deserve to see science as something for them. It starts with relevance. Is your hook genuinely connected to their lives? Are the examples inclusive and familiar? Are we showing them a version of science where they belong? Alex Nixon echoed this too, reminding us that science is not something remote or reserved for the lab. It is already part of how we navigate the world: asking questions, testing ideas, adjusting when things don't work. When

children realise they are already using scientific thinking, it is empowering. It makes science feel familiar, possible and personal. Alex Farrer challenged us to ask whose world we are representing in our lessons and it hit home. If we are using the same tired examples and textbook clichés, we are not just boring, we are excluding. When science connects to children's lives, it becomes magnetic, especially for those who might otherwise opt out.

Empower the teacher

As Alex Sinclair put it:

There is no curriculum development without teacher development.

It is not just about student identity: teacher confidence matters too. That is something every guest touched on. Whether it was Jane Turner encouraging us to 'get our science story straight' through the Primary Science Quality Mark or Alex Sinclair calling for teachers to own their influence, the message was clear: with the right support, every teacher can teach brilliant science. We have got to ask teachers what they need. We need to honour their experience, build their subject knowledge and support them with meaningful CPD, not overwhelm them with checklists. The Primary Science Quality Mark (PSQM) came up time and time again as a structured but empowering framework that helps schools do just that. (Further information about PSQM can be found at:

www.herts.ac.uk/for-business/skills/psqm.)

Teach the skills explicitly

Great enquiry doesn't happen by accident. As Tracy Tyrrell reminded us,

Children don't get better at drawing graphs by drawing more graphs.

It is not enough to set the task: we have to teach the skill. That quote hit home for a lot of listeners. It is the difference between practice and progress. If we want children to think like scientists, we need to model how to observe, how to record and how to conclude, just as we explicitly teach grammar or methods in maths. Paul Tyler echoed this throughout his episode. For him, strong science is not about overloading lessons; it is about embedding core enquiry behaviours and giving children real tools to use again and again. Teaching these skills explicitly, within the context of the lesson, is not a luxury, it is the groundwork that makes the rest possible.



Model curiosity

Science isn't delivered to children; it is done with them.

Something magical happens when teachers let go of being the 'expert' and lean into curiosity. Anne Forbes framed this beautifully and that idea changed everything for me. I started saying 'I don't know' more in lessons, not as a cop-out but as an invitation to wonder. When a child has a wild theory, we run with it. When something doesn't work, we figure it out together. Teaching science became less like running a quiz and more like going on an adventure. It also took the pressure off. I didn't need to know everything. I just needed to model what it means to be curious, to question, to test and to revise. That is the real heart of science.

Focused recording

In the busy buzz of a practical science lesson, not everything needs to end up in a book. Sarah Earle's advice around assessment was such a breath of fresh air:

Not everything needs to be written down.

If you are assessing observation, then observe; if it is a prediction, have a conversation. Thoughtful, focused recording gives you clearer insight into children's understanding and gives them the space to think. Bryony Turford reinforces the importance of focused recording as part of effective science lesson planning. She highlights that having a clear idea of what you want children to produce helps strip away unnecessary distractions and allows for greater accessibility. By deciding in advance what needs to be recorded and how, teachers can better tailor their lessons to suit the needs of all learners. This clarity also enables more purposeful assessment during the lesson, as teachers are better positioned to notice what matters. This is not about ticking every box on every lesson plan: it is

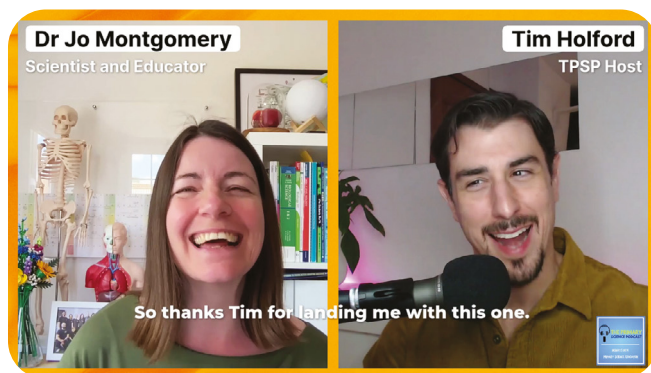


about choosing one or two things and doing them well, spinning one plate beautifully rather than juggling ten and dropping them all.

The science is in the question

The quality of your question will drive all of the evidence that you are going to collect. Have a poor question that is too broad, too woolly, not focused enough and it makes an enquiry extremely difficult. (Lynne Bianchi)

There is a reason science gets children so excited: it taps into a natural desire to know more. But as Lynne Bianchi pointed out, it is not just about asking questions, it is about asking the right ones. Good science needs good questions, ones that are testable and rooted in evidence. That thread ran through the series. Jo Montgomery spoke passionately about science as noticing, wondering and exploring, which are the very habits that well-formed questions ignite. When we design lessons around strong, open-ended questions and give children the space to think, predict and reflect, we are not just teaching facts, we are teaching them how to think. Her advice on creative communication also stood out. Let children show their thinking using art, drama, models and more, not to tick a cross-curricular box but because it deepens understanding and gives more children ways to shine.



Work together

We need this science community to help us raise our game. Not because we are not good enough but because we have got the most important job in the world. (Matt Baker)

If there is one message that echoed across the series, it is this: you can't do it alone. Whether it was Matt Baker rallying leaders across Southeast Asia, Bryony Turford pushing for supportive CPD or Alex Sinclair championing professional bodies like the ASE, every guest had the same advice: connect. Change happens faster when we connect, share ideas, reflect together and celebrate small wins. This podcast has become part of that same energy: a space to listen, to learn and to be part of something bigger.

What's next?

Season 3 of the podcast is already underway, and this time we are diving deeper. Each episode takes a single unit from the English National Curriculum and explores it in detail. What key knowledge matters most? What misconceptions trip children up? What strategies bring these topics to life in the classroom? With a panel of expert voices, including researchers, teachers and curriculum leaders, we are building a rich, practical guide to primary science, one unit at a time.

If you are a science coordinator, a seasoned educator or just science-curious, here is my advice: jump in. Don't just ask questions, ask ones that make you nervous. Don't just try ideas; try ones that might not work. Be okay with getting it wrong (and definitely laugh about it afterwards). Because in science, as in teaching, that is where the learning lives.

What listeners are saying

While the podcast began as a passion project, the feedback from listeners has been both humbling and energising. Teachers have praised the lineup of guests, with many surprised (and delighted) to see such a mix of researchers, science leads and classroom practitioners featured.

One head of school shared how Anne Forbes' reflections on teachers acting as 'guides on the side' really resonated, reminding her of the importance of building independence and ownership in young scientists. Others have highlighted specific moments that shifted their thinking, such as Tracy Tyrrell's point that 'children don't get better at drawing graphs by drawing more graphs'. That insight struck a chord with several science leads, who said it helped them refocus on teaching enquiry skills explicitly, much as we do in maths or writing.

The response so far has been overwhelmingly positive, particularly from those already engaged in primary science leadership. However, if there is one thing I have heard again and again, it is this: 'More people need to hear this'. That is one reason I wrote this article. I wanted to help spread the word and open the conversation to a wider audience.

So if the podcast has sparked a thought, confirmed a hunch or helped shape your practice, please share it with someone else in your science community. The more voices we bring into this conversation, the stronger it becomes.

Find out more

You can listen to *The Primary Science Podcast* by searching for it on *Spotify* or *YouTube*, where all episodes are freely available.

Tim Holford

A passionately curious primary teacher and science subject lead working in Southeast Asia.

Email: thepriarysciencepodcast@gmail.com