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**Literacy
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Hello!



Happy New Year to you all. I am absolutely delighted to be back at the helm of *Teach Primary* after a year away on maternity leave.

And what a year it's been (not just for my poor sleep schedule). A flurry of changes, from a brand-new government to curriculum reviews and Ofsted reforms has meant that the education sector continues to have to deal with a veritable merry-go-round of demands and concerns. But what's new? As teachers, you're all used to rolling with the punches and making decisions on the fly, which is why Clare Harley's article on how to really put your theories into practice and reflect on the way you decide how you do things is so helpful. Check it out on page 33.

That process of iteration is also a large part of our STEM special this issue. Paul Tyler gives us a brilliant insight into how he uses cardboard engineering to help his pupils develop creativity and resilience, through a 'permission to fail' system (page 48), and we hear from Sheena Peckham at Digital Matters about the best ways to help your class sift through online information to figure out what's true and what isn't (page 47). If you're looking to give children a bit more agency in the classroom, turn to page 11 for Lucy Unwin's tips on instilling them with a sense of power.

Our leadership section has a focus on letting pupils embrace their freedoms, too, by taking a good look at the role of play in schools. Whether you're keen to include play within your curriculum, or just to make the case for kids having fun while in your care, we have some great voices asserting its importance, from page 37.

Finally, a shout out to Lydia for being such a masterful caretaker of our beloved magazine for the last 12 months.

Best of luck for the start of 2025, and happy reading!

Charley

Charley Rogers, editor
 @TeachPrimaryEd1

*Don't miss our next
 issue, available from
 28th February*

POWERED BY...



STUART TIFFANY

on how to choose which stories to tell, and the power of narrative in history

"Deciding what to include from the last 1,000 years can feel like one hell of a job"

p26



SARAH FARRELL

presents a range of ideas and downloadable resources for celebrating the NSPCC's Number Day

"Number Day reminds pupils that maths is a fun and enjoyable subject"

p44



JAMES CLEMENTS

on how pupils can effectively use rhetorical questions in fiction and non-fiction writing

"Children can use rhetorical questions to help their writing come alive"

p54





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We're all ears!

We want to make sure our magazine is a brilliant resource for teachers and are always striving to improve. We love hearing from real teachers about what they liked and what they would change. Got feedback about this issue? Contact us via the details in the yellow box below – we'd love to hear from you!

**teach
PRIMARY**

We want to hear from you!

Get in touch with your rants, comments, photos and ideas.



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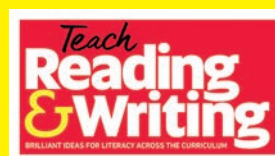
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Wicked Writers

The National Literacy Trust's annual writing competition is back for 2025. Run in partnership with Wicked Active Learning – the acclaimed cultural and social education programme for the UK production of the stage musical *Wicked* – the competition is open to all UK schools, for students aged 9 to 14, and runs from 13 January to 28 February 2025.

This year, pupils are being asked to write persuasively about a positive change they would like to see in their local community. This could be anything from the environment to mental health to social justice – it just needs to be local! Making a positive change is a key theme in *Wicked* and is the subject of the song *For Good*.

Entries are judged in two age categories: 9 to 11 (KS2/P6, P7) and 11 to 14 (KS3/S1, S2, S3). Find out more and sign up at tinyurl.com/tp-WickedWriters25



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3 INSTANT LESSONS... (You're welcome)



TACKLING STEREOTYPES

Premier League Primary Stars has released a comprehensive lesson, designed to empower pupils to understand, identify, and confidently challenge gender stereotypes. Visit tinyurl.com/tp-stereotypes for more info, and to download your free resources



AND, ACTION!

Sky and Adobe have launched free, ready-to-use resources to help pupils aged 8-18 produce, record and edit their own movie trailer, promoting arts education. Find out more and register at tinyurl.com/tp-SkyEdit



CURRICULUM PLANS

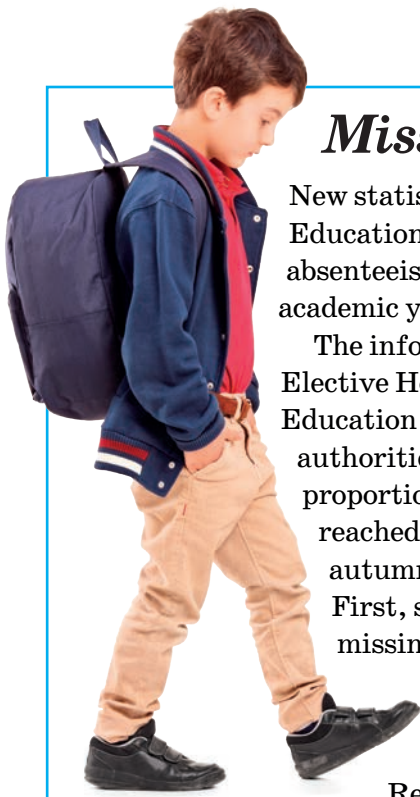
Oak National Academy has launched free curriculum plans across nine subjects, including art & design, computing, citizenship, MFL, music, PE and DT. Visit tinyurl.com/tp-OakCurriculum to explore the six curriculum principles

→→→ TODAY'S **TOP** **RESOURCES**



SPaG Gym

Looking for a literacy workout for your class? Plazoom's SPaG Gym offers 120 resource packs to get pupils' brains buzzing. The bright, appealing worksheets cover the full punctuation and grammar national curriculum programme of study from Years 1 to 6, using an 'understand, challenge, test, explain, apply' approach. Visit plazoom.com/collections/spag-gym



Missing children

New statistics from the Department for Education (DfE) have revealed that pupil absenteeism has increased by 28 per cent in one academic year (2022/23 vs 2023/24).

The information in the report is based on Elective Home Education and Children Missing Education data. The collection from local authorities started in autumn 2022, and the proportion of local authorities providing data reached 100 per cent for the first time in autumn 2024. Russell Hobby, CEO of Teach First, said: "The dramatic rise in children missing from education poses a grave challenge. The longer this trend continues, the more we fail to give young people the best start in life."

Read more at tinyurl.com/tp-Missing24

Laugh out loud

Scholastic UK has announced the winners of The Lollies Awards 2024. Celebrating the funniest children's books of the past year voted for by children, the awards include spots including picturebooks, non-fiction, and poetry. Former Children's Laureate and Lollies' ambassador, Michael Rosen, said: "This is the moment when you can boost children's love of reading: a brand-new tranche of funny books, hitting the button, triggering giggles and laughs. Unmissable!"

THIS YEAR'S WINNERS WERE:

Best picturebook: *I Did See a Mammoth!* by Alex Willmore

Best book for ages 6–8: *Bunny vs Monkey: Machine Mayhem!* by Jamie Smart

Best book for ages 9–12: *How to Survive Time Travel* by Larry Hayes and illustrated by Katie Abey

Best for teens: *You're Not the Boss of Me!* by Catherine Wilkins



Best non-fiction book:

Cats: Understanding Your Whiskered Friend by Dr John Bradshaw and illustrated by Clare Elsom

Best poetry book: *The Gecko and the Echo* by Rachel Bright and illustrated by Jim Field

Illustrator of the year: Jamie Smart

Find free accompanying resources at tinyurl.com/tp-Lollies2024

*Bett UK

32% of educators who have used AI report a decrease in their workload*

Look ahead | Book ahead



LONDON BOOK FAIR
From 11–13 March in Olympia, LBF features Frank Cottrell-Boyce and Jamie Smart as Children's Author of the Day and first ever Creative of the Fair. See londonbookfair.co.uk

BEAT THE SCAMMERS

Join BBC Education for a UK-wide Live Lesson for Safer Internet Day at 11am on Tuesday 11 February covering scams, phishing and much more. See bbc.co.uk/teach



Dr Maggie Aderin-Pocock

Space scientist and presenter

1. What was primary school like for you?

I actually went to 13 different schools, because my parents broke up when I was young. On top of that, I was pretty disengaged with school, because I have dyslexia – which wasn't diagnosed until my 40s – so I think some teachers just assumed I wasn't very academic. My parents come from Nigeria, and my dad, especially, emphasised the importance of education, so I felt I'd failed with that until much later in my school career.

2. What made you want to study physics at such a high level?

I've always been an incredibly curious person, which is often a dyslexic trait. I think of dyslexia as my superpower now, and being an explorer, physics really appealed to me. I love the fact that physics is essentially the study of everything, and within it we're pushing the edges of knowledge. I also can't remember a time where I wasn't fascinated with space – Lt. Uhura from *Star Trek* was a real role model for me!

3. Do you think the prevalence of women and girls in STEM is improving?

I do, but too slowly. One of the reasons I like to go to schools to speak to people, is because I've heard 'girls don't do physics' so much, which obviously isn't true. So I just try and smash those stereotypes whenever possible.

Dr Maggie Aderin-Pocock has worked extensively with BBC Education, helping to create science content. For BBC Bitesize primary resources, see bbc.co.uk/bitesize/primary

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V&A



6 ways to give your pupils agency

Providing children with a feeling of power over their own learning can lead to a much happier classroom, says Lucy Unwin

1 | UNDERSTAND POWERLESSNESS

Young people can often feel frustrated and powerless in the world, whether it's to do with the climate crisis or changes in government. They know what's going on, but, with no vote or influence, these things can be even scarier for them than they are for the adults. Then they come to school and can be swept along through busy days in environments they find stressful. Hold a class chat or 'town hall' to really explore where your pupils feel most powerless, and how this affects them.

2 | SMALL IS BEAUTIFUL

Doing one small thing can be incredibly powerful – even in the face of seemingly huge problems – and positive change can start with something as simple as sharing kindness. Offer your students an 'Acts of Kindness' tick-list with simple ideas like 'play with someone new', 'learn to say hello in a different language' or 'make someone laugh', and hold a class competition to see who can do the most. See lucyannunwin.com/resources for a printable list.

3 | FIND THEIR PASSIONS

Now pupils know they do have power, help them to focus it. Are there things the children feel should be more appreciated or understood? Things they want to protect? Things they want to see happen? Consider introducing a 'passion project', like in *How to Be a Revolutionary*. The characters' projects in the book include sharing the joys of an under-appreciated animal, or making rummage boxes for dementia patients at a care home. The idea is to be led by the students' own interests.



Lucy is the author of children's novels *How to Be a Revolutionary* and *The Octopus, Dadu and Me*. She lives with her husband, two daughters and tortoise.

4 | BUILD TEAMS

Not every child will want to stand for something like school council. But you don't have to have a loud voice or be a natural leader to have agency; you can be a small cog in a big machine and have just as much of an impact. Encourage pupils to combine their unique talents to make effective world-changing teams. Maybe groups organised by shared passions could create a campaign together: one person researching, one designing a logo, one writing a mission statement, etc.

5 | CHANGE THEIR WORLD

Allowing choices in the classroom is another great way to foster a sense of agency. Are there meaningful choices you could give over learning? What the children learn, how they learn, or perhaps more control over something like seating plans? It can be a brilliant opportunity to discuss different forms of democracy, too. Faced with a choice, do pupils want to take a straight yes or no referendum, with the risk of leaving half the class unhappy? Do they want to elect peers to investigate options in more depth and decide on their behalf?

6 | REFLECT AND CELEBRATE

For children to see how all the small choices and decisions they've made add up to a meaningful impact on their world, they need a chance to reflect. Did the compliments they shared lead to a happier classroom? Which acts of kindness left the biggest footprint in their community? And don't forget to celebrate! Stepping up to take responsibility is hard, and recognition always goes a long way. Maybe a 'school change-maker' badge is in order?

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Dogs in school? Let's paws for thought...

Having animals in the classroom can benefit us all, but we need to think about their wellbeing, too

 nationalschooldogalliance.co.uk

Picture this: a child, who usually struggles with social interactions, walks into a classroom and finds solace in spending time with a calm, relaxed dog. It's an appealing scenario. However, before embarking on such activities, teachers and school leaders need to pause for thought.

The sight of a dog walking into a classroom can light up a child's face with joy, and schools around the world are increasingly welcoming dogs into their classrooms to enhance learner wellbeing, engagement, motivation, and social skills. There is a growing body of international research indicating that dogs in schools can help in many ways, such as reducing anxiety, promoting emotional regulation, and fostering empathy (tinyurl.com/tp-FrontVetSci). In an era where children and young people's mental health is a priority, these benefits are invaluable.

But it's crucial to recognise that not all children, teachers, and canines

are comfortable interacting with one another. Even in contexts where there is enthusiasm for the concept, without proper guidance and structure, the presence of dogs in schools can lead to unintended consequences. The reality of integrating a sentient animal into a bustling school environment requires meticulous preparation, planning, and management. These interactions only work if we ensure that we match the right child with the right dog, and then in the right classroom context.

Tails of the unexpected

In our most recent study of dogs in school, which involved over 1,000 teachers worldwide, we uncovered some surprising and concerning findings (tinyurl.com/tp-NSDAstudy). Whilst many teachers are enthusiastic about the benefits of having pets in their classrooms, many also reported unexpected challenges. Some teachers felt overwhelmed when trying to manage both a dog and children in a

busy classroom environment. Incidents such as scratching, toileting and, in the worst-cases, biting were reported. Many teachers in our study felt unprepared to deal with these unexpected events. This is understandable; teachers are skilled and dedicated, but most are not trained dog handlers.

Adding to the complexity, many schools start to bring in a dog without formal guidance or experience. The lack of readily available high-quality guidelines means that these interactions are not always positive or productive. Practices vary widely; some dogs belong to staff members and come to school daily, while others visit periodically through established organisations. Some dogs visit for an hour, some are in school all day. Some are trained and assessed in a school context, some come with little or no specific training. Many are expected to work with a wide variety of people, in a wide variety of spaces during the visit.

Whilst many dogs thrive in a school context, these varying practices mean there is a risk of some becoming anxious or reacting unpredictably. Our research, which included video analysis of interactions between children and dogs, showed that while many experiences were positive, there were also moments when several of the animals appeared stressed. Many teachers and children were unable to identify the signs of discomfort in the dogs. These challenges are rarely reported in the literature, but these are issues that we need to consider as a profession.

The newly launched National School Dog Alliance (NSDA) can play a pivotal role here. The NSDA aims to bring together academics, educators, allied professionals, canine behavioural experts and policymakers to create a cohesive community that promotes effective principles for integrating dogs into schools. Via our website, we will establish a freely accessible and independent platform for sharing resources and fostering conversations.

School dogs have the potential to make a significant difference in many children's lives – but only if we get it right. Everyone should be able to have a safe and positive experience, and we owe it to our faithful canine friends to ensure that their experiences in schools are equally enriching and beneficial. **TP**

Dr Helen Lewis is a former primary school teacher, associate professor of education at Swansea University, and chair of the National School Dog Alliance.

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Giving advice to schools? Be practical, please

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[@bennewmark](#)

bennewmark.wordpress.com

From parents to politicians, university academics to educational psychologists and from consultants to software salespeople, there is no shortage of folk who think teachers and schools should do what they are told.

It often feels as though teachers are at the bottom of a professional hierarchy, and that those who regard themselves as higher up, think that teaching and school-based roles should be about enacting the advice and instructions of others, rather than about thinking and making decisions themselves.

This can make life very difficult for those of us doing the actual work of teaching children an academic curriculum. Those of us who – frustratingly – end up having to teach classes of 30 or more (even when we think things should be done differently).

First, the advice we are given is often contradictory in practice. A pupil passport for one child might say they need a calm, consistent and orderly environment, whilst that of the child sat next to them might say they need regular movement breaks, making it extremely challenging to fulfil the requirements of both documents.

Secondly, directions and advice are

too often formed in very different environments from those in which children are taught.

It's all well and good to say a child should not receive sanctions because they don't respond to them based on a theory and a one-to-one session in a clinical setting, but without practical guidance on how this works in a typical school, this is at best unhelpful and at worst downright irresponsible.

In the past I have raised issues with practical implementation to those advising me, but these conversations have often felt as if I and the professionals in these meetings were speaking different languages.

Frequently, I've come away from these conversations feeling as if they believed logistics were my problem alone, or even worse, that they thought I should reform my entire classroom, or even school, to create an environment in which their ideas could be faithfully implemented.

This is hugely frustrating, because even if such changes were desirable – and this is certainly not proven to be true of very many of them – making them is not in my gift as a salaried public servant. I can't get more funding. I can't change the way education is structured and organised. I must work within the system around me, and that means finding and implementing strategies and

solutions that work within my constraints.

I can't help wondering whether those giving advice – and there's always so much advice – are even interested in the real-life ways in which schools and classrooms operate, and how best to help struggling young people access them better. At my most uncharitable I've even wondered whether a sort of moral purity is more important to them; a belief that saying what they should think happen in their personal Edutopia is fighting the good fight, leaving me and my colleagues to find concrete, realistic ways that improve the experience of vulnerable young people we professionally care about very much.

None of this – of course – means that advice from outside teaching is useless and should be ignored. At its best it can even be transformational; but those giving it should be mindful that the teachers who receive it are professional equals, and respect their perspectives by ensuring that any suggestions are applicable in context.

Thoughtful CPD can help. Rather than giving teachers decontextualised lists of things they should do in their classrooms, good professional development must first ascertain the specific challenges teachers face and then share strategies framed as suggestions, while affording teachers and teaching assistants – the doers – the respect to use, adapt or even challenge and ignore advice if it isn't relevant or appropriate.

Finally, those wishing to change teaching practice should be aware that good strategy begins with what is practically possible. All of us – in wildly varying ways – would like the world to be different from what it is, but responsible advice, teaching and leadership mean putting idealism to the side if it involves advocating for things that can't be applied in the world in which our pupils are actually educated.

Our children – particularly those who find learning hardest – are being educated in the system we have now. They can't wait for someone else's utopia. **TP**

Ben is a history teacher and assistant principal for teaching and learning at a school in the Midlands, and co-author of the papers 'A Good Life' and 'Five Principles for Inclusion'.



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Each issue we ask a contributor to pen a note they would love to send

A letter to...

The Education Secretary

EYFS is not 'lightweight' teaching, and the government needs to provide expert training to make the new nursery initiative work, says **Ben Case**...



Dear Bridget Phillipson, There's a memorable scene in the Arnold Schwarzenegger film *Kindergarten Cop* where, after his first day in a nursery classroom, he collapses into bed, exhausted. During my first six weeks in early years as a Reception teacher, that was me – every single day. The government's plan to open 3,000 early years settings in schools is a welcome step forward, but its success will depend on avoiding the mistakes I made in that first month and a half.

The early years experience is fundamentally different from teaching older children, yet this distinction is often misunderstood. Even as someone who had already adapted from training as a secondary teacher to teaching Year 4 in a large junior school, I was unprepared for the shift to EYFS. The challenge wasn't the children – it was me and my misunderstanding of what the role required.

In my previous jobs, I was used to being the teacher in the room. I planned when we'd tackle each topic, the approach I would take, and the outcomes I expected from each lesson. My class would sit at their tables, they would listen to what we all had to say, and then (mostly) get on with what they needed to do during the lesson.

When I stepped into my first Reception classroom, I thought I was ready. I'd met the

children, spoken with the team, and prepared for what we were going to do. But I hadn't planned for what I would experience – which at the time felt like complete chaos.

I'm embarrassed to admit it now, but during those first weeks I was not the best person for that classroom. Thankfully, I had incredible support (thank you Sam!) which kept things on track and ensured the children had a great start to their first year at school.

And then, sometime during that first half term, something clicked. I realised that my role in early years wasn't to 'teach' in the traditional sense. I was there to facilitate the

"I wasn't prepared for what felt like complete chaos"

children's learning. Most importantly, I was there to help them understand that *they* were learners.

The skills you need to teach in early years are not the same as those for teaching older children. I assumed they were. In early years, teachers focus on the fundamentals that need to be in place to ensure the next phase of learning can happen – like supporting the development of fine and gross motor skills that will enable pupils to write.

A deep understanding of how a child learns is essential in EYFS. I'd sat through countless staff meetings on supporting children to read, however none addressed how to teach them *to begin reading*. How do you

help a four-year-old to recognise the shapes on a page as letters, understand how those letters represent sounds, and blend those sounds to make words?

I found my calling in early years, and I hope many others will, too. But if the plan to open 3,000 early years settings is to succeed, we need to face facts: asking teachers to work 'flexibly' across Key Stages 1, 2 and early years will not work.

As with my own experience, there is a persistent, mistaken view that teaching younger children is somehow easier. Early years is often seen as the lightweight end of teaching. But the reality is that early years teachers require specialised knowledge, a deep understanding of child development, and a thorough grasp of the EYFS statutory framework.

Unlike Arnold Schwarzenegger in *Kindergarten Cop*, early years teachers don't need to be thrown into the deep end to learn the ropes. They need training, support, and time to observe effective practice. Teachers moving into early years should have opportunities to work alongside experienced teams, to understand how our youngest children learn, and to develop the skills required for this unique and rewarding role.

I urge you to ensure that the government's plans for early years settings take this into account. The future success of this initiative – and, more importantly, the future success of our youngest learners – depends on it.

From Ben



Ben Case is an education advisor at Tapestry and a former early years teacher. You can find more information about school-based nurseries at tinyurl.com/tp-TapestryNurseries



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UNDERCOVER TEACHER

Our anonymous educator gets something off their chest

If behaviour is always an expression of unmet need, how can we justify such uneven reactions to incidents?

Senario 1: It's summer 2024 and, mid-lesson, a Y6 child loses his temper after a lunchtime argument with another child is reignited.

Child A (a regular perpetrator of violent acts) punches Child B in the stomach and then picks up a chair to throw at B's head. I, the class teacher, spring into action and wrest the chair away from A to prevent further injury; unfortunately, in his frustration, he punches me square in the jaw.

Child A is removed, sobbing and shaking, and is taken away by the headteacher. Half a day of fixed-term-exclusion later, he is delivered back to the scene of the crime, once again sharing a space with his various victims. A degree of remorse has been noted; he expressed an understanding that his behaviour was unacceptable; he is in a regulated condition... for the moment. We return to business as usual.

Scenario 2: More recently, another Y6 child (Child X) was removed from school for chasing a classmate (Y) around the playground brandishing a pair of scissors, laughing, and yelling threatening and racist abuse. This child is usually compliant in class, but has low-level SEN and uses some of the foulest language I've ever heard from a 10-year-old. None of us believed his threats would be enacted.

The head tells me the following day that X will not be returning to the school site under any circumstances. He will resort to permanent exclusion if necessary but is seeking alternative provision whereby the parents deliver home learning, overseen by the school and the local authority, who will provide once-a-week online tutoring. X would technically stay on the books without ever crossing the threshold of the school gates again.

I completely, and vocally, disagreed with this course of action. To be absolutely clear, I do not condone any kind of racist act, and the school leadership is completely right to take a firm stance on the issue and to ensure that Y is able to learn in a caring, equitable and threat-free environment. However, things are rarely this straightforward.

Alongside SEN considerations, X does not have the most stable home life. His parents are certainly not

qualified to provide a full education, and the likelihood that the racist language is a learnt behaviour from home must be recognised.

Will his prejudices ever be challenged if his world is made so small? What will his secondary education look like after most of a year out of mainstream schooling?



"This is the moment we've abandoned the holistic approach"

I fear we are setting X on a trajectory of failure, academically, socially and personally. A vital part of the school environment is citizenship, civil responsibility, and accountability. Removing the issue by removing the child is not tackling it proficiently, and there is a real danger we are creating future victims through this action. Where is the apology? Where is the opportunity to demonstrate that change has occurred, and lessons have been learnt? Where will X have his racist behaviours challenged and changed?

Then we come to the disparity between the punishments dealt out for each scenario. Both involved children with SEN; both involved violence (one threatened, the other realised). Yet the outcomes were worlds apart. Why does an actual physical assault feature so low in the hierarchy of crimes: is this a

part of schooling that teachers and students are now expected to endure? There is certainly no provision for violent children within the special school system locally, and my school is clearly failing to cope with it.

For the last four years, the school has actively pursued a holistic approach to behaviour management. This has involved restorative conversations after any incident; investment in counselling, play-therapists, drawing-and-talking interventions; and staff receiving regular training from our local authority that repeatedly tells us 'behaviour is an expression of an unmet need'. Ask most of the staff and they will describe the policy as light-touch and involving more 'coddling-over-a-hot-chocolate' than is fair or effective.

Child's X's punishment is not typical for our school. If there was ever an occasion where behaviour was *an expression of an unmet need*, then this was it. Yet this is the moment we chose to abandon the holistic approach; I fear we have let him down. **TP**

The writer is a teacher in England.

4 REASONS TO TRY... Wellbeing Survey

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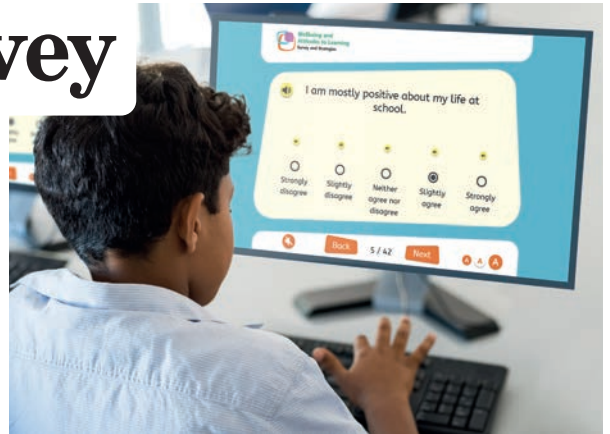
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1



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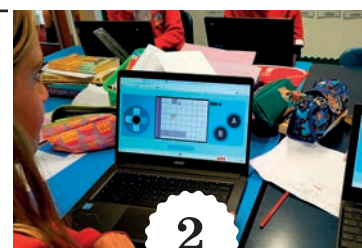
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2



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They have a number of coding workshops available, but their Coding Games Workshops are their most popular.

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3

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4

Support staff wellbeing

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5



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MEDIUM TERM PLAN

KS2

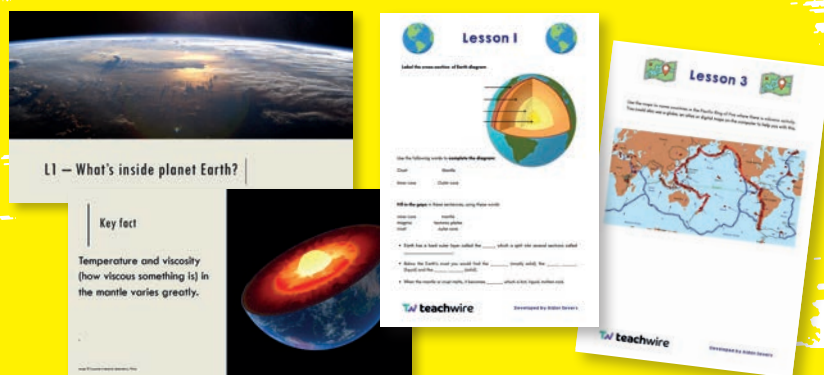
GEOGRAPHY

WHAT ON EARTH?

AIDAN SEVERS

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WEEK 1

Learning objective

- What's inside planet Earth?

Find key vocab for this week in the downloadable resources (link above).

Begin by introducing the idea that Earth has a hard outer layer called the crust. Explain that it is split into several sections called plates, or tectonic plates. Share both the key vocabulary and the diagrams that exemplify this concept (available in downloadable resources). Show the children a leather netball (or similar) and liken the separate pieces of leather that are stitched together to the tectonic plates.

Ask pupils to respond to a multiple-choice question about what they think is beneath the crust (slide 79 in the downloadable PowerPoint) and then proceed to show the cross-section diagram of Earth's structure, showing the crust, mantle, outer core and inner core (slides 8 & 9). Show children a pre-made plasticine (or similar) model of the Earth – cut into it, or peel away the layers, to reveal the different parts of Earth's structure.

Use the table (slide 10) to describe the materials that these layers are made of, their temperatures, their size and their viscosity and state of either being a liquid, solid or gas, and relate this to prior learning in science (Year 5, properties and changes of materials),



When we think of natural disasters, we think of bright orange eruptions of magma, vast plumes of black ash, collapsing buildings and tidal waves washing over everything in sight.

We imagine danger, damage and destruction. But what causes volcanoes, earthquakes and tsunamis, and how do they affect people's lives?

During this unit, children will learn about how the movement of tectonic plates causes volcanic activity, earthquakes and tsunamis. They will study the structure of the Earth's interior and how the different layers contribute to volcanic activity and earthquakes. Although children will take a deeper dive into this topic in secondary school, they will learn about significant areas of such activity, with a particular focus on how it affects human life.

where possible. Spend more time on the crust and mantle, particularly that temperature and viscosity in the mantle can greatly vary and that magma forms when rock in the crust or mantle melts.

Pose the question: What might happen to the crust and tectonic plates if the mantle beneath it melts? (Slide 15) Once the children have discussed it, introduce the *theory* that a tectonic plate moves when part of the plate sinks into the mantle (slide 16).

In order to provide a lead into future lessons, briefly state that this movement causes volcanoes, earthquakes and tsunamis (slide 16).



Assessment

Can children label a blank version of the cross section of Earth diagram? Can children use the new vocabulary in a sentence? (Both in L1 download.)



WEEK 2

Learning objective

- What is a volcano?

Find key vocab for this week in the downloadable resources.

Begin by showing the cross-section diagram (slides 8 & 9), and pose the question: What might happen if there were an opening in the crust? (Slide 20) After some discussion, share the definition of a volcano (slide 21) before showing children a pre-made 3D model that represents a cross section of a volcano. Show children a diagram of the same (slide 27).

Watch footage of various volcanoes erupting (like this one from BBC Earth Science, from about 0:50: tinyurl.com/

tp-BBCEsvolcano), asking children to note down what they see happening as they watch. Share the vocabulary slide for 'erupt' (slide 22) and encourage the use of the language of erupt/eruption/erupting when children are sharing their observations.

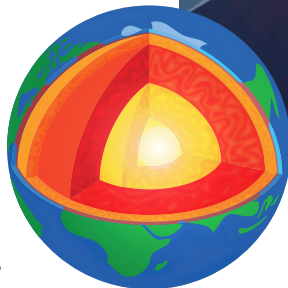
Explain that the volcanoes in the video were active volcanoes, but that some volcanoes can be dormant (perhaps linking the etymology of the word to the word 'dormitory' as being a place to sleep), and others extinct, relating the latter to previous learning about extinct animals (slides 31-33).

Finish the lesson by gathering the pupils' ideas about their current perceptions of how volcanoes affect people's lives, in readiness for lesson 4 (slide 35).



Assessment

Can children label a blank version of the cross section of the volcano? Can children describe what happens when a volcano erupts, using the key vocabulary? (Both in L2 download.)



high pressure and temperatures which melts the mantle, causing magma to rise to the surface.

Introduce the idea of a volcanic hotspot (slide 42), where a column of extra hot magma (called a magma plume) rises to Earth's crust causing the crust to get thinner and to melt, which leads to volcanic activity.

Share a map of the Ring of Fire in the Pacific Ocean (slide 44) and a (political) map of the same area with countries marked. Ask children to identify countries that have volcanoes caused by plate movement (e.g. Chile, Indonesia, New Zealand) and countries where there are volcanic hotspots (e.g. Hawaii, French Polynesia).



Assessment

Can children use maps to locate countries that have volcanic activity? (L3 download)



WEEK 3

Learning objective

- Where in the world would we find a volcano?

Find key vocab for this week in the downloadable resources.

Briefly revisit learning from lesson 1 about tectonic plates and their movement, sharing a map of Earth's tectonic plates (slide 37 or tinyurl.com/tp-WikiTectonicPlates). Then share a world map featuring the locations of volcanoes (slide 38 or tinyurl.com/tp-RGvolcanoes) and pose the question for the lesson: Where in the world would we find a volcano? (Slide 39)

Once children have identified that volcanoes occur mostly around plate boundaries (slides 40-41), discuss the answer to the question: Why would we find volcanoes at plate boundaries?

Explain that the plate movement allows magma to find a way to the surface more easily in two particular ways: some plates move apart and magma from the mantle fills the gap; and in some places a plate goes under another plate and the friction causes

48-50). Share some statistics about the number of people who live near volcanoes, and the number of deaths caused by volcanoes (slide 51).

Ask children to discuss potential reasons why people still live near volcanoes despite the danger. Share an overview of some of the positives of living near a volcano, using props:

- Nutrients from the volcano make soil fertile and good for farming – show children a healthy plant and pictures from the case study (Case study: Farming in volcanic soil around Mount Vesuvius, Naples, Southern Italy).
- Tourists come to see volcanoes, and this brings money to the region – show children a camera and a picture from the case study (Case study: Mount Merapi in Indonesia) as an example of how an active volcano can bring adventure tourists into the area and how the local economy benefits.
- Geothermal energy can be produced sustainably in volcanic areas – show children a portable heater and a picture from the case study (Case Study: How Iceland uses geothermal energy to produce heating – including for greenhouses and even pavement heating! – and electricity, as well as hot water for tourist attractions such as the Blue Lagoon).

Give pupils the chance to learn more about one of the three case studies above using a HOTCLUB activity (L4 download).



WEEK 4

Learning objective

- Can volcanoes be useful?

Find key vocab for this week in the downloadable resources.

Start by sharing some images of the destruction caused by volcanoes (slides

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Assessment

Can children give three ways that volcanoes can be useful to people living near them? Can the children go into more detail about one of the three ways?



WEEK 5 Learning objective

● Does the Earth's movement cause any other natural disasters?

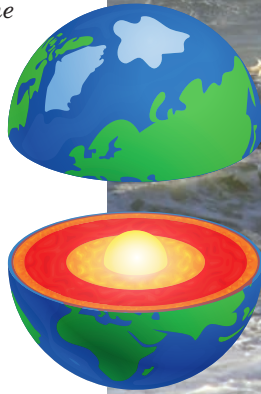
Find key vocab for this week in the downloadable resources.

Revisit work from lessons 1 and 3, reminding children of how and why tectonic plates move and where the plate boundaries are in the world. Extend this learning by explaining that movement at plate boundaries can cause plates to catch and stick, causing sudden movement, which is felt as an earthquake. Build a tower on one of two baking trays (or similar) to represent two tectonic plates; simulate the plates catching and sticking causing the tower to fall. Explain that underwater earthquakes can cause tsunamis.

Watch video footage of earthquakes and tsunamis and their aftermath (like these from BBC Newsround: tinyurl.com/tp-NewsroundEarthquake and tinyurl.com/tp-NewsroundTsunami). Discuss the impact of earthquakes and tsunamis based on what pupils have seen. Then share statistics about deaths and injuries in places where earthquakes and tsunamis (slide 68) occur regularly.

Linking back to learning in lesson 3 and using the same maps, explain that 90 per cent of earthquakes and 80 per cent of tsunamis happen within the Pacific Ocean's Ring of Fire, and that such places can be described as having lots of seismic activity (slide 71).

Pose the question: If you lived in a place where earthquakes or tsunamis happen, what would you do? (Slide 72) If children say that they would move away to somewhere safer, ask a further question: What if where you live now were a place with a lot of seismic activity (slide 73)? With reference to lesson 4's work on the benefits of living near a volcano, and the fact that volcanoes, earthquakes and tsunamis occur in the same places, explore the social and economic reasons why people



do not move away: they may not want to leave family, friends and homes, and moving is costly (slide 74).



Assessment

Can children explain how earthquakes and tsunamis occur? Do they understand why people continue to live in dangerous places? (L5 download)



WEEK 6 Learning objective

● How does the Earth's movement affect people's lives?

This lesson looks a little bit different from the others, because you will not teach the children any new information, instead giving them the time to draw together and summarise all their learning from the unit to answer the overarching question of the learning objective.

Start with the low-stakes multiple choice quiz (slides 77-93), giving children time to answer before going through the answers and having them correct any mistakes.

Then, give them a choice of how they will present what they have learned

about how the Earth's movement affects people's lives. Provide them with the full list of key vocabulary (in downloads) and the same blank diagrams used throughout the sequence so that they can use these in their work. You could suggest an oral presentation, a piece of written text, a video or a page in the style of an illustrated non-fiction book – show some examples of these. Refer children to the success criteria and create checkpoints during the lesson to help them reflect on their work.



Assessment

Can children explain how the Earth's movement positively and negatively affects people's lives? TP



Aidan Severs is an education consultant with over 15 years of teaching experience.

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What's the STORY?

Setting the scene in history is like crafting a brilliant narrative, says **Stuart Tiffany**, and can help structure your teaching, to boot...

If I were to say that you needed to teach pupils about the Roman Empire and its impact on Roman Britain, would you immediately know where to start? What to cover, and emphasise? Would you be confident doing this for the entire history curriculum, from scratch? I imagine many teachers would absolutely excel at this, but there are also many of us for whom deciding which elements from the last 1,000 years or so to include can feel like one hell of a job, especially amongst everything else we have to think about and plan for.

History is vast in scale and challenge, and is full of landscapes and cultures far beyond the world of which 21st century children have any understanding. So as subject leaders and class teachers, we must focus our attention on the key question: which stories should we tell, and why?

When I'm working with trainee teachers, I find that one of the most useful starting points is to define what history actually is as a subject, and look at its Greek etymology:

histōr – learned, wise man

historia – inquiry, narrative, account

Here we can see that narrative is at the heart of the subject, and to teach history effectively, we should be engaging with

the stories of humanity that have shaped our modern world. Carefully constructing a narrative arc across a unit will also help your pupils understand the causal links that are present across much of history, and will capitalise on the fact that the human brain automatically wants to sequence information into narratives in order to understand it (see the work of cognitive scientist Dan Willingham and history specialist Christine Counsell on this). The KS2 curriculum also emphasises 'establishing clear narratives within and across periods', so this model is useful both cognitively and to meet curriculum specs. Win-win.

So how to start? Well, first of all we need a question to act as a hook, stimulating children's curiosity and structuring their learning. Historical enquiry is the key to the whole puzzle, so questions should allow pupils to work towards answering the question as a historian might. For example, when teaching about Roman York, we may ask '*What does the evidence reveal about life in Eboracum?*' This provides a clear focus for enquiry, as well as a sense of mystery about what will unfold.

You can then break down these overarching questions into sub-enquiries that function like chapters of the story you're teaching.

Each enquiry plays a role in defining the learning on a more granular level, so children's knowledge flows and builds deliberately and cumulatively. This will also support you as a teacher in defining what core background knowledge pupils will need to construct a full narrative answer to the bigger question.

Cross-curricular pedagogies

In English we might use story maps to depict a narrative arc, and

similarly in history, we can use timelines to structure and contextualise historical events (see an example at tinyurl.com/tp-HistoryTimelines).

You can even embed retrieval in much the same way as you would when reading the class book; ask what happened last time children learned about this topic. Where do pupils think the story will go next?



"We must focus on the key question: which stories should we tell, and why?"

You can also highlight historical figures the same way you might a character in fiction: “*I wonder what will happen to X...*”.

Pushing this correlation even further, writing up historical events as an actual story can help sequence material, as well as firmly grounding abstract facts within a wider context. For example, I’ve used the paragraphs below to introduce pupils to the next phase of their learning within a unit on Roman Britain. They act as the prologue for an in-depth study of Roman York, which is the culmination of the unit in Y3/4:

Lossio was working diligently in the fields of wheat, just like every day. The warm breeze was a pleasant change and would help the crops grow. Suddenly, he heard a rumble approaching. A sound the likes of which he had never

heard. A sea of red advanced along the paved roads, the clang of their hobnailed caligae echoing in unison as they marched past the people working the land.

Septimius Severus appreciated the breeze, as he had been promised nothing but brutal rain and bitter cold. His purple cloak would prove very useful! This land was very different from his native Leptis Magna. He had fixed his mind towards the campaign ahead. Severus was accompanied by his loyal legions, his sons and heirs Caracalla and Geta and their mother, the Syrian-born Julia Domna.

His journey took him towards Eboracum along the roads that had been built and maintained for many years by the power of Rome. He had great plans for this land: strengthen Hadrian’s Wall, occupy new territory and reclaim lost forts to hold the position.

He would leave his mark on this Northern landscape!

Here, I’ve taken key concepts and information, and considered the following:

- Which parts of the narrative can I piece together to emphasise and explore as a broader overview of the period?
- How can I look beyond isolated events and think about how they sit as part of a wider narrative arc?
- Is there a way that I can narrate explicitly to ensure children are guided through abstract worlds, beliefs, cultures and broader ways of life?



People and places

Every story needs a good setting, and humans, as a species, are very good at manipulating and changing their environment to meet their needs. So, when sequencing your teaching, make sure to highlight the correlation between physical geography and the development of humanity, whether that’s the Neolithic revolution of hunter-gatherer to agricultural production, or the introduction of industry in the 18th and 19th centuries. See the panel above for some ideas for structuring this.

However, even when children have a firmer understanding of the geographic world, they still may not have a secure sense of the historical way of life, and it may appear ‘strange’ or ‘wrong’ to their modern eyes. To help contextualise changes over time, when writing out your story, try focusing on details like how toys, transport or homes have changed, and how many social groups are explicitly included or excluded. This is where your role as narrator really becomes pivotal, as pupils may not realise that there was a time, for example, before the fire

Who, what, where?

When you’re planning your next unit, think about all the worlds and ways of life you need to convey in your narrative, and consider:

-  Who is involved (who are your main character and supporting cast?)
-  In what geographic space are they based? (Where do they live and work?)
-  How did people live? (Think societal groups including gender, ethnicity, etc.)
-  How do the cultural practices and political hierarchy of the time influence the above?


brigade existed (relevant when teaching the Great Fire of London), or when social hierarchies officially placed women as lesser than men (ancient Athens, and 19th century Britain). Including these details within your story really helps bring the context to life, and by narrating this hinterland and setting the scene, you will be giving children a more secure sense of the period as a whole.

There are many ways to think narratively in history, but I hope these ideas give you a jumping off point, and allow you to have a bit of fun with your curriculum. Good luck! **TP**



Stuart Tiffany is a primary teacher, history CPD provider

and consultant. He is also the author of *Mr T Does Primary History* (£21.99, SAGE).

 @Mr_S_Tiffany

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How to combat PREJUDICE

LGBT+ inclusion doesn't have to take a lot of time, says **Mel Lane**. In fact, it can fit seamlessly into your classroom, making it a happier place for everyone...

For the past seven years, I've been working with thousands of primary-age children, running LGBT+ inclusive assemblies and workshops each year in schools. The difference I've observed in pupils is transformational. Year 2s are much more accepting of, for example, boys who like wearing dresses or girls who love playing football. Year 3s tell me that it doesn't matter if you don't know someone's gender – you can still be friends. And Year 6s are articulate and thoughtful when they suggest ideas for how to ensure a trans child would feel welcome in their school.

As teachers, taking on anything that adds to our workload can seem too much. So I'm delighted to tell you that taking a little bit of time to talk about LGBT+ lives is much easier than you might think, and will definitely pay back way more than the time you've invested.

Just drop it in

When I first asked my Year 6 class to tell me where the apostrophe goes in 'Simons boyfriend', I was really nervous that someone would laugh or say something offensive, but no-one made any comment – they just got on and told me where to put the apostrophe. I was amazed that the children didn't bat an eye at this kind of inclusive language – and that it was me that was needlessly worrying about it.

After all, many children have LGBT+ friends and family members and the

number of young people coming out is increasing all the time (The Guardian, 2023). When we drop in references to LGBT+ lives, we're just making sure everyone is represented. Maths is super easy for drop-ins, too. For example, *Sam and his two dads went to the cinema. How much did it cost if...?*

Unnecessary gendering

For very good reason, we never ask children to line up separately by their skin colour. So why do so many of us still split them up depending on their gender? A Year 5 child recently told me how horrible this made them feel (and this isn't the only child to have told me this).

"The teachers don't know I'm non-binary", they said, "so when they split us up boy/girl it makes me feel...", and then they rubbed their tummy as if in pain.

Instead, try dividing children by asking, for example, "Would you rather be a unicorn or a dragon or neither?", or "Do you prefer chocolate or ice-cream or neither?"

"LGBT+ inclusion doesn't have to be a separate issue; it can be part of conversations we are already having"



Visibility

LGBT+ people have flown in space, dived in The Olympics, invented an early version of the computer, and much more. When we are talking about someone's achievements, and they happen to be LGBT+, we can drop that fact in as part of the teaching, letting children know that being LGBT+ is just another way to be a human.

For example, if you're teaching your class about space exploration, mention that astronaut Sally Ride was a lesbian and had a lifelong partner who helped her teach kids about science. We don't need to avoid words like 'gay', 'lesbian' or 'non-binary'. We

can explain them in simple, age-appropriate language, such as saying that 'gay means a man who loves a man', etc. For those of us who grew up without this kind of inclusive language at school, it can feel a bit forced at first, but it soon becomes second nature.

Toilets and uniform

Children are great at problem-solving. In my Year 6 session, I read a children's book about a trans child going to school and then asked the children if they think they would welcome a trans child in their school. They always say an enthusiastic, 'Yes, of course'.

The children's ideas for making things more inclusive include making at least some toilets available for any gender and making sure that all school uniform can be worn by anyone. For the children, it's simple. What's more, it's so easy to do that the majority of schools I work with have now made ideas like this a reality.

Parents

I've worked with thousands of school children and virtually all the parents have been supportive of LGBT+ inclusive work. We know that 82 per cent of parents support teaching children about same-sex parents (Just Like Us, 2022). Sadly, some people have been frightened by misinformation. Giving families the opportunity to be a genuine part of the conversation and be involved in how your school develops its inclusivity policies can help them feel more confident, and, most importantly, to feel heard and respected.

When talking to parents, it's a great idea to group teaching about different protected characteristics together – being LGBT+ is just another way to be a human, and equal and fair treatment in schools is governed by The Equality Act 2010. Giving families an opportunity to review resources that teach about different races, religions, disabilities and LGBT+ identities helps to frame this particular strand of inclusivity as part of a celebration of diversity designed to ensure that all children and families feel respected, welcome and included in your school. This almost certainly ties in very well with your school's existing ethos and values, whichever words you use to express that with the children.

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Resources

If you're developing or updating your school's inclusion policy, you might want to take a look at the RSHE guidance (tinyurl.com/tp-RSEguidance), as well as Pop'n'Olly's free 'Discussions with parents' resource that brings together current information on legal frameworks (tinyurl.com/tp-pnoFREE).

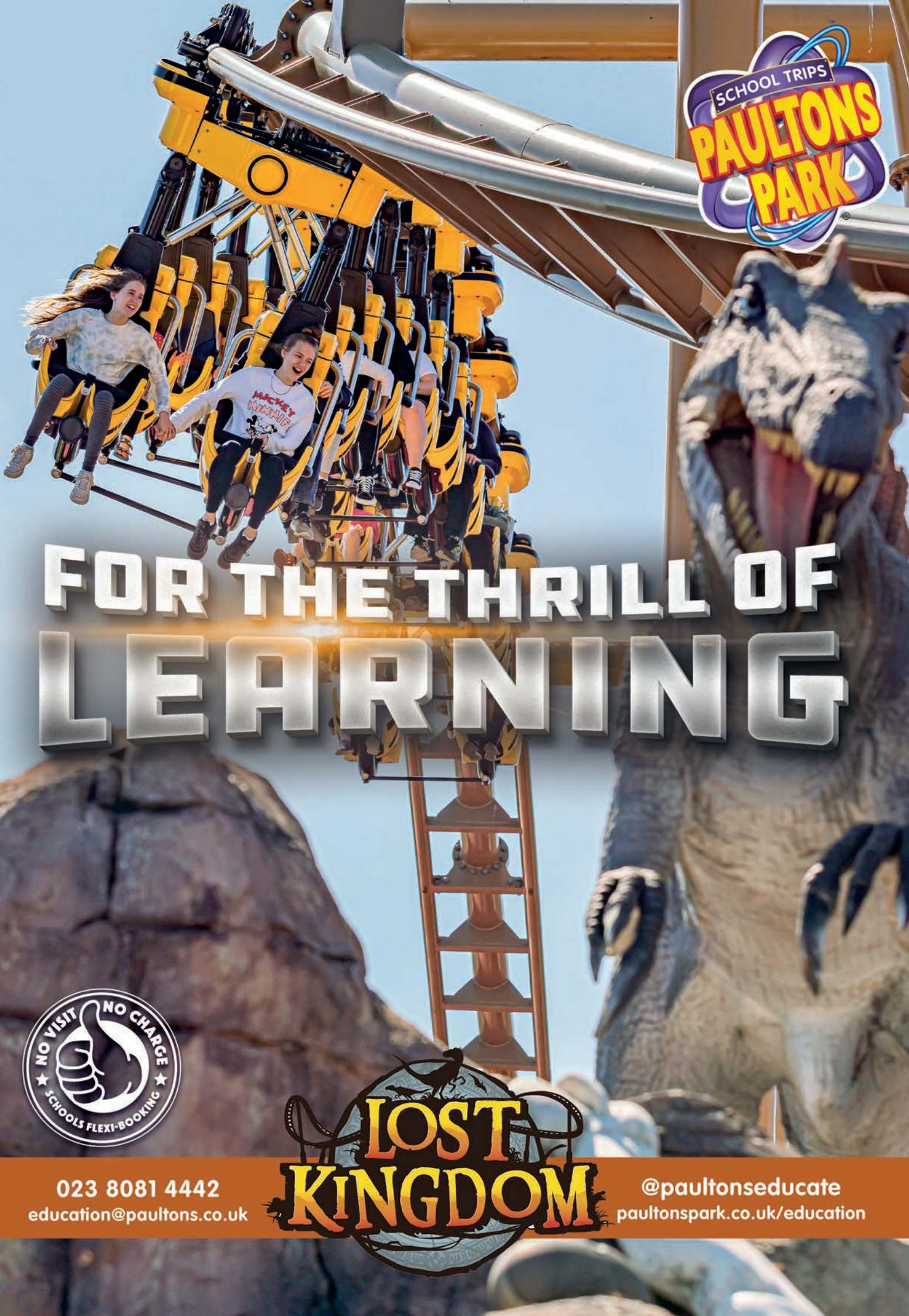
Prejudice is a learned behaviour, but preventing it from developing is much easier than you might think. Just a few simple actions can be transformative for children, staff and families in your school. **TP**



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How I do it ➡

Inspire creative word choice and build thematic understanding through artistic blackout poetry...

HANNAH KAVANAGH

1

Begin by printing or photocopying pages from books. You can also cut out pages from old or pre-loved titles to recycle them, which adds an element of sustainability to the lesson. Ensure each child has a selection of texts to work with, providing a range of themes and styles. This not only engages their creativity but also gives them a unique foundation for their poetry. You could also include pages from class reads.



At our school, we're always looking for new ways to integrate creativity into the curriculum. One of the projects we keep coming back to is blackout poetry. It's a fantastic method to engage children in creative writing, encouraging them to explore language and meaning in a unique manner. This activity also prompts children to think carefully about word choices, focusing on the themes or moods they wish to convey; perfect practice for longer pieces of writing. Using recycled book pages, they produce meaningful poetry, transforming ordinary text into works of art that are completely their own.

Instruct the children to use a pencil to lightly circle the words or phrases they want to include in their poem. Prompt them to think about the themes or emotions they wish to convey, asking them to consider how the selected words interact with each other, to create new meaning. To scaffold, you could model your own version on the interactive whiteboard or via a visualiser.

2

Once the children have circled their words, ask them to use a whiteboard pen or marker to draw a bold box around their chosen words, reminding them to be careful not to cover them up. This helps to emphasise the selected words and makes them stand out in their final piece. To add an extra layer, you could ask pupils to talk to a partner about why they've chosen particular words, perhaps tying in previous learning on adjectives, verbs and nouns.

3

4

Encourage the children to take their creativity further by drawing simple outlines of patterns or illustrations around the boxed words. This is an opportunity for them to be inventive and enhance their poetry visually. Prompt them to consider how these designs relate to the themes or emotions of their poem, and if any of the words they've chosen have definitions that could inspire a picture or pattern.




Finally, instruct pupils to use bold colours to fill in everything except the boxed words. Leaving the chosen words untouched allows them to stand out and creates a striking contrast, making the final poem easier to read. Remind them to consider how the colours they use might reflect the mood or theme of their poem. This final touch will transform their work into a unique piece of art.

5



Hannah Kavanagh is a Year 5 teacher and English lead at Fourfields Community Primary School in Yaxley.

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Do you ever feel like you've made a thousand decisions before breaktime has even rolled around? The whistle goes, and you realise you've already had to juggle what could reasonably be considered an entire week's worth of 'this-or-that's; 'yes-or-no's?

You're not the only one. There's even a word for this in philosophy: *phronesis*. It means 'a type of wisdom or intelligence concerned with practical action'. Aristotle came up with this idea to explain the process of linking theory to practice through quickfire decision-making. And it applies to the way we work in classrooms every day.

All this has made me think recently... how does decision-making work in the classroom? How do we conclude what we think is right, and what does this look like on a practical level?

Start at the very beginning

One of the reasons I love working with ITT students is that you really get to break down the processes seasoned teachers are so used to in the classroom. One of the first things I tell new teachers is that you have to prepare for the most basic things to go wrong, because nothing in a classroom is simple. Perhaps you've had a similar experience; you're working

with (or have been!) an incredibly excited and confident trainee teacher, who can't understand why they stumble over something as basic as helping pupils enter a classroom and taking the register. The thing is, this sounds like such a simple task on the surface. But underneath, it's a web of complex decisions. We often don't see this, because we don't break it down into its constituent steps. As

seating so those two girls who fell out this morning aren't next to each other, and a million other things, seemingly all at once.

Instinctive decision-making is an amazing skill, and I'm certainly not advocating that we spend all day unpicking every single action, but wouldn't it be great to have time to reflect now and again? *Why do I do this this way? Why does this process work well? Is there a better way of doing X?*

Right this way

This is where we can go back to Aristotle's concept of *phronesis*. The idea that there is an ethical element to the decisions we make in the classroom means that there must be a 'right' and a 'wrong' choice as we seek to achieve certain outcomes or reach certain goals (Winch et al., 2015). This is by no means a simple feat. *Phronesis* focuses on the need for you to understand and navigate the complex environment of your classroom in a way that allows you to do the right things in a practical situation (Pickup, 2020).

This is why the thought process behind an action or decision is just as important as the action itself, if not even more so. Practically

teachers, we make so many decisions every day that when we stand back and really think about it, it's amazing how much of it just feels automatic. As children pour into a classroom, we have to ensure that everybody is sitting down, help that one pupil who has already lost their lunchbox, figure out

"The thought process behind an action or decision is just as important as the action itself"



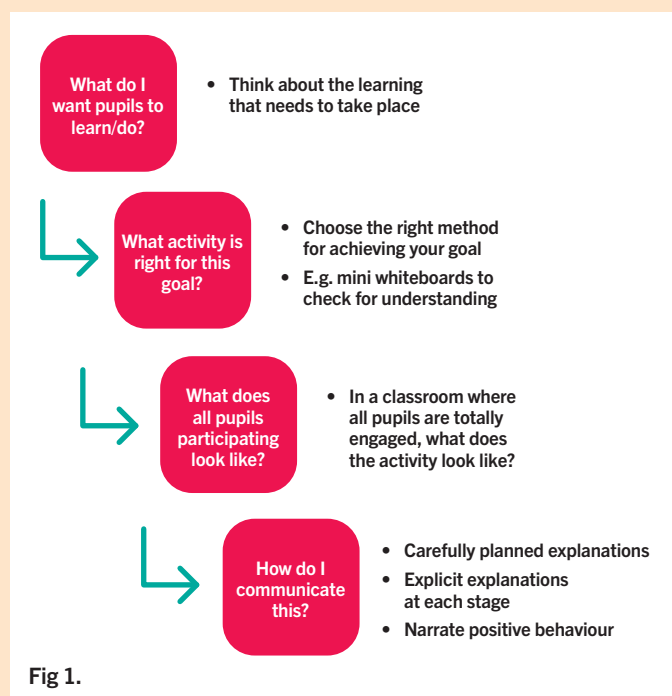
speaking, there is a way to scaffold this. To support it in our school, I created a four-step approach that teachers use in planning meetings, and in all comms from the quality of education team to teaching staff (see fig. 1).

Using these questions, we can ensure that any actions we take are aligned with what our pupils actually need.

Tell me why

This process also has wider implications for how senior leadership teams within schools can quality assure what's going on in classrooms. For example, if you've made a decision using this process, even if it slightly deviates from the school's official policy, you can show that you've made a valid decision, and thought it through fully. It's like showing your working. Nobody knows your class better than you do, so this can be a useful scaffold both for documenting why you've done something, but also to use as a guide when actually making the decision, to ensure you've considered every angle. It might sound a little bit daunting (nobody wants more paperwork), but even if you use this as a loose mental structure, it can actually lead to exciting and engaging professional conversations about how and why decisions are made. This, in turn, can help us move away from generic feedback and tick-box policies and towards more thoughtful and meaningful collaboration that benefits everyone. And if that wasn't enough, the main outcome of this process is far more important: to have a shared language with which to explain why we do things a certain way, and a method for undertaking self-reflection.

Whilst traditional CPD methods such as INSET days and after-school sessions seem to be the norm in most schools, when I reflect on my



own development as a teacher, and that of teachers I really admire, no-one really uses those forms of CPD to show how they got better. If we're honest, most of us spend the hour thinking about the reports we've got to write and the stack of marking on our desks! Instead, the teachers who have developed, improved and cemented their practice over time have done so through a combination of thinking about their own teaching and talking to others about theirs in informal settings like staffrooms (and articles like these). By focusing on phronesis, we can grow genuine school cultures and context-specific ways of working, without relying too much on bolt-on CPD. Wouldn't it be better to use systems like the one above – mine isn't the only process out there, you may have your own – to provide opportunities for colleagues across phases, year groups, and subject specialisms to listen to one another and hear about the different thought

processes we all use to make these myriad decisions, both big and small?

I propose that we make this part of our everyday practice in schools, and work together to really understand the why behind the what. **TP**


5 questions for reflection

- 1 What regular actions do you take in the classroom that seem simple but are actually complex when broken down? How did you decide to do things this way, and why?
- 2 What is your thought process when planning lessons? Does your thinking align with the four-step model?
- 3 Does your school provide opportunities for informal discussion around lesson planning?
- 4 Does your school provide opportunities for you to share your thought processes with SLT as part of the feedback process?
- 5 If you use collaborative planning, to what extent does your year or phase team consider what classrooms actually look like when everything is working well?



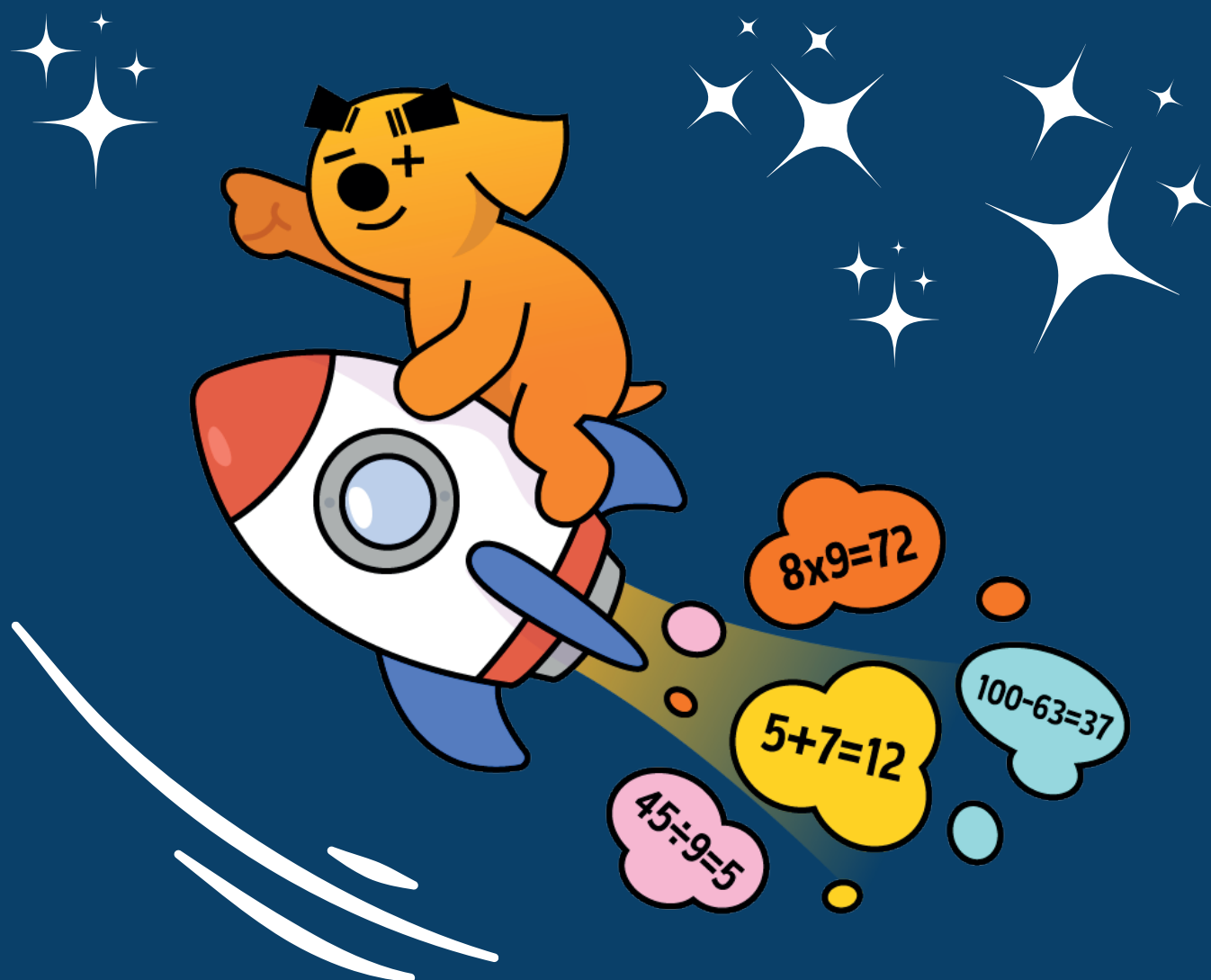
Claire Harley is a senior leader and history teacher

in the East Midlands.

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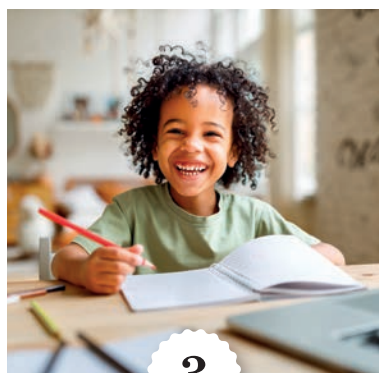
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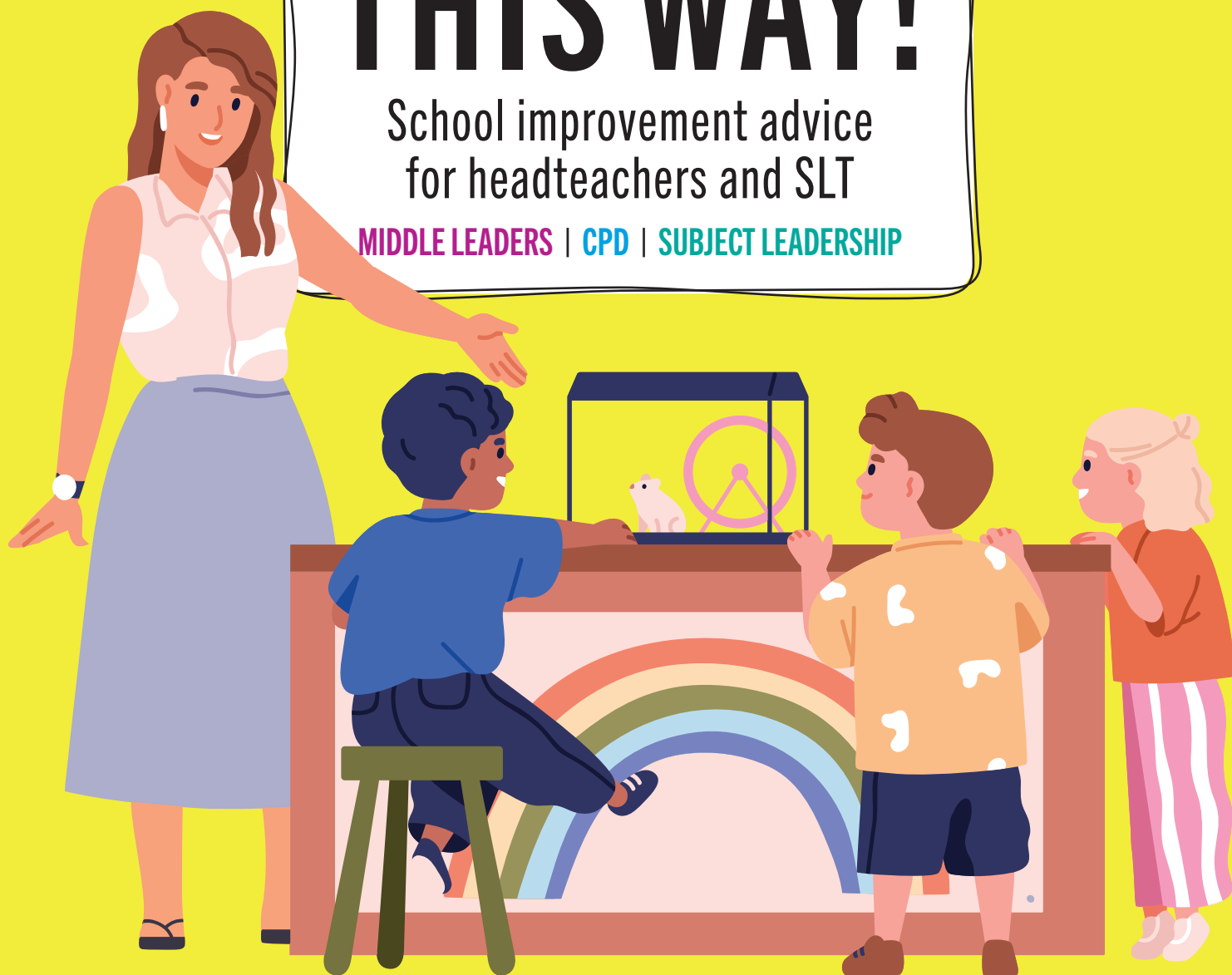
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Play is for all ages, not just the **NARNIA OF EYFS**

In school, play is often the domain of the playground or reserved for our youngest pupils. However, evidence suggests the importance of play for all children, not just those in the ‘Narnia’ of Early Years education. As leaders, we frequently struggle to integrate play into our curriculum design and feel that we will be penalised for using this approach to learning. Nevertheless, like any effective curriculum strategy or approach, when play is implemented in a carefully planned manner, it positively impacts

pupil wellbeing and outcomes.

Throughout my work with schools across the country for the Chartered College of Teaching’s Rethinking Curriculum project, I have been privileged to witness various play-based curriculum designs. Each is unique to the specific context and needs of the school community, but all make the educational experience more exciting and engaging for learners.

A crucial aspect of curriculum design is fostering a school-wide culture that supports the chosen

approach and ensures that everyone involved has a clear understanding of what that approach entails in the specific setting. When it comes to play, it’s important to establish a shared understanding and agreement on what play should look like in your school.

Play exists on a broad spectrum. On the one hand, there is free play, ‘with no external goals set by adults and... free from adult imposed curriculum’ (Play England, 2024). On the other hand, there is structured play, which ‘tends to be adult-led and includes activities that can be a measure for either education or clinical reasons’ (Rees-Edwards, 2022).

Have a vision

When considering your vision for play within the curriculum, you may find

it helpful to reflect on the following four questions:

- What role do you envision for the adults working within the play setting?
- How frequently do you expect play to occur, and for what duration?
- Will the expectations differ for different age groups?
- Will play take place indoors, outdoors, or both?

Ideally, these ideas need to be discussed and developed collectively as a school team. As with any school-wide decision, this process may involve differing opinions and perspectives. Your role is to unify the vision for play, ensuring that everyone feels valued and respected while also providing the best

opportunity for the children.

This conversation will not be a quick one; however, having a solid foundation is crucial, as failure to address this comprehensively can hinder the successful implementation of the curriculum.

During the initial phase of your discussions, it is also important to consider the broader school community's understanding of play. What do the governors or trustees know about play? What are the perspectives of your families? How do your children perceive play? By exploring the views of these key stakeholders, you can identify additional training needs as part of your implementation planning. By understanding any reservations or

differing views, you will be able to explore why play is still suitable or even uncover why your stated vision may not quite work.

Practicalities

Once the vision is established, it's important to consider the systems and policies that will support the development of play-based learning in your setting. There are two key areas that I believe need to be addressed in detail.

First, it is crucial to ensure that the introduction of play is inclusive. Identify whether there are young people who may find this approach challenging, and think about how to help them fully access the learning experience. If you plan to conduct play activities outside as part of the curriculum, ensure that all students can participate; if some cannot, consider what accessibility improvements can be made. Additionally, assess whether you have sufficient behaviour management strategies in place to ensure that play can be conducted safely for everyone involved.

Secondly, it is essential to evaluate the current assessment expectations



“Play is a key to children leading happier lives”

Who are you, the fun police?

Let me ask you this: if play had absolutely no impact on learning whatsoever, would it still be a good use of a child's time in school? I think most of us would agree that play is not just about learning. Ultimately, it is about enjoyment. As developmental psychologist, Prof. Alison Gopnik explains in her book *The Gardener and the Carpenter*, although the evolutionary purpose of play may be to help children's brains to grow, the reason children play is because it is just so much fun!

And fun should matter in school. We currently have a big attendance problem where around 20 per cent of children are persistently absent ([tinyurl.com/tp-PersistentAbsence](https://www.tinyurl.com/tp-PersistentAbsence)) and Children's Society data shows pupils aged 10-15 are increasingly unhappy with school ([tinyurl.com/tp-GoodChildhoodReport](https://www.tinyurl.com/tp-GoodChildhoodReport)). But what if it was more fun? What if children were given

more opportunities to do what they are biologically hardwired to do? What if our pupils got to play more while they were in school? I honestly believe it would be the cheapest and most effective solution for getting more children into school every day and, essentially, enjoying it more when they are there.

But we are doing the opposite. Primary schools have shortened their playtimes by about 45 minutes a week compared to levels in 1995, according to a UCL study ([tinyurl.com/tp-UCLbreaktimes](https://www.tinyurl.com/tp-UCLbreaktimes)). At the same time, 47 per cent of children are not getting the minimum 60 mins of daily activity recommended by the NHS ([tinyurl.com/tp-60mins](https://www.tinyurl.com/tp-60mins)). We also have the unhappiest 15-year-olds in Europe according to PISA data ([tinyurl.com/tp-2022PISAs](https://www.tinyurl.com/tp-2022PISAs)). It's utter madness.

But what do we consider play? Well, it typically has certain defining characteristics, three of which are that it is autonomous, fun and intrinsically motivated. It is no surprise, then, that children, and adults, who report higher levels of autonomy, positive emotions and intrinsic motivation tend to have much higher levels of wellbeing, too. Simply put, play is a surefire key to children leading happier lives.

So, at the end of the day, we need to be less fixated on the notion that children learn through play, and focus more on the fact that play enables children to be happy, healthy and to flourish. After all, shouldn't that be the purpose of school?



Adrian Bethune is a part-time teacher at Broughton Community Schools, Associate Lecturer at Oxford Brookes University, and founder of teachappy.co.uk



Memorable mathematics

I have often been asked, 'How can play have anything to do with mathematics?'. We usually consider maths as more of a 'serious' subject, but for mathematicians, play is necessary for creative problem solving; exploring 'what might happen if...'. Many mathematical strategies are already present in children's play, and it is important for us to nurture these strategies from the outset. For example:

- Exploring and imagining
- Expressing
- Classifying
- Specialising and formalising
- Organising and modelling
- Predicting and conjecturing
- Convincing
- Reflecting
- Generalising
- Extending

Play is intrinsically motivating, too; it is memorable and mindful. We can use playfulness to make maths much more notable for the children we work with, and to provide a space where pupils can build on their prior, often taught, experiences. Providing even occasional time for playing with some taught mathematics is important for children of any age, allowing time to make sense of what they are being taught, make connections with other learning, raise questions, and for us to assess their understanding, confidence and interests. For example, we might provide time for pairs to make rectangles with interlocking cubes to further explore multiplication, or ask younger children to make a set of 0-15 cards to use for later teaching.

How we think of ourselves in relation to a subject fundamentally influences how well we learn (Dowker et al 2019; Dweck 1999; Sfard & Prusak 2005). Being playful is the opposite of being put on the spot or 'wrong', and so it can help us build the fearless classrooms necessary to nurture confident mathematicians with a positive view of the subject (Obersteiner, 2018).

Dr Helen J Williams is an independent educational consultant specialising in maths, and author of Playful Mathematics for Children 3 to 7 (£21.99, SAGE).

@helenjwc



and systems of your curriculum and how play-based learning will fit into these. Often, assessment is viewed as a barrier to curriculum development. High-stakes accountability and external pressures can erode practitioners' confidence. Therefore, your assessment system and policies must support the play-based approach you have adopted. By addressing the expectations and explaining how the assessment will complement, rather than hinder, teachers will hopefully feel less anxious about fitting play into previous assessment systems.

If your staff members lack experience in integrating play and assessment, it is crucial to plan for long-term training to help build their expertise and confidence in these new methods. As the school leader, you should also be ready to discuss the assessment policy with governors or trustees, who may be familiar with more traditional assessment methods. By aligning assessment with your play-based approach, you can ensure that play is an integral part of the curriculum delivery cycle, rather than an additional task.

Curriculum development is a gradual process, and the strategy for introducing play must be considered on a long-term basis.

Play it your way

The national curriculum is often cited as a barrier to implementing a creative curriculum approach such as play.

However, the method of delivering the curriculum content is ultimately up to individual schools. If you believe a play-based approach is right for your school, take the time to understand why and plan accordingly.

Here are some questions upon which to reflect:

- Why is play the most beneficial way to enhance your curriculum?
- Is this the right moment to undertake curriculum development work? Do you have the necessary capacity?
- Can you prioritise training and professional development around play for all your staff?

If you can confidently address these questions, then be bold and embrace the wonderful world of play!

For more information on Rethinking Curriculum, and to access a free evaluation tool and play resources, visit chartered.college/rethinkingcurriculum



Jenna Crittenden is an experienced Early Years and primary teacher and leader of 17 years. She is now curriculum design lead at The Chartered College of Teaching, leading on Rethinking Curriculum.

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Super CIRCUITRY

Add a spark to science lessons and help pupils comprehend how electricity works, with these hands-on activities...

DANNY NICHOLSON

It is hard to imagine our modern world without electricity. After all, it's all around us, powering our lights, heating and much of our entertainment. To most of us, life would be unthinkable without electricity.

It's a tricky topic to teach, though, because it is an abstract concept. We can see its effect on something like a light bulb, but it is very hard to explain what is actually happening inside a circuit, particularly at primary school level. The nature of electricity is hard to visualise, and when asked to draw what is going on inside a wire, children often produce waves or sparks (Kibble, 2002).

Another common misconception that children have is that the current is used up as it travels around the circuit, and that there is more current in the wire before the bulb and less current in the wire after the bulb. In reality, there is the same current at every point in the circuit.

In primary, children don't need to know the difference between series and parallel circuits, but they do need to understand that for electricity to flow, a complete circuit is needed.

Models and analogies

To help children understand what is going on, it can be useful to use a model or an analogy, bringing in a different frame of reference to describe what is happening. For example, many people think about electricity in terms of

something else, such as water flowing through pipes or traffic moving along roads (Asoko, 1995).

No model is perfect. They will usually fall down on some aspect of what actually happens inside a circuit, but the shortfalls could be discussed with the pupils.

You could try using a string loop model. Ask pupils to sit in a circle on the floor. Use a loop of string (or a hoop) to play the role of the electrons inside the wire. Ask the children to hold their hands out so that the string can pass between

their thumb and forefinger. One child can then act as the battery and start moving the string (electrons) around the circle. The movement of the string is the current, flowing around in a circuit.

We need to take care with this model to avoid giving the misconception that it is the wire that is moving, but it's a good starting point. For more ideas for models, see the IOP website at tinyurl.com/tp-IOPcircuitmodels

Application of electricity

By the time they get to Year 6, as stated in the national curriculum, 'Pupils should construct simple series circuits, to help them to answer questions about what happens when they try different components, for example, switches, bulbs, buzzers and motors.' In lower years, pupils are expected to simply draw

"Electricity is a tricky topic to teach, because it is an abstract concept"

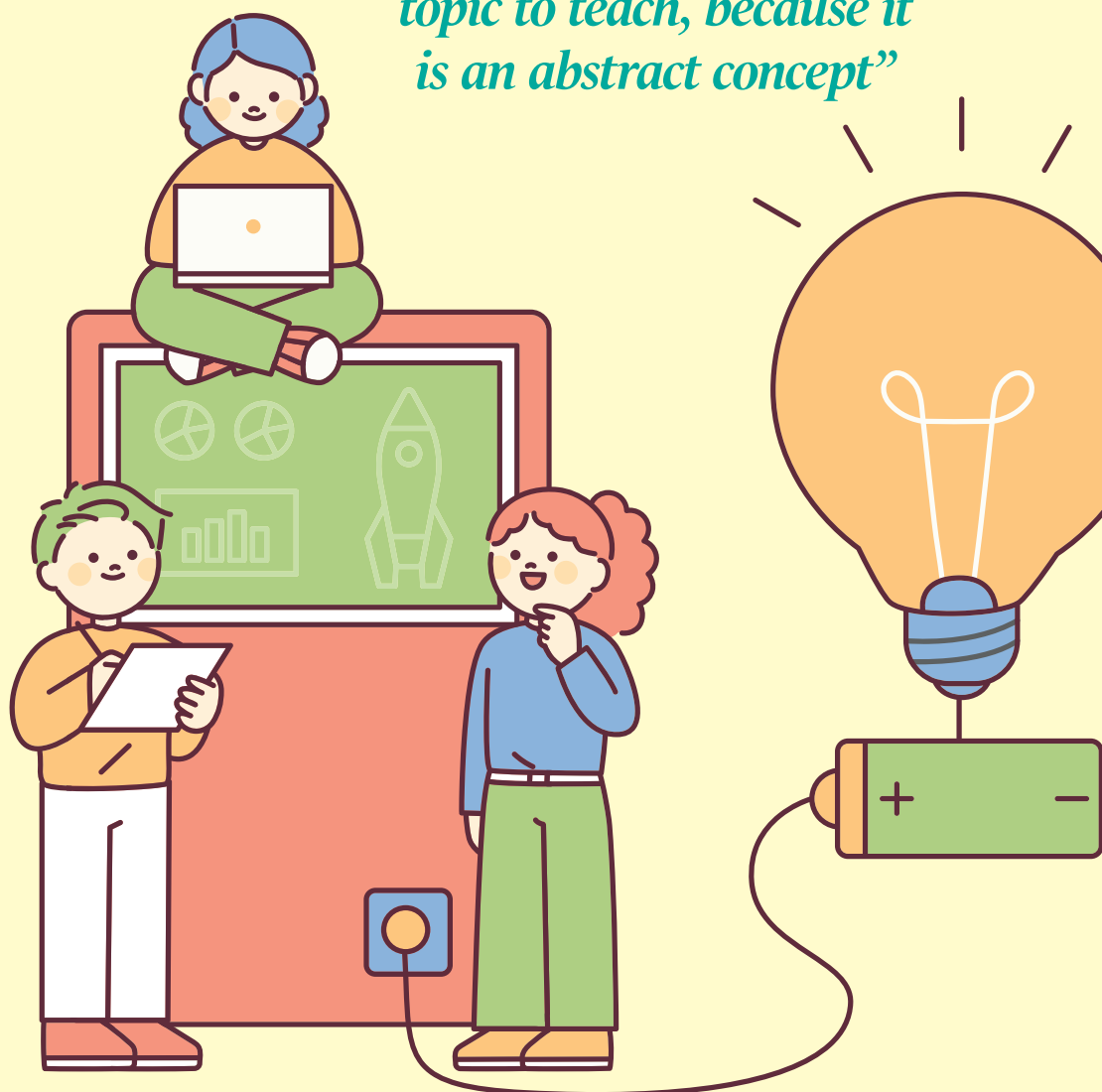


Fig.1. Basic electrical symbols



circuits as they appear in real life – with wiggly wires, and batteries and bulbs drawn as they look to us. However, in Year 6, children are expected to draw circuits using more scientific symbols and straight lines (see Fig.1).

To help with the transition in notation, Chapman (2014) suggests building real circuits on a large sheet of sugar paper alongside the circuit diagram, so pupils can see how the real circuit relates to the diagram.

Pupils should also be able to use their knowledge to design and make useful circuits. For example, they could build a simple model

of a windmill, using a motor to spin cardboard blades. This kind of project will provide opportunities for cross-curricular links to design and technology, too.

Other useful circuits could include:

- Burglar alarm (see tinyurl.com/tp-BurglarAlarm)
- Buzz wire game (see tinyurl.com/tp-BuzzWireGame)
- Giant game of Operation (see tinyurl.com/tp-Operation)
- Paper circuits (see tinyurl.com/tp-PaperCircuits)

Be aware that you'll need to complete a risk assessment

before working with batteries and circuits. CLEAPSS and SSERC have resources for this (tinyurl.com/tp-CLEAPSS and tinyurl.com/tp-SSERC).

Making learning real

Children will have regular experiences with electricity every day of their lives. They will know that televisions and games consoles will not work unless they are plugged in. Many toys need batteries to work, and children should be aware that batteries come in all different shapes and sizes. Batteries are a good introduction to voltage and the size of the 'push' around a circuit, too.

Pupils should be able to group devices into those that use batteries, those that use mains electricity, and those that use both. It can be a little tricky for children to differentiate between them these days, since many of their toys and gadgets use a rechargeable battery and can run on either mains or battery, such as phones, tablets, digital cameras and laptops. So, when grouping items, try to include obvious examples as well, such as a fridge, TV, washing machine, and lights.

Another way to bring learning to life is to make it physical, and try out some practical lessons. I've used the below ideas with my classes, and find they're really useful starting points for hands-on experimentation.

Energy Sticks

An Energy Stick is an excellent gadget for teaching circuits in primary schools. It is relatively inexpensive, and you just need one to use with a whole class to make an impact. It's typically a transparent plastic tube

with metal casings on either end, and lights inside. When both metal conductors are touched, the stick lights up (some even make a sound). Use it to turn the whole class into a circuit by holding hands. Ask children to observe what happens when the circuit is complete, and whether anything changes if one hand is dropped. Can they explain why?

Electrical audit

Carry out a survey in the classroom. Task children with making a list of all the devices that use electricity. Divide them into groups – those that use mains electricity, those that use batteries and those that have both. The children could carry out a similar task at home.

Making switches

Give the children a square of card, two paper fasteners and either some tin foil or a paperclip. Ask them to make a working switch that they could put into a simple series circuit to turn a small bulb on and off. This is very simple, but a real crowd-pleaser.

Batteries

Select a range of small toys that use different types of batteries. Ask the children to take the batteries out of the toys and look at their different shapes and sizes. Can pupils put the toys into groups according to the types of batteries they use? Ask them to record the results as a graph or pictogram, afterwards. (Safety precaution: take care with small batteries and warn the children not to put them in their mouth.) **TP**



Danny Nicholson is a science teacher, edtech trainer, and author.

His new book, *Science Fix* (£22.99, SAGE), is out now.



Three, two, one... CELEBRATE!

Take maths games to a whole new level by tying them in with essential support for the NSPCC this Number Day...

SARAH FARRELL

Number Day, organised by the NSPCC and celebrated this year on Friday 7 February, encourages schools to engage children in fun, maths-related activities while also raising awareness and support for the NSPCC's vital work. As a teacher, you can inspire your students to explore numbers through a range of practical, engaging games and activities.

Why celebrate?

1) It promotes positive attitudes towards maths.

Some children may have the perception that maths is solely about solving calculations. Celebrating Number Day reminds pupils that maths is a fun and enjoyable subject.

2) It develops collaboration and teamwork.

Often, maths lessons mainly involve children working independently. Number Day provides the opportunity to engage in group activities with turn-taking games or paired challenges, which promotes social skills and communication.

3) It builds confidence in maths.

Allowing children to practise their maths skills through games and challenges gives them an opportunity to be successful and be supported by friends.

There are many different ways to celebrate Number

Day. You may decide to dedicate the entire day to maths-related activities, or you might just add a twist to your existing maths lesson. Whatever you choose to do, here are some ideas to get you started...

Number Day activities

Number bingo (KS1 and KS2)

Resources: Bingo cards with numbers (or mini whiteboards for children to write their own numbers); pens or counters

How it works:

- Either provide children with bingo cards or ask them draw a 3 x 3 grid and input their own numbers between 1 and 100.
- Call out numbers. When they hear a number that they have, children cross out their number or put a counter over it.
- The first child to complete a row or column (or the entire grid) shouts "Bingo!" and wins.

KS1: Practise number recognition by calling out the number, or challenge children by calling out a calculation, e.g. "4 + 8". You may also want to limit number choice to within 20 or 50.

KS2: Challenge children by displaying the number in Roman numerals or by giving them a harder calculation to find the number, e.g. "3 x 2 x 4".

Number match-up (KS1 and KS2)

Resources: Sets of cards with different representations of number on them; for KS2, the children could create these themselves

How it works:

- Lay out the cards face down.
- Children take it in turns to flip over two cards.
- When they find a match (e.g. 4 and four), they keep the pair and take another turn. If they do not turn over a match, they return the cards face down.
- Continue until all matches are found. The child with the most pairs wins.

KS1: Practise subitising and number recognition by using digits and written words or images representing the numbers.

KS2: Include times table multiplication facts, Roman numerals or other representations.

Maths scavenger hunt (KS1 and KS2)

Resources: A list of challenges or items to find, described in mathematical terms



How it works:

- In pairs or small groups, children work together to complete the scavenger hunt.
- Gather children afterwards to share and compare their findings and to discuss the maths involved.

KS1: Depending on the confidence level of pupils, tasks could revolve around counting (“Collect 3 leaves”), measuring (“Find a pencil that is longer than 12 cm”) or shape (“Find a cylinder”).

KS2: Tasks can become more complex, such as finding an object longer than 11.2 cm but shorter than 12.5 cm, or involve investigation (“Measure the length of one of the benches”, “Count how many chairs the classroom has and multiply the answer by 2”).

Explode a number (KS1 and KS2)

Resources: Mathematical manipulatives and large pieces of paper

How it works:

- In pairs or small groups, give children a number.
- Using manipulatives or through writing and drawing, ask children to create as many different representations of a number as they can. They may write the number in words, use place value counters or a Gattegno chart, or write the number in expanded form. KS2 children may find the factors of the number, write it in Roman numerals or write calculations that give the target number as an answer.

- Whoever can create the most representations of a number, wins.

Number riddles (KS2)

Resources: 100-square grids

How it works:

- Children choose a number and think of clues to give to other children so they can work out the number.
- Each clue should narrow down the possibilities, but it shouldn't reveal the answer too soon. E.g. “My ones digit is even, but my tens digit is odd. I am divisible by 3. I am 5 more than a square number. My digits have a sum of 9.”
- Cross out the numbers that can be eliminated as you go until only one number is left.

Dice games (KS2)

Resources: Dice (10-sided dice would work best for this, but it would still work with 6-sided dice)

How it works:

- On the whiteboard, draw out a template (e.g. 6 boxes next to each other to create a 6-digit number). Children copy this down onto a whiteboard or on paper.
- Set the challenge. This may be trying to make the smallest number, the greatest number, the number closest to 500,000 – the possibilities are endless!
- Children should then take it in turns to roll the dice and select which of their boxes to put the digit in. They will have to choose carefully to try to achieve the target number.
- This could be extended by formatting the challenge as a calculation, such as $______ + ______ = ______$ and asking the children to come up with an addition question with an answer as close to 60,000 as possible.

Jeopardy (KS1 and KS2)

Resources: Questions separated into categories (addition, subtraction, etc.) and arranged in point values

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tinyurl.com/tp-NumberDay

How it works:

- Divide the class into teams.
- The first team chooses a category and a points value. Ask a question that fits into the chosen category (e.g. if it's addition, you could ask “What's 5 + 8?”). If they answer the question correctly, they win the number of points they chose for the points value.
- At the end, total up the scores. The team with the most points wins.
- To make the game as effective as possible, choose questions that target areas that you know your class that they have recently covered in lessons. There are some examples in the downloadable resources. **TP**



Sarah Farrell is a **KS2 teacher in Bristol** who makes and shares resources

online.

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“Celebrating Number Day reminds pupils that maths is a fun and enjoyable subject to learn”



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Icebergs of **FAKE NEWS**

How can children tell the difference between facts, beliefs and opinions online?
A few carefully placed activities can work wonders, says **Sheena Peckham**

What are the signs of something being fake online? Is it that it seems too good to be true? Or features something that's pushing an agenda? Or has obvious spelling errors?

Yes, those are some of questions and signs to look out for, but they're not very helpful to a child who doesn't yet have the critical thinking skills to assess motives, or who struggles with their own spelling.

Often, the common signs we highlight when it comes to misinformation or disinformation are easier to talk about than to spot. This is especially true for neurodivergent children.

But it's essential that we help pupils navigate the online world, so below are some approaches you might find useful with your class.

The SIFT method

When it comes to children's media literacy, it's a good idea to develop an easy-to-remember process that you can display in the classroom. One such process is the SIFT method: Stop, Investigate, Find and Trace. **Stop:** Before believing or sharing information, stop and think about whether it might be false.

Investigate: Investigate the source. Who is sharing the information? Where does it come from?

Find: Can you find the same information in other places? Does it say the same thing or something different? If the information is different, then we need to explore further.

Trace: Trace the information



back to its beginning. What is the context in which it was shared? Is the content recent or was it shared a long time ago?

You can demonstrate this method using different types of information – articles, images, videos, and audio – to model the process.

The iceberg diagram

An iceberg is split into two parts: the surface and the deep-dive. Surface questions about an article or image might include 'What does the information tell us?' or 'Who wrote the article?' or 'Where did you find the information?' Those are generally easy questions to answer without thinking critically.

The deep-dive questions include 'What are the author's beliefs?' or 'What information is left out?' or 'How could this information make some people feel?' Usually, these questions have multiple answers or answers that require more detail.

Creating an iceberg diagram is a really helpful way for children to visualise their thinking. You can give pupils templates on paper, or project a bigger class version on the whiteboard or visualiser. Show the top of the iceberg sticking out above water, then the bulk of it below the surface. Take an article or image, and place questions about the information in each part of the iceberg, depending whether they're 'surface' or 'deep dive', and get children to discuss why a question fits into its section.

Just like SIFT, you will need to dedicate a few lessons to teaching this process. Then, you'll need to reaffirm it throughout every lesson that requires critical thinking or fact-checking.

Real or fake?

Gamified learning can be a good way to engage children in media literacy. Using online tools, source a series of images – both AI-generated and real photos. Put them into a set of slides or an online quiz

tool and ask the children, 'Real or fake?'

Between each image, ask pupils to explain their choice. How can they tell it's real? Or how do they know it's fake? Are there mistakes in the image? Or things that don't make sense?

It's important, when children call out an AI image as real, that you take time to discuss why fact-checking is important (because it's not always easy to tell just by looking). This is where the SIFT method can come into play.

Research races

A fun way to explore fact-checking skills is to challenge pupils to find information sources in the form of a race. Children will need internet access for this activity.

To prepare for this, you will need to find a couple of news stories. For each story, change the headline and some details. Avoid providing any information about the source when you share the articles with pupils.

Now it's a race to the finish line: who can find the true source first? For more support, you can pair or group children to work together. **TP**



Sheena Peckham is the content lead at Internet Matters, a leading

non-profit organisation committed to safeguarding children in the digital world.

 @IM_org

 internetmatters.org/digital-matters

Fail again, FAIL BETTER

Construct some of your most creative STEM lessons yet, and build pupils' resilience with cardboard engineering, says **Paul Tyler**

For the past 15 months I have been teaching sustainable engineering across the upper primary stages of my school, with a remit to develop children's skills, creativity and innovation. I have spent a good deal of the time a very long way out of my comfort zone, but have been massively inspired by what the children bring to the experiences.

We work in a 'failure-rich' iterative design environment, where children are encouraged to try things, fail, evaluate and try again – I've discovered that I am particularly good at modelling the failing bit! On a serious note, progress can sometimes seem slow, but giving pupils creative freedom and allowing them to learn from mistakes genuinely means they better understand concepts, and skills are more deeply embedded.

Children use cardboard for a lot of their building work. Why cardboard? It's actually the perfect material for building projects in primary schools for a number of reasons:

1. It is readily available and usually free. I put out a letter to our families once a month with a list of resources we need – cardboard is always on it – and I get everything I need for the children's projects for free.
2. It is highly versatile and easy to work with. Cardboard comes in a wide range of grades from thin cardstock to cereal packets, strong corrugated card, and thick moulded card.

If children have the right tools available, then working with any type of cardboard is safe and easy.

3. It's a sustainable, eco-friendly resource. The cardboard that gets donated to the school has already served its primary purpose and gets a second life as the children build with it. After building it can be recycled or shredded and composted.
4. It's a totally safe building material. Apart from the rare possibility of a paper cut, cardboard and the tools used to work with it are totally safe for children of all ages.
5. It is a perfect building material. Cardboard can be made into almost anything that children want, from a large tower made out of sheets of corrugated cardboard, to a detailed model of a car, or even an accurate moving model of a human arm.

Creative processes

Engineering is among the most creative endeavours that humans undertake, and developing children's creativity through engineering starts by giving them opportunities to play with materials, time to explore methods to join these materials together, and a free rein to build. Our infants all have access to a 'creative station' space for 'junk' modeling; sometimes there are prompt cards with ideas, but usually it's just free building time. These areas are constantly busy, and children love to talk about what they are building.



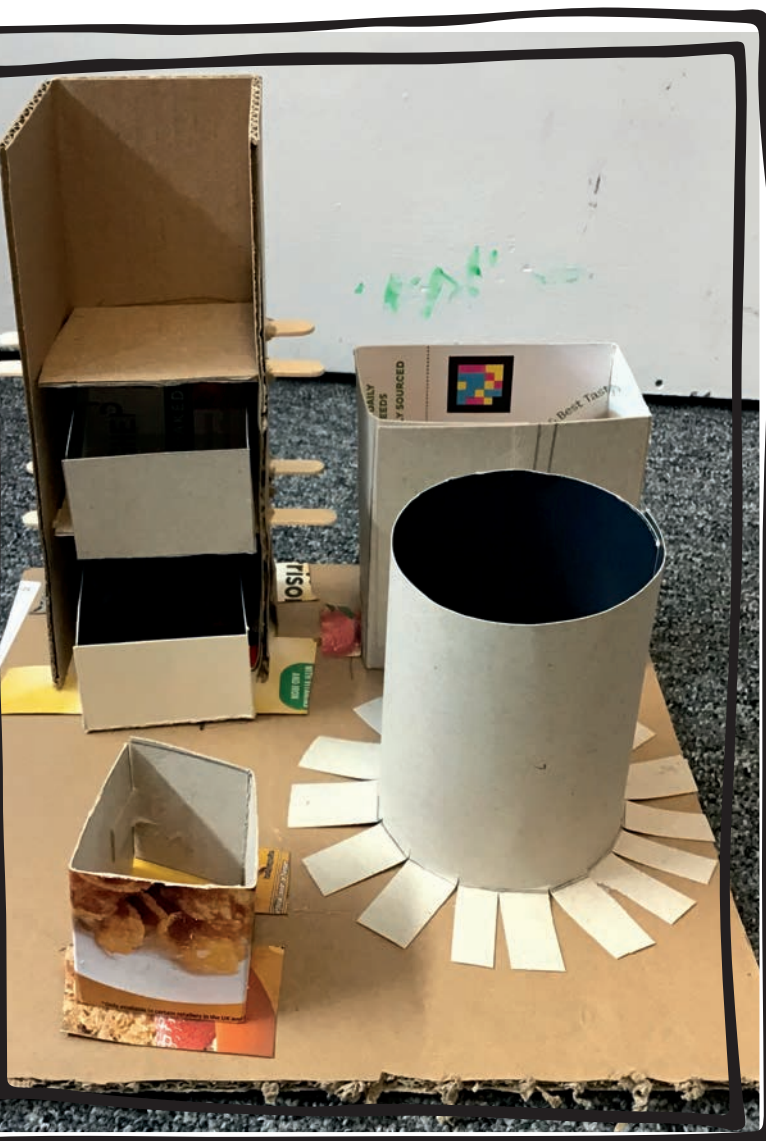
There are basic tools for them to use, too, including scissors, glue, a cardboard saw and masking tape, and older pupils train younger ones to use Makedo tools to cut, punch and attach cardboard.

As children progress through the school, they refine their skills; design briefs become more detailed, material choices expand and there are increasing opportunities for collaboration. But the opportunities for creativity are always there, and a plethora of open-ended challenges ensures there is always freedom during the design process.

Lay foundations

I discovered very early on that I needed to explicitly teach some core skills before children were able to go and work independently. From using the Makedo kits in





you've taught the core skills, you can give the children open-ended design briefs and allow them to design, and build, creative solutions.

The design cycle

All of the experiences I teach are based round the design cycle. We start by identifying a problem, for example: 'Our desks in class get messy when we are working, and we often lose things.'

Then we have a discussion about possible fixes and do some research into what solutions already exist and how we might be able to improve them. During this discussion, pupils create a design brief with some 'open-ended' details. For example: 'We need to build a desk tidy that is no bigger than 15cm square and has space for all the day-to-day tools we use in class.'

The next step is sketching out some ideas for designs, where the children draw a plan of their product as well as perspective projections from different sides.

Then we move onto the iterative part, and pupils start to build parts of their final design, test them as they go, and make improvements as necessary.

Often the improvements are structural; a join needs improving or a stronger grade of cardboard is required. Letting children discover where these improvements are needed is an important part of the process, even if it means the building takes longer. I encourage pupils to discuss ideas with each other, share solutions and 'copy' what they see others doing. As the teacher I try not to intervene if possible and when I do it's almost always just asking questions.

Cardboard projects


The list of projects you can make with cardboard is almost limitless – basically if you can imagine it, you can build it. Over the last 15 months the children I teach have built:

Inspiring resources

 The Low Resource Challenges from My Science Club are excellent for developing children's engineering thinking skills. They need to visualise solutions, adapt and find creative solutions. Find them at tinyurl.com/tp-MSClowresource

 The Makedo website has a gallery of amazing ideas to inspire children on what to make next: tinyurl.com/tp-Makedo

 Autodesk Instructables is an open-source collection of amazing cardboard engineering projects that can be followed and adapted to inspire your builders. tinyurl.com/tp-Instructables

 Check out the book *Cardboard Box Engineering* by Jonathan Adolph (Hachette), which has inspirational project ideas for all cardboard engineers.


- Desk tidies
 - Marble runs
 - The set and props for the school show
 - A football stadium
 - Big Ben
 - Houses
 - Rockets
 - Cars and trucks
 - Optical illusions
 - Dioramas of book and film scenes
 - Pinball games
- Give it a go. This truly is STEM at its best. **TP**



Paul Tyler teaches sustainable engineering at Kirkhill Primary School in

East Renfrewshire and is the co-founder of My Science Club.

 @Glazgow

 myscienceclub.com

infants to figuring out the craft knife in the upper school, some skills need to be taught in isolation.

For example, teaching children how to score, fold and glue cardboard so they can build intricate models allows them more independence to be creative later on. It's also important to teach a variety of joining techniques so children can make informed choices in their building.

But it's not just motor skills we're developing. As projects become more detailed and building becomes more sophisticated, there is an increased need for accuracy. Core maths skills such as measuring accurately, and constructing shapes such as perfect squares and triangles using tools like set squares, protractors or pairs of compasses, can be reinforced in a real-life context. Once

What comes after PHONICS?

Too many schools are teaching reading based on a foundation of misconceptions, says **Christopher Such**, but there's a way to fix that...

Over the past half-decade, my working life has been almost entirely focused on the mountain of evidence relating to reading instruction and the day-to-day teaching of reading occurring in English schools. Having spoken to countless teachers and school leaders, I have come to the following conclusion: far too many schools in England – perhaps even the majority of them – are teaching reading in ways that are founded on a misconception, leading to lessons that are both ineffective and stultifying.

Such a claim requires considerable explanation. For once, this is not an attempt to rehash arguments about the obvious importance of explicitly and systematically introducing pupils to the alphabetic code so that they can begin recognising words for themselves. Instead, my concern is with what comes *after* phonics.

Testing, testing...

Many schools – through a mixture of inertia, poor advice and understandable fears about accountability – currently teach reading in KS2 in ways that have been reverse-engineered from the end-of-school assessments, commonly called SATs. The content domains of the reading assessment have come to be seen as types of reading skill that pupils need to practise if they are to become capable of comprehending texts. This

assumes that if pupils can, for example, answer a question requiring them to summarise, then this must mean they have acquired a discrete, transferable skill. Put another way, as long as we teach pupils how to answer questions that require summarising, then surely this is a step towards better comprehension capabilities.

that ensures children feel confident when the time comes is entirely justifiable. But structuring the teaching of reading for months and years around this assessment preparation is profoundly counterproductive, even when judged against the cynical goal of maximising test scores at all costs.

Read all about it

Due to this common misunderstanding about the nature of reading comprehension, thousands of schools teach reading lessons in which precious little actual reading takes place. Most of each lesson is spent instead in the modelling and practising of how to identify and answer particular types of SATs-style questions. And frequently the texts that are placed in front of pupils are brief, disconnected extracts, selected not for the language and experiences that they offer to young minds, but

“The theory of supposed discrete comprehension skills is utterly bogus”

Or so the theory goes. The problem is that this theory is utterly bogus. A reader's aptitude in answering questions that require summarising is primarily based on their ability to read fluently and on their understanding of the written language specific to the text in front of them. And the same is true of every other supposed comprehension skill. Pupils can answer prediction questions, retrieval questions, explanation questions, etc, because their fluency and understanding of relevant written language allows them to comprehend the text, not because they have acquired some discrete, transferable skill.

Of course, preparing pupils for assessments is always likely to give a small boost to results, and a little SATs practice in Y6



conversely for the assumed skills they allow to be isolated and rehearsed.

It would be foolish in the extreme to blame busy classroom teachers or school leaders for the current state of affairs. Only the distorting effect of excessive accountability pressures could ever have led to something so obviously misguided. This is not to suggest that high-quality teaching would automatically flourish if these accountability pressures were less severe. Expertise in any area of teaching is hard won. However, I am certain that every teacher in existence – unencumbered by the misconceptions foisted upon them by a system superficially chasing test results – would correctly assume that reading instruction should include lots of time spent reading entire books and other texts carefully chosen for the language and experiences they

offer to pupils. Instead, many of us have been guided to teach reading as little more than poorly disguised test rehearsal.

If I sound frustrated, then that is because I am: frustrated with myself for teaching in this way for the first half of my career; frustrated with a system that can distort the professionalism of teachers in such ways; but most of all, frustrated for pupils everywhere, deprived of lessons that genuinely develop their reading capabilities and motivate them to see the value of literacy. It is a situation that requires urgent attention.

Busting myths

As I am a primary reading consultant, you will be forgiven for thinking that I am incentivised to exaggerate the problem and then offer my own individual solution.

However, while I do support schools to use a specific approach, I certainly do not think that there is only one way to teach reading effectively. If as a profession we can move away from the misconceived view of discrete, transferable comprehension skills, then almost any approach to teaching reading in KS2 can be effective, assuming it meets three priorities:

- 1. Develop pupils' reading fluency through active decoding with modelling, practice and feedback.** The teaching of initial decoding that is central to reading development in reception and KS1 merely begins the journey to fluent reading. It is the application of what pupils have learned to real texts – with unfamiliar words and unfamiliar parts of the alphabetic code – that builds their grasp of the English writing system and allows them to recognise words with the automaticity required for fluency. Ideally, every pupil would receive this practice via daily one-to-one reading with a trained adult, but such a thing is logistically implausible. However, whole-class structures, such as repeated oral reading, can achieve much of the same benefits through teacher modelling, purposeful rehearsal and discussion of a relatively brief text.
- 2. Increase pupils' understanding of written English and the world to which it relates by providing a variety of texts chosen for this purpose.** We cannot profess to care about developing pupils' desire to read independently if our reading lessons do not frequently offer opportunities to become engrossed in books in their entirety. By reading at pace with occasional pauses to explain and ask questions in ways that do not overly interrupt the momentum, we can build pupils' knowledge of written language and show them the value of reading.
- 3. Nurture pupils' understanding of their subjective, strategic role in interpreting and appreciating texts by guiding discussions that analyse written language and explore children's own ideas.** By engaging pupils in text discussions that explore an author's language choices and themes, we help them to recognise the craft of writing and the ways in

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which we can analyse texts. And by asking questions that platform pupils' own opinions and ideas, we nurture their curiosity and help them construct their own identities as readers.

In short, beyond focused practice to develop fluency, the effective teaching of reading mostly involves us introducing pupils to the wonders of written English through meaningful experiences with texts chosen for this purpose. Reconceptualising reading instruction in this way offers us the chance to replace years of tedious test preparation with reading lessons that are more efficient *and* more enjoyable. Our pupils deserve no less. **TP**



Christopher Such is an experienced primary school teacher, school leader, reading consultant

and author. His latest book, **Primary Reading Simplified (£19.99, SAGE)**, is out now.

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Building new WRITERS

Carefully chosen scaffolding strategies can bring writing success for EAL and multilingual learners, says **Iva Miteva**

Have you ever had to write a poem using rhyming words; or a story with a clear beginning, middle and end using powerful adjectives; or an essay using similes and alliteration? What if you had to do it in a foreign language? What would you struggle with? What would help you express your thoughts?

We consistently see that mastering successful writing skills in more than one language can boost confidence, creativity and communication skills, lead to improved language acquisition, and improve a learner's chances of success both academically and later in life.

But mastering writing can bring challenges for teachers and pupils alike. If we can implement some simple activities to help structure teaching and learning, we're much more likely to see our EAL children thrive (and encounter less stress!).

Common challenges

When learning to write, multilingual learners often face various difficulties that might have linguistic or cultural roots.

To begin with, English spelling is complex compared to other languages. Focusing on teaching spelling rules and eliminating careless errors as early as possible in a child's schooling

Pronoun	Verb	Article	Noun	Adverb
I	touched	the	door	gently.
He	opened		window	quickly.
She	closed		book	slowly.
We	moved		chair	quietly.
They			table	noisily.

Table 1

will help improve the quality and fluency of their writing.

EAL learners often have very limited vocabulary at first and, naturally, their sentences might sound repetitive and too simple. Due to the lack of acquired vocabulary, they struggle to express themselves and find the appropriate words, e.g. 'There is no place in the hall' instead of 'There is no room in the hall'. Grammatical structures including word order, tenses, prepositions or subject-verb agreement might also differ significantly from the learners' home language.

There can also be discrepancies between English and the home language in what is expected with regard to content and layout for written work. This can lead to incoherent paragraphs and disjointed ideas, with incorrect transition words.

How many of us actually double-check that our EAL learners have understood the writing task and the

prompts? These pupils can struggle to fully comprehend what is expected of them and might write off-topic due to unfamiliar and subject-specific vocabulary in the written instructions. Multilingual learners will also often need longer to plan, draft and edit their writing compared to native speakers, as they try to use the whole of their language repertoire to navigate a written task successfully.

Luckily, there are several scaffolding strategies that can be used to effectively support the different stages of EAL learners' writing development.

First things first

When introducing a new genre of writing, draw on children's prior learning, and discuss the similarities and differences between this and styles and genres with which they're already familiar.

Before the children begin their own compositions, show them examples of a completed piece of writing to model expectations and structure. You can then help them to approach their writing task confidently by breaking it down into more manageable chunks, e.g. brainstorm > plan > draft > edit.

Scaffold expectations

Paired or group writing activities will allow pupils to use their more fluent peers as models for language development. Remember too that translation software can help if a child is struggling to find the words they need.

Provide writing frames such as substitution tables, graphic organisers, and sentence starters. These will help EAL learners develop their ideas in a coherent way.

A substitution table presents words and phrases with different columns for each part of a sentence, e.g. subject, verb, object, article, adjective (see Table 1). This helps break down complex sentence structures into more manageable chunks. The children can then create grammatically correct and meaningful sentences more easily to use them when speaking or writing.

Give these ideas a go, and you might just find your multilingual pupils start to shine as a result. **TP**



Iva Miteva is an EAL specialist with Learning Village.

Who wouldn't want to write CAPTIVATING PROSE?

Inspiring curiosity and enhancing creativity, rhetorical questions can be a useful tool for young writers in both fiction and non-fiction, says **James Clements**

Aren't rhetorical questions great for getting children to share ideas and create effects in their writing? (Can you see what I've done there?)

The (unnecessary) answer is a resounding yes. A well-considered rhetorical question can draw a reader into a topic, create a sense of intrigue or provide an insight into a character's thoughts and feelings.

But, like every technique, rhetorical questions are best used sparingly and judiciously. One or two, well-placed, can bring a text to life. But a steady stream of them might make for a disjointed and rather odd piece of writing.

Knowing how to use rhetorical questions in an effective way depends partly on an ear for language and an understanding of how texts work, but it also depends on some knowledge about the approach and its possible uses.

Adventures and explanations

Rhetorical questions are versatile tools. They can be used in fiction for exciting action scenes or character dialogue, and to introduce key ideas in non-fiction. And they can help create a connection between writer and reader in both genres.

Once children understand their purpose, we'd hope that they will choose to use rhetorical questions naturally, navigating when the technique best serves their writing. However, some pupils might benefit from having the writer's thought process explained explicitly.

To help, we can encourage children to follow four easy steps:

1. **Identify the purpose** – what effect do pupils want to achieve? Do they want to surprise the reader, make them think, or build suspense?
2. **Put ourselves in the reader's shoes** – imagine the question the reader might be asking themselves at this moment in the story or text.
3. **Don't expect an answer** – remind the children that the goal isn't to get a response, but to make the reader pause or reflect.
4. **Make it relevant** – the best rhetorical questions relate directly to the topic, action or characters' emotions in the story, keeping readers focused and engaged.

For example, let's imagine a child is writing an adventure story about a character named Ruben, who's exploring an ancient cave filled with mysterious, magical treasures. Here's how they might create a

rhetorical question for a suspenseful moment in the story, following our steps:

1. **Identify the purpose** – we want to create a feeling of suspense, making readers wonder if Ruben is in danger.
2. **Put ourselves in the reader's shoes** – at this moment, the reader might be wondering, 'is Ruben safe or is something about to happen to him?'
3. **Don't expect an answer** – pupils should aim to phrase the question in a way that encourages reflection but doesn't require a specific answer.
4. **Make it relevant** – as the scene is set in a dark, mysterious cave, the question should relate to the setting and Ruben's feeling of nervousness and uncertainty.

The outcome could look like this:
Ruben took a step forward, his heart pounding. Was he truly alone in this ancient cave, or was someone – or something – in here with him?

If the child is writing a non-fiction text about volcanoes, they might

use a rhetorical question to introduce a new idea or grab the reader's attention.

1. **Identify the purpose** – the child should make the reader curious and engaged with the topic of volcanoes.
2. **Put ourselves in the reader's shoes** – the reader might be wondering 'why do volcanoes erupt?' or 'What causes these eruptions?'



3. Don't expect an answer

– the question should set up the topic without requiring the reader to have prior knowledge.

4. Make it relevant – the question should lead naturally into the explanation that follows.

The outcome could look like this:

Have you ever wondered what causes a volcano to erupt with such power and force?

Engagement and focus

So, why might KS2 children use rhetorical questions in their writing? (See what I've done again?) Here are some of the key effects they might try to create:

Reader engagement

Rhetorical questions can help readers feel directly involved in the text, sparking their curiosity and prompting them to think actively about the topic or story while, or even before, they read.

In fiction:

Sophie glanced around the empty room. Where had everyone gone?

This question invites the reader to wonder along with the character, increasing their investment in the mysterious scene that is about to unfold.

In non-fiction:

Have you ever wondered what life is like for astronauts staying in space?

Here, the rhetorical question is intended to pique the reader's interest, before providing a detailed explanation about life on the International Space Station.

Building tension

In narratives, rhetorical questions can build suspense.

In fiction:

The footsteps seemed to grow louder behind him. Was it just his imagination, or was someone following him?

This creates tension by making readers share the character's anxiety, enhancing the atmosphere of suspense and possible danger.

Drawing attention or focus

Rhetorical questions can help emphasise key points or ideas, signalling that a particular detail or fact is especially important.

In fiction:

But why would the thief risk everything to steal an old, battered box?

Here, we highlight the importance of the box, encouraging readers to think about its possible role in the story and why it might be worth risking being caught to steal it.

In non-fiction:

Why do many scientists think the rate of climate change is increasing?

This question helps focus the reader's attention on the most important point, framing the explanation

of the issue that follows as something deserving of the reader's attention (and perhaps even creating a sense of urgency).

Establishing voice

In fiction, rhetorical questions can help children to show a character's personality. In non-fiction, they can establish a particular tone to their writing, e.g. building a conversational style.

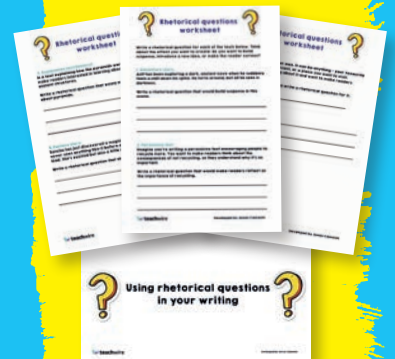
In fiction:

'Did Deanna really think she could outsmart her wise old grandmother?' chuckled Gran to herself.

This question adds a mischievous, knowing tone to the writing, giving readers insight into Gran's perspective and hinting that Deanna might not get away with whatever she's up to!

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tp-RhetoricalQs**

In non-fiction:

I mean, if they could choose anything, who would actually choose to eat vegetables?

This question creates a playful, conversational tone, inviting the reader to reflect on their own experiences as if talking with a friend.

Whether they're crafting thrilling tales or explaining fascinating facts, children can use rhetorical questions to help their writing come alive by adding depth, engagement, and personality. Some time spent learning how this technique works, and how it might be employed most effectively, is time well spent. **TP**



James Clements is an education writer and researcher. His latest project

is **FluentZoo**, a resource for supporting children's reading fluency.

@mrjclements

fluentzoo.com

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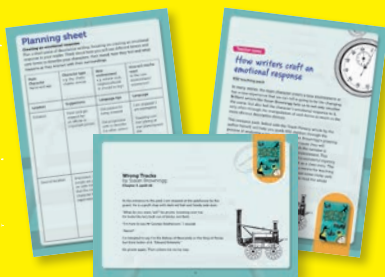
TIME

WAGOLL

Wrong Tracks by Susan Brownrigg

Peer inside the mind of the author, and help pupils understand how to use various verb forms for creative effect

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Download your **FREE**, exclusive teaching pack to help you explore both this extract and the rest of the book with your class.

tinyurl.com/tp-WT

I love using real people, real places and real events in my stories, especially those that focus on northern working-class lives. In *Wrong Tracks*, a real boy takes centre stage. Edward Entwistle was born in Wigan, Lancashire, like me, but over 150 years earlier, when life was very different. Yet I felt a strong connection to this ordinary boy, who by chance was caught up in all the drama surrounding early steam travel. In his old age, Edward, now living in America, became a newspaper sensation when he told his story of how, as a lad, he was asked to drive George and Robert Stephenson's famous Rocket locomotive!



Wrong Tracks (£7.99, Uclan Publishing) is out now.

It proved tricky to authenticate his claims, but I soon realised the gaps in his story gave me the perfect opportunity to fill them in. It also allowed me to have fun with Edward's habit of telling tales and fondness for exaggeration.

In *Wrong Tracks*, Edward, age 14, is invited by Mr George to leave his small village and move to Newcastle Upon Tyne for a very important job – one for which he is the perfect fit. There he is entrusted to care for Premium Engine, a new locomotive that is going to compete in the Rainhill Trials. The prize is £500 and a contract for the winning inventor's engine to run on the

Liverpool & Manchester Railway – the world's first inter-urban passenger railway.

Edward and his new loco-mad friend Prudence soon realise someone is trying to scupper the Stephensons' chances. It is up to the friends to spot sabotage and chase down spies in a thrilling race against the clock.

I like to follow in my characters' footsteps when writing my books. Highlights were seeing Rocket and riding on the replica at Locomotion in Shildon, two steam train footplate experiences, and visiting the former Forth Street Works in Newcastle. There, I imagined how it was for Edward arriving for the first time at the Stephensons' Manufactory... **TP**

5 TIPS FOR USING VERB FORMS FOR EFFECT

PASSIVE VOICE

Passive voice (when the usual object of a clause becomes the subject) can be useful too, as used well it can add atmosphere and tension to a scene. Passive sentences can also show when a character has lost power in a scene or can be used to hold back information in a mystery.

ACTIVE VOICE

Stories benefit hugely from protagonists being active and pushing the plot on. Using active sentences (*subject, verb, object*) will give your story more pace as

your character is doing stuff – and doing things has consequences.

PRESENT TENSE

Present tense has the story unfold for the reader at the same time as for the character. Combined with action verbs it can propel your story forward and keep a sense of tension. Some readers don't like present tense narratives, as they find them less convincing.

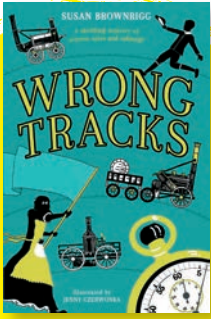
VIVID VERBS

There are lots and lots of verbs to choose

from when writing, and the right one (as with strong nouns) will make your writing more vivid and precise. Using a thesaurus can help you find an alternative word that fits better.

PAST TENSE

Past tense can give a sense of distance from events. How does the passage of time affect the pace of your story? Combined with first person, past tense can mute some of the drama, as we know the protagonist has survived to tell the tale. Past tense is often the default for novels.



Extract from

Chapter 3,
pages 15-16

I originally wrote *Wrong Tracks* in the third person and past tense. But I wanted the reader to be in his head (and heart) - and for the action to unfurl in real time. Changing tense and POV helps the reader explore this new world with Edward. The use of a passive verb - I am stopped - emphasises the main character's lack of power in contrast to the guard's.

This simile has a double purpose. Bricks are not just strong and tough (like the guard), but they also reflect the environment Edward is in. I wanted to contrast his former life - small village - with the industrial here.

Here I am trying to paint a picture for the reader through Edward's eyes. Using a longer list of things builds the sense that this new world is overwhelming - and thrilling. It is a balancing act knowing how much description to use. Too much and a reader may skip over something you wanted them to notice.

This section finishes with Edward's internal dialogue. The use of the verb 'rub' shows Edward's determination. I wanted the reader to be on Edward's side and to will for him to succeed. But will his confidence last? Ending on a question is a trick writers can use to encourage the reader to read on!

At the entrance to the yard, I am stopped at the gatehouse by the guard. He is a gruff chap with dark red hair and beady pale eyes.

"What do you want, lad?" he grunts, towering over me. He looks like he's built out of bricks, not flesh.

"I'm here to see Mr George Stephenson," I squeak.

"Name?"

I'm tempted to say I'm the Bishop of Newcastle or the King of Persia, but think better of it. "Edward Entwistle."

He grunts again. Then ushers me on my way.

I pass through an archway and gape in amazement at the smiths' shop, where men with arms like hams hold red hot tongs over blazing fires.

I can feel the heat; smell it. My heart races with anticipation. I have never been anywhere like this before! It is thrilling.

Continuing on, I reach a long brick building with large archways open to the elements and a tall chimney which seems to be the centre of the works. Machinery parts and wheels are lined up against the wall. I cover my ears at the loud clanging and hammering that echo through the vast space.

Passing a large crank, I enter the manufactory itself. The room is crowded with locomotive parts. I am in awe. Everywhere is a hive of activity. Robust men in shirt sleeves are absorbed in their tasks. There is a potent tang of oil, steam and sweat in the air. Every space is crammed with gears and pulleys and other machinery.

Will I be expected to learn how to operate them all? Imagine that! I rub my hands together. What will I do first?

Edward is small for his age (14). His size becomes important in a later scene, so I wanted to remind the reader of that here, with the verb 'towering'. It also shows that Edward is out of his comfort zone. Careful placing of key information can stop a later dramatic scene from being overloaded with information.

This line adds a bit of humour, Edward and I use it to break the tension in this scene.

The fact this line is thought not spoken, lets me reaffirm that Edward is realising his white lies and bragging can get him into bother - and in this new situation he is on his best behaviour.

This description is full of excitement and the new. The simile - arms like hams - uses a comparison with something ordinary from Edward's world. The wrong simile (if anachronistic) can jolt the reader from the story. Remember to check the etymology of any words that you suspect may be too new for your chosen time period.

This captures Edward's reaction to a new environment. 'Clanging' and 'hammering' give a sense of the noise, and help us feel what Edward is sensing. Visiting similar locations can be helpful when trying to write about places and times that no longer exist. I have to take care not to use all my research, though, as too many details/facts can bore the reader!

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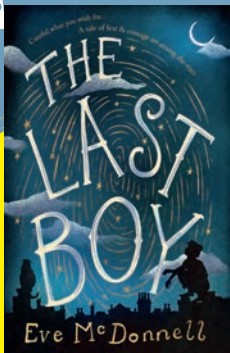
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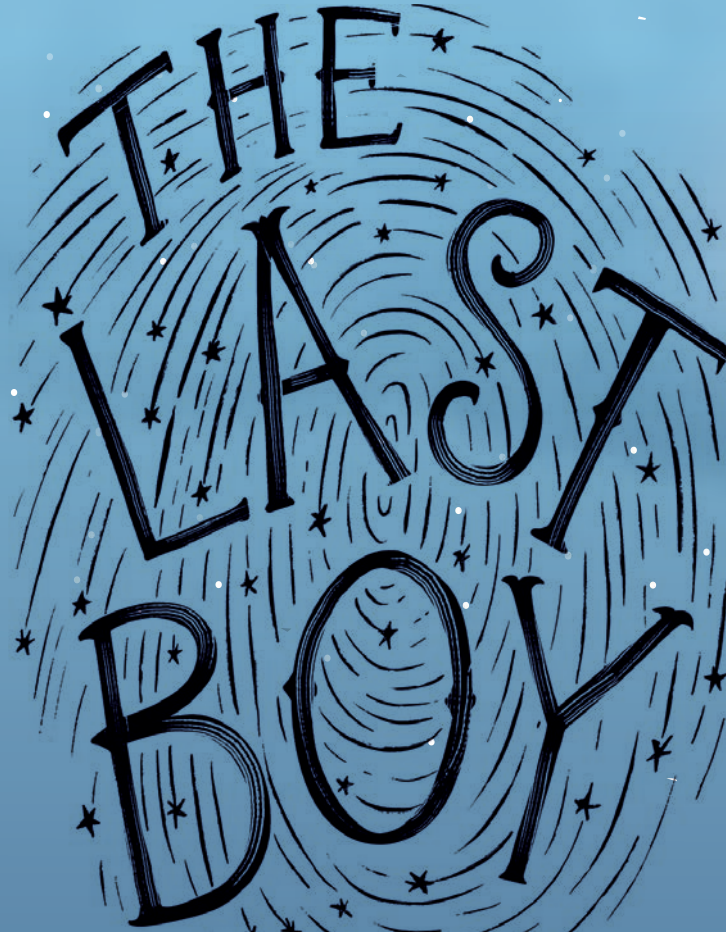
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Published by Everything With Words, September 2024



Explore the skies

Take a journey back in time and learn all about the last ever chimney sweep's astronomical adventures with Eve McDonnell's powerful novel

KATE HEAP

The *Last Boy* is a compelling middle-grade novel that will capture readers' hearts and minds. It tells the heartbreaking story of a young chimney sweep in 19th century Ireland. A petite boy, Brewster was sold to Master Sweep Wyer when he was just six years old. Now, at age 12, he makes a wish on a sky full of falling stars – to be the last climbing boy.

This book is overflowing with historical and scientific themes.

There is so much to discover: the history of child labour and work of chimney sweeps across Ireland and Great Britain, technological advancements in the wake of the Industrial Revolution, the impact of astronomy and people's relationship with the stars, and the power of mathematics to make predictions – and change one's life. Author Eve McDonnell's research is incredibly thorough, providing abundant detail for her readers.

When Brewster joins his sweep

family, we start to see just how difficult this life was for such young children. As readers, we keenly feel each welt, blister, empty stomach and sooty cough. There is no escaping the horrors of these young lives.

A gift for maths, probability and the science of the stars pulls Brewster into a life beyond his climbing family. His ability to work out calculations and predict the arrival of a magnificent comet draws the attention of a wealthy lady. Lady Rosse has the most amazing telescope

and a passion for photography. Her family's technological interests and ground-breaking inventions call to Brewster and, as if by magic, he finds himself starting a new life in her care.

But this new life isn't going to be easy. Lady Rosse expects great things from him in return for her help in making his wish come true. Brewster would do just about anything to protect his climbing family and change the lives of young sweeps forever...

Activities

The last climbing boy

'He wished over and over, fast as words could leave his lips, that he would be the last boy. *The last climbing boy.*'

Not only did Brewster wish *he* would no longer have to climb narrow, soot-filled chimneys, he wished it for all climbing boys everywhere.

The real George Brewster was born in London in 1863. Unable to provide for him, his family sold him to Master Sweep Wyer for just a few shillings. George's death certificate shows he died after getting stuck in a chimney flue. Wyer was charged with manslaughter and sentenced to six months' hard labour. News of George's death caught the attention of the 7th Earl of Shaftsbury. Saddened by the tragedy, the Earl was prompted to push a bill through parliament to stop the use of climbing boys – the Chimney Sweepers Act of 1875.

Find out more about the lives of chimney sweeps in the 1800s. How were they treated? How did they clean

chimneys? What laws did the Chimney Sweepers Acts of 1834, 1840 and 1864 put in place? Did Master Sweeps obey these laws?

Imagine you live in 1875. Write a newspaper report about the tragedy of George Brewster's death or about the Chimney Sweepers Act of 1875. Include key facts and quotes from people at the scene.

Photographing the past

Birr Castle in Ireland is the home of Lady Rosse and her family. A passion for technology and invention runs through every room of this great building. An amateur astronomer and pioneering photographer herself, Lady Rosse has a wish – she wants to photograph the past. Over the years, she has brought the world's greatest minds to her home, built the world's largest telescope and filled her library with scientific books – the very books Brewster sneaks in to read in secret to expand his own mind.

Create a fact file about telescopes. How does the speed of light allow us to see into the past? Find out about Proxima Centauri (the nearest star to Earth except for the Sun) and how long it takes its light to reach our eyes. The Leviathan Telescope was a real telescope built at Birr Castle in the 1840s. What did the Third Earl of Rosse discover using this telescope? Why was it such an important invention of its time?

Written in the stars

In 1833, the greatest meteor shower in history, the Leonids, filled the sky with hundreds of thousands of dust particles shed from the tail of the Tempel-Tuttle comet, burning up as they entered Earth's atmosphere. Every 33 years, the orbit of this

magnificent comet causes it to flash across the sky to the delight, and sometimes horror, of those who witness it. Unaware of what they were seeing in 1833, people panicked. Superstition and lack of knowledge caused them to believe they were being cursed, blaming crop failures, illness and misfortune on the comet.

Using mathematics and science, Brewster is able to predict the 1866 return of the comet. He longs to see it, with thousands of meteors creating a sky more white than black. His understanding of science means he isn't afraid and can appreciate the wonder of it all.

Find out about the Leonid meteor shower and Tempel-Tuttle comet. Why is it called Leonid? What was



Take it further → → →

WHAT DO YOU WISH?

Brewster makes a wish on thousands of 'falling stars'. Everyone's wishes are unique, just like their fingerprints. If you could make a wish on a falling star, what would you wish for?

Author Eve McDonnell suggests making a wish print. Write a series of sentences beginning with 'I wish...'. The sky's the limit! Start writing in the middle of the page and spiral your sentences into the shape of a fingerprint. Everyone's wish print will be personal and full of hope.

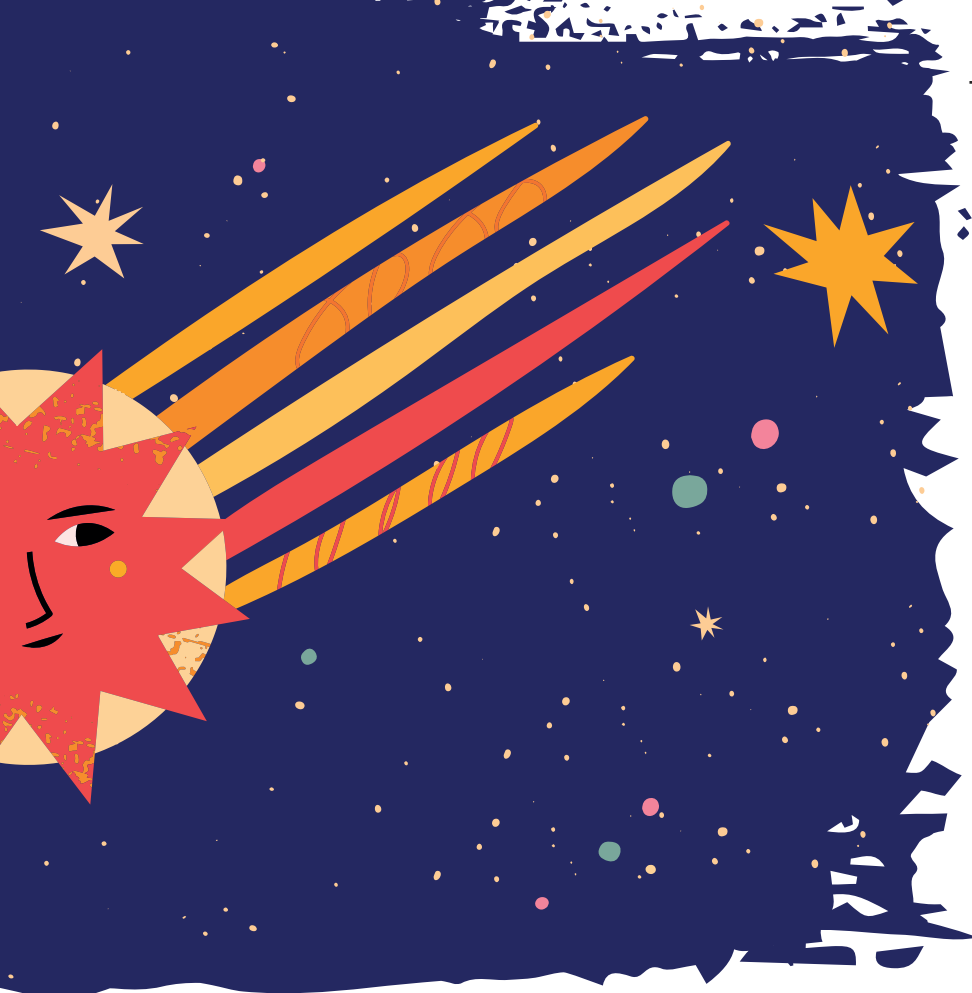
SWEEP'S LUCK

Chim chiminey, chim chiminey, chim chim cher-ee... If you're familiar with the film *Mary Poppins*, you'll know chimney sweeps are considered good luck, especially if they blow you a kiss.

Throughout the story, Brewster blows kisses to his friend Alice in kindness and to bring her good fortune. But why are sweeps considered so lucky? Brewster's early life was full of anything but luck, although did this start to change when Lady Rosse took him in

Find out more about this sweep superstition. There are ancient beliefs that fire and the hearth are connected to good fortune. Legend tells us that in the year 1066 (approximately), King William of Britain's life was saved when a chimney sweep pulled him out of the path of a runaway carriage. The king invited the sweep to his daughter's wedding, beginning the superstition that sweeps are good luck at weddings. A second legend tells us King George III was riding in a carriage when his horses bolted. A passing chimney sweep calmed the horses and





Loved this? Try these...

- ❖ *Mystery of the Night Watchers* by A.M. Howell
- ❖ *The River Spirit* by Lucy Strange
- ❖ *Rivet Boy* by Barbara Henderson
- ❖ *Darwin's Dragons* by Lindsay Galvin
- ❖ *The Chestnut Roaster* by Eve McDonnell

people to Birr Castle? What is their legacy? What impact did they have on Brewster throughout the story?

Choose one of these historical figures and create a character profile. Include details from the text, but also research who they were in real life. What was their passion? How did they gain knowledge? What was it about their class, education, wealth or opportunities that allowed them to become experts in their fields? How did they relate to Brewster? Did they help or hinder him in his own scientific quest? Add a sketch of the individual or some symbols to represent them. **TP**



Kate Heap is a primary English consultant and children's book reviewer. She is also the author of the Developing Reading

Comprehension Skills series.

 scopeforimagination.co.uk

the scientific impact of the 1833 meteor shower? Why were people so afraid of the comet? When will the Tempel-Tuttle cross our sky again?

Use oil pastels to create a night-sky scene. Blending blues, purples and blacks will create an inky sky, then small splatters of white paint stretched across the page with a white colouring pencil will add a stunning meteor shower. Use the book cover for inspiration as you fill the paper with a 'storm of stars'.

Brilliant minds

Many of the characters in *The Last Boy* were inspired by real people who were deeply committed to science. Lady Rosse and her

husband, William Parsons the 3rd Earl of Rosse, built the real Leviathan Telescope at Birr Castle. Charles Parsons – their son and Brewster's nemesis – went on to become the inventor of the compound steam turbine. Dr Grubb, who took Brewster under his wing, helped design the huge Leviathan telescope mirror. Sir Robert Ball, the boys' tutor, was a real astronomer, who went on to have great influence in the world of maths and science. Even Mary Ward, who fell from Lady Rosse's steam carriage, placing her in history as the first road traffic fatality in Ireland, was a well-known naturalist, astronomer, microscopist and author.

What do you think attracted these

stopped the coach. The king decreed that all sweeps were lucky, and the superstition spread throughout Europe.

Rewrite the final chapter of *The Last Boy* so Brewster finds a life of good fortune. As well as being known as 'Brewster the last climbing boy', help him find success as 'Brewster the astronomer' and a caring home with Dr and Mrs Grubb. What will his calculations help him to predict? What great inventions will he create? What will his life be like when it's full of hope and happiness rather than soot and darkness?

THE REAL BREWSTER

Discover more about the real George Brewster, who died from suffocation after climbing a boiler chimney at the Fulbourn Lunatic Asylum, Cambridgeshire, in 1875. Historian Joanna Hudson has applied to have a blue plaque mounted in Fulbourn in February 2025 to mark 150 years since this tragic death. Her research has revealed so much about the life of young sweeps.

You can watch a fascinating video where Joanna shares her use of historical sources such as census documents, photographs, diagrams of chimneys, newspaper articles

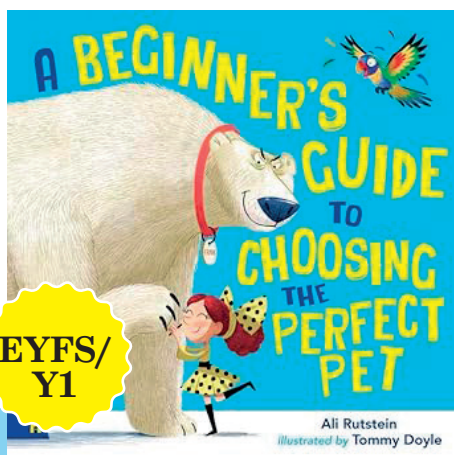
and records to discover more about George's legacy (tinyurl.com/tp-GeorgeBrewster). You might notice George's death certificate says he was 14 years old (rather than 11) when he died. It's likely this document was falsified to make him appear older because the Chimney Sweepers Act of 1834 stated that no child under the age of 14 could work as a chimney sweep. Master Sweep Wyer would have been worried about criminal charges for sending young children up chimneys.

George Brewster's death and the resulting legislation marked a significant transition of British industrial society.

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We review five new titles that your class will love



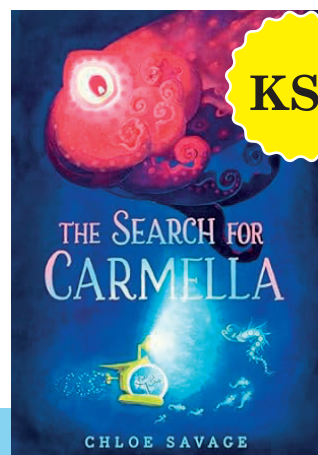
A Beginner's Guide to Choosing the Perfect Pet

***by Ali Rutstein, ill. Tommy Doyle,
(£7.99, Allen & Unwin)***

People think kittens and puppies make great pets, but they're deluded. Rhinos and tigers are much better. And as for that polar bear, he really is the perfect choice!

Expect a topsy-turvy world of well-meaning advice as this picturebook plays with the gap between what we know and what it's telling us. Energetic artwork takes the joke to another level, with lots of fun and a visual ambivalence that's carefully maintained until the final spread.

Anyone old enough to twig that we're not meant to trust the narrator will enjoy the interplay between words, pictures and subtext, even if they don't understand every nuance. The vocabulary may stretch younger readers, but will build their capabilities as they laugh along.



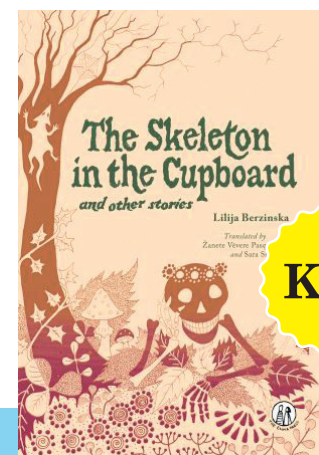
***The Search for Carmella* by Chloe Savage**

(£12.99 HB, Walker Books)

It takes LOTS of work to plan an underwater expedition, but the wonders of the deep make it all worthwhile – even if the scientists don't see Carmella, a legendary creature that lights up the ocean with her magic. Luckily for us, though, we get a better view than Dr Rose!

Featuring strong female characters in STEM roles, this beautiful picturebook offers insights into the nuts-and-bolts of scientific research, and evokes the mystery and excitement that drives it. Dr Rose dares to dream, but her story's also about appreciating what's right in front of her. Failure can be just the way we're framing things, and new doors open all the time.

Richly-coloured deep-sea artwork features identifiable creatures that will prompt children's curiosity and their own research.



The Skeleton in the Cupboard and Other Stories

***by Lila Berzinska, trans. Zanete Vevere and Sara Smith
(£8.99, The Emma Press)***

Why is Squishbod trying to hide that skeleton? Will the Sea Wolf agree to be Hare's prisoner? And what impact will a tiny calamity like fog have on them?

You could believe anything of the remote corner of Europe where such creatures live, but these odd little characters are friendly enough, and always busy with their worries, dreams and daily tasks.

Latvian author Lila Berzinska's charmingly surreal tales are packed with wisdom, warmth and insight, along with occasional glimpses of something more troubling. Value each other, they seem to say, and make the most of the here-and-now. But beyond the obvious enjoyment of 'what happens next', there's plenty of space for readers to dream in, too, and draw their own conclusions.

→→→RECOMMENDED RESOURCES

plazoom



WAGOLL WRITING PACKS

Support pupils when writing across a whole range of text types and genres with these engaging resources, differentiated for KS1, LKS2 and UKS2. Each of the 86 packs includes model texts, planning guides, writing templates and more. Every one focuses on a particular kind of text, encouraging children to make appropriate vocabulary, register and layout choices. Visit tinyurl.com/PlzWAGOLL

Meet the author

LINDSAY GALVIN ON MYTHICAL CREATURES AND PLACING YOUR STORIES IN HISTORY



What was primary school like for you?

A whirlwind of country dancing, the

hall apparatus in PE, long singing practices, and big class art projects, like turning the entire hall wall into a giant dragon with milk bottle tops for scales. There was the terror of quick-fire times table tests and that nasty and inexplicably shiny toilet paper. I remember loving dictation but not loving working in a group. But the best bit was being read aloud to at the end of every day!

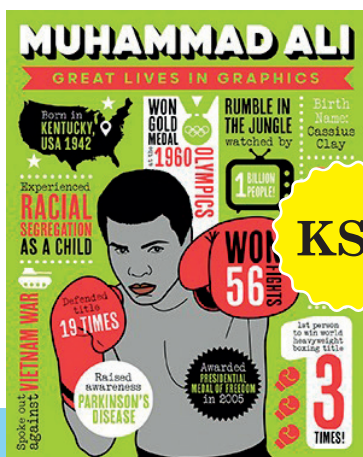
What inspired you to write *The Great Phoenix of London*?

I always have lots of potential ideas buzzing around in my head, but they need a character or mythical creature as well as a historical era and setting before they can develop into a story. For years I knew I wanted to write about a phoenix and the kid it bonds to, but I couldn't place it in history. It was out of the blue that I thought it would be fun to write something set during the Great Fire of London, and it was an obvious home for my fiery phoenix who had been waiting in the wings.

What was your favourite thing you learned while researching the book?

A key research moment was finding out the fire melted the roof of St Paul's cathedral, and the molten metal ran down the street. I also learned that people sheltered in the crypt, piling it with flammable items that would later explode. These were the first scenes I had fully fleshed out in my mind and became a lynchpin to the whole story.

The Great Phoenix of London by Lindsay Galvin is out now (£7.99, Chicken House).



KS2

Great Lives in Graphics: Muhammad Ali

(£9.99 HB, Button Books)

Packed with intriguing bite-sized facts about one of the world's greatest boxers, this non-fiction picturebook for older readers explores Muhammad Ali's life and times as well as his sporting achievements and legacies.

A clear introduction to the rules of boxing is included together with its history. Double spreads cover Ali's 'Rumble in the Jungle' and 'Thrilla in Manila' wins against George Foreman and Joe Frazier, but his 1964 conversion to Islam and his high-profile post-retirement charity and peacekeeping work are given equal coverage.

One of the fascinating 'Great Lives in Graphics' series featuring famous names including Greta Thunberg, Leonardo da Vinci and Coco Chanel, this eye-catching and dynamically designed book will please sports fans and is especially good for reluctant older readers.



KS2

The Great Phoenix of London

by Lindsay Galvin

(£7.99, Chicken House)

Separated from his family by a fire in Pudding Lane, Gil clutches a mysterious rock as he battles to reach the safety of St Paul's. But as temperatures rise, the rock hatches, and Gil and his friend Jennet are hunted through the flames by people who'll stop at nothing to trap a legendary Phoenix.

Woven from well-researched facts shot through with glimmering strands of mythical fantasy, this exciting middle-grade adventure brings history to life through pacy storytelling and convincing characters. A light-touch approach to complex themes (the amoral pursuit of scientific goals, the blaming of French-speaking immigrants...) gives it depth and impact.

An engaging UKS2 curriculum-related read-aloud, this will also be a popular independent choice for confident readers.

WELLBEING DURING SATS WEEK

SATS COLLECTION

Curriculum Crunchers

Curriculum Resources

Nouns, Verbs And Adjectives

EASY TO LEARN, HARD TO FORGET

SATS AND SINGING GUIDE

WHAT HAVE YOU GOT FOR SATS?

It's time to get to know the Curriculum Crunchers Series!

SPARK

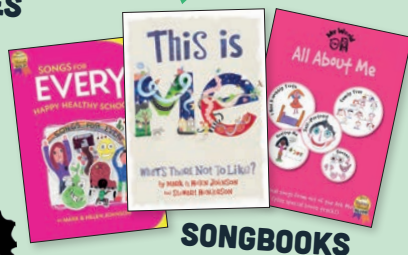
POWERED BY

ANYTHING FOR CHILDREN'S MENTAL HEALTH WEEK?

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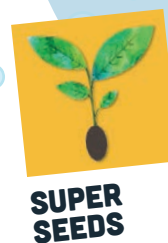
100s OF SONGS TO CHOOSE FROM



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HAVE WE?!

Try 30 specifically for winter and spring! Some popular ones include:



100s OF SONGS!
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- 🎵 **PERIMETER-TER-TER!**
- 🎵 **THE SHAPE SONG**
- 🎵 **THE 'MEAN' SONG**
- 🎵 **8 TIMES FUNK**

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WHAT CAN I SING IN MATHS LESSONS?

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OVER 100 CURRICULUM LINKS & CREATIVE IDEAS



HANDY TIPS & TRICKS

SONGBOOKS



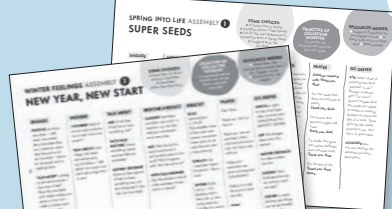
SPARKYARD
Out of the Ark.com

WHAT HAVE YOU GOT TO BRIGHTEN UP MY JANUARY?

We're all about jolly and joyful Januarys – here's some stuff to get you smiling:



AND SONGBOOKS TOO!



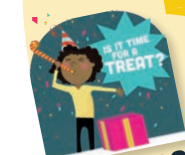
ASSEMBLY PLANS



HANDY GUIDES



ASSEMBLY RESOURCES



TREAT BOX SONG-GENERATOR



FEEL-GOOD SONGBOOKS



MAKE YOUR OWN POSITIVE PLAYLISTS!



NEW SONGS TO CHECK OUT:
'GOOD, GOOD DAY'
'COME RAIN OR SHINE'
'THE NEW YEAR SONG'



BSL & MAKATON VIDEOS

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Event DETAILS

What is Bett?

Bett is the largest edtech exhibition in the world, taking place each year in different locations across the globe, including the UK, Brazil and Asia. From global tech companies to renowned education brands to startups, you can find solutions for all education settings, challenges and budgets.

Where is Bett UK?

■ ExCeL London, Royal Victoria Dock

When is Bett?

■ 22nd – 24th January 2025

How do I register?

■ Head over to uk.bettshow.com/visit and select your ticket



INNOVATE AND COLLABORATE

We get a sneak peek at what's in store for the 40th anniversary of the world's biggest edtech show, from Stephen Fry on AI to the infamous Kids Judge Bett

The last 10 years in education have been some of the most challenging. With a projected gap of 44 million teachers worldwide by 2030, we need to act now to build better education, globally. The statistics are staggering, but behind the numbers lie stories of resilience, passion and unwavering dedication from our incredible global education community.

In the face of these challenges, what is the world doing to support educators and champion global equity in education?

For one, Bett UK is back. Celebrating 40 years of edtech excellence, Bett 2025 is set to unite 30,000+ educators, policymakers and edtech enthusiasts from 129+ countries. This is your chance to explore the latest trends in education, access hundreds of hours of free CPD, and connect with the global education community, all under one roof.

Join us as we innovate, collaborate and drive better education, for everyone. Tickets for all three days are absolutely free for educators, and include wonderful highlights such as...

THE LEGENDARY STEPHEN FRY

Renowned for his wit, wisdom and incredible insights, Stephen Fry is an English actor, screenwriter, author, playwright, journalist, poet, comedian, television presenter, film director and all-round national treasure.

With a career spanning over four decades, the star of *Blackadder*, *A Bit of Fry & Laurie*, *QI*, and *The Hobbit* – to name only a few – has inspired millions through storytelling that bridges the worlds of technology, literature and learning. Find him discussing the human approach to AI with Anne-Marie Imafidon in the Bett Arena at 9:30am on 22 Jan.

BETT ARENA TACKLES AI

Hosted by the dynamic Laura McInerney, this year's Arena will feature AI trailblazers Dan Fitzpatrick (The AI Educator), and Rose Luckin, professor emeritus at UCL and founder of Educate Ventures, who will explore how AI is

reshaping education (hear more from Rose on p68). Adding creativity to the mix, poets Michael Rosen and Christian Foley take the stage for an inspiring and unique session. Plus, hear the powerful story of Nicolas Hamilton, as he shares his journey and incredible achievements in professional racing and inclusion.

GO BIG OR GO HOME

At Bett UK 2025, we're championing the next generation of tech-savvy thinkers and innovators.

Bett's Big Assembly, in partnership with Tech She Can, invites learners to explore gaming tech and career opportunities alongside inspiring educators. The Design4SDGs Challenge and Kids Judge Bett empower pupils to share ideas and recognise standout tech products, while the Esports Tournaments let school teams showcase their skills in Rocket League matches.

Register your interest now at uk.bettshow.com and follow us on social media @bett_show to make sure you don't miss a thing!

VISIONS OF THE 2040 CLASSROOM

Professor Rose Luckin on the future of AI in education, and why giving teachers a voice is the key to success

Teach Primary: What will the primary classroom look like in 2040?

Rose Luckin: It's incredibly hard to predict, but we're seeing a lot of enthusiasm across the English education system about AI. Obviously not from everybody; there are still a lot of people who are not engaging with it, understandably, because they've got far too many things on their plates. But there is engagement. However, for many educators, the key is having an understanding of how AI works and its implications, because it's incredibly difficult to leverage it, both for their pupils and for themselves, if they don't have that skillset.

TP: So CPD is the cornerstone of this development?

RL: Yes. We know AI will be a factor, there's no stopping that, so it's essential for people working in education – across the sector, but I think particularly in primary – to have a say in, and a knowledge of, how this technology is used. We also need to make clear that the things our educators are really good at – those human connections – are still hugely valuable, perhaps more than ever. And, actually, how they work with tech tools can emphasise that expertise; we don't want to use AI to automate or enhance processes that don't work well. And it's the educators that know what works and what doesn't.

TP: How far should teachers engage with the ethical side of AI?

RL: Training and support will be essential, not only so teachers can meet their pupils where they are, but also to empower educators to really have a voice in what AI should and shouldn't be able to do. What do they think is acceptable? There are risks. Safeguarding risks already exist, of course, but AI will make them bigger and more significant. There are also more subtle risks if AI is allowed to

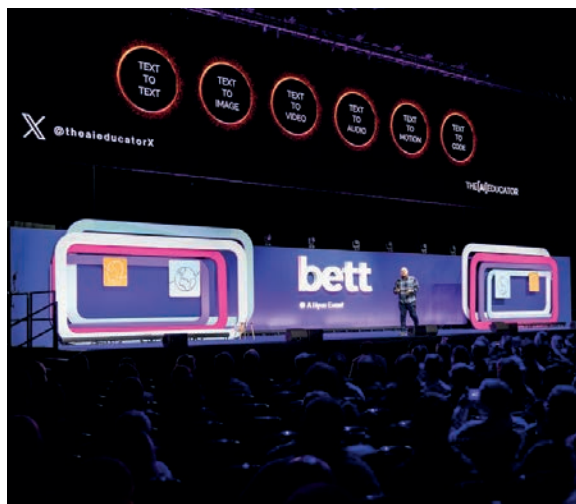
do too much. For example, with some consumer AI tools, we're already being told they're going to make our lives effortless. As an educator that's not a message I'm very comfortable with, because learning isn't effortless. And that's a really important argument for why teachers need to be part of the conversation, because we don't want a slew of products out there telling learners they don't need to work hard anymore. In reality, I think that intellectually, we'll have to work much harder.

TP: And what role does Big Tech have in all this?

RL: Unfortunately, there is already a huge advantage gap between what independent and state schools are reaping from these technologies. That's not an indictment of either, but that's the way it is; there's so much that AI can do, but it will take significant investment. Big Tech can help with that – they will gain an awful lot from selling their products in the education sector, so they could help us with some of our key challenges, such as creating tools to address the SEND crisis. Our system is under incredible strain, and they could step up to assist.



Rose Luckin is professor emerita at UCL, and founder and CEO of Educate Ventures Research Limited. See her discuss visions of the 2040 classroom at 14:15 on 22 Jan in the Bett Arena.



teach PRIMARY RECOMMENDS



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The BBC Teach website is packed with short curriculum-linked videos bringing the best BBC content into your classroom; assembly plans; and education campaigns. Look out for new Live Lessons in 2025 marking key moments in the school calendar including Safer Internet Day, World Book Day and Science Week. Join us on stand SS71 to find out more.

bett

● A Hyve Event

ExCeL London
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bett | *TableTalks*

● A Hyve Event

Take part in peer-led discussions to inspire change and spark new ideas at Bett 2025. Launched in 2024, we hosted over 130 roundtables between 1,000 educators from 739 institutions across 78 countries.

bett | *Cconnect*

● A Hyve Event

Want to discover the right solutions for your learners in a fraction of the time? Using data and technology we make critical connections between education decision makers and solution providers, taking the 'work' out of networking.

bett |



● A Hyve Event

Due to popular demand, Tech User Labs is back and bigger than ever! With free sessions at Bett 2025, you'll learn how to get the most out of your current tech and explore emerging innovations within education - there's no CPD opportunity quite like it!

**Tickets for Bett UK
2025 are now LIVE!
FREE for educators!**



All content sessions
at Bett UK are CPD
accredited

OUR PRACTICAL DIGITAL STRATEGY

Focusing on the basics, but with a premium twist, has made all the difference for our littlest learners, says Zaitoon Bukhari

You might think that when planning the implementation of technology in the classroom, it's the more complex operations that are the hardest to teach. But from my experience, it's the little learners who are trickiest to cater for. Many class teachers aren't technology specialists, and so helping them adapt the devices and software they use with younger children can be a difficult process.

In our primary schools, we've introduced one-to-one Chromebooks for pupils, and one of the things our younger learners have most trouble with is using the keyboard to type their logins, etc.

Therefore, we have introduced 'kiosk mode'. This has been a real gamechanger. It means pupils have controlled access to the various edtech platforms that the teachers approve. With the use of the touchscreen function, learners are able to navigate the platform much like they would on a smartphone. We have also introduced a QR code login, which allows the children to scan a code instead of typing their login details. This has enabled a smoother start to the beginning of activities.

Once teachers started seeing how easy it was for the children to adapt to the

Chromebooks using kiosk mode and QR logins, I think there was much less anxiety.

Pupils also have access to a whole host of accessibility tools, so for example, teachers can rely on these tools to provide learners with opportunities to gain independence, allowing TAs in the classroom to focus on specific one-to-one support.

Teachers and TAs might upload an instructional video, for example, allowing the learners to hear the information in their own space without an adult having to repeat it back to them. And children don't need to have an accessibility need to use these tools; if they find them useful, they're there.

The key takeaway for us in implementing a practical digital strategy is to use the technology and platforms that enhance the learning experience of our students. Of course it's tempting to be drawn into flashy tech, but my main piece of advice would be to focus on premium versions of the basic tools – you'll get much more bang for your buck.



Zaitoon is director of digital learning at Achievement Through Collaboration Multi-Academy Trust. See her discussion on best practice at **16:30 on 22 Jan at Teaching & Learning.**



Celebrating 40 years

As Bett heads into its fifth decade, we look at some of the highlights of the world's biggest edtech show...

Table talks

Learn from other educators and grow your personal learning network. Bringing together individuals from schools, universities and governments based on chosen topics of interest, TableTalks is the opportunity of the year to connect and collaborate with your peers.

Connect @ Bett

Transforming the way that our community connects and collaborates, you'll meet new people, discover new organisations and forge meaningful connections that result in positive changes for you, your organisation, and your learners.

Tech User Labs

Learn directly from world leading experts, with specialised tutorials and working groups designed to help you get the most out of your tech. Tech User Labs is an unrivalled opportunity not to be missed!

CPD-accredited content

Planning your CPD credits for 2025? Tick it off your list early when you register for Bett UK 2025, with our free CPD accredited programme, hosting over 100+ hours of quality, CPD accredited content for you to choose from. With six stages, 300+ speakers and thrilling keynotes from some of the biggest names in education, there's no CPD opportunity quite like it. The best part? All our content is free for educators.

Find out more about the Bett UK 2025 agenda at uk.bettshow.com

teach
PRIMARY

RECOMMENDS

Educational innovation

Explore the future of learning with Dell Technologies at Bett 2025, where cutting-edge technology meets educational innovation (stands **ND10** and **NJ80**). Visitors will have opportunities to get hands-on with the latest laptops, monitors, and devices – each rigorously tested to meet the demands of modern classrooms. You'll also find an Esports Showdown, alongside Expert Insights from Dell and Intel specialists regarding AI, Windows 11, cybersecurity and more.



DELLTechnologies **intel**

Protection & representation

NAHT represents over 50,000 serving school leaders in early years, primary, secondary and special schools, making it the largest trade union exclusively for school leaders in the UK. NAHT is democratically run, and supports its members through offering unparalleled protection and representation, using its voice at the highest levels of government to influence policy for the benefit of leaders and learners everywhere. Alongside its members, NAHT works to create a better education system for both educationalists and students alike. Find NAHT in the Bett Hall at stand SS50. See naht.org.uk for more details.





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Science



WHAT THEY'LL LEARN

- How the various ingredients within toothpaste have their own properties, which all have different functions
- How to design, create and test different formulations, utilising numeracy skills
- How to record observations, make comparative judgements and draw conclusions

Clever chemistry and the science of smiles



Transform an everyday chore into an opportunity for exciting STEM adventures with **Marc Bowen**

 @raglanvcprimary

Creating potions has long held a fascination with children, whether that's combining leaves and petals from the garden, or immersing themselves in the gloopy wonderfulness of slime. This investigation will help pupils to realise that 'mixing potions' isn't just a fun activity – it's what scientists do all the time, with the results of creative chemistry sitting in their bathroom cabinet! Through their own experiments they will unlock their understanding of the properties of materials and how they can be combined to create a highly effective toothpaste.

START HERE

The end goal of this lesson is for the children to create and test their own toothpaste formulas. It could be fun to set the lesson within the context of a national toothpaste crisis: some toothpastes aren't cleaning properly, others taste strange, and some even fall off the toothbrush too quickly! Toothpaste companies are baffled and need expert help. Explain to pupils that they will need to explore various ingredients, experiment with their combinations, and evaluate how well their toothpaste cleans, smells, and stays on the brush. This is also a great opportunity to emphasise the creativity and imagination intrinsic within science.



MAIN LESSON

1 | CREATE

The equipment you will need for the investigation can be easily sourced in local supermarkets, chemists or online. You will need:

- Toothpaste-making ingredients: Baking soda (sodium bicarbonate), cornflour, salt, glycerine, peppermint flavouring, food colouring, water, teaspoons, yoghurt pots or plastic beakers.
- Optional ingredients: Additional flavours and colourings to allow for formulation variation.
- Testing equipment: Clean toothbrushes, white tiles or old plates/saucers, permanent markers.

Having already set the context in the starter activity, discuss common toothpaste ingredients and the role they play in the formulation. What does baking soda do? (Gentle abrasion/reducing acidity). Why is peppermint used for flavour? (It's considered to be a fresh, clean smell). Why is glycerine important? (Helps to hold moisture and prevent the toothpaste drying out in the tube). This background information helps the children to understand the purpose of each ingredient and sets the stage for their experimentation.

Divide pupils into small research teams and provide them with the materials to make their own toothpaste; each team will create their own formulation, which will be



“Help pupils realise that mixing potions isn’t just a fun activity, it’s what scientists do all the time”

comparatively tested against other teams’. Emphasise the need to capture the quantities of the ingredients in their formulations, so that it would be possible for the toothpaste companies to replicate the most successful recipe. It is also important to discuss that they may adapt their formulation – e.g. adding more glycerine if it is too dry – but that they should also record any amendments, and the quantities used.

2 | TEST

Once each team has formulated their toothpaste, ask pupils to work collaboratively to test its effectiveness. Using white tiles, old plates or saucers (one per team/formulation) marked with a large,

permanent marker dot to simulate dirt, get the teams to test their formulations in turn. At this stage it is essential to discuss fair testing, e.g. ensuring that the toothpaste is applied with the same motion, same approximate pressure and for the same duration.

Following each test, those children not in the group whose formula is being tested should make observations (perhaps on a pre-devised numbered scale) of how well the formulation stayed on the toothbrush, its smell, and the effectiveness of the cleaning (any changes to the permanent marker dot).

3 | REVIEW

When all the tests are complete, the teams should

then look at the combined investigation outcomes, considering: How well did each toothpaste remove stains? Which seemed most effective? Did it smell fresh and pleasant? Which was the most appealing of all? Did it stay on the brush during use? Which seemed to have the best consistency?

Once each group has drawn their conclusions, ask them to present their findings to the class. You can collate these outcomes to allow for later comparison and discussion. This is an opportunity to introduce scientific debate and discussion, and for the children to apply their communication skills, sharing their judgements and discussing potential improvements to each formulation.

With all the groups having provided their feedback, you can then lead a class discussion based on the outcomes and comparative effectiveness of different formulations. What worked best? Were there any surprising results?

To fully conclude the investigation, it would then be beneficial for each team to reflect on the feedback they received, identifying the strengths of their recipes and suggesting justified amendments that they might make to future concoctions.

Marc Bowen is a deputy head and primary teacher in South Wales. He is always keen to engage in professional dialogue, sharing ideas and experiences for use in the classroom. He welcomes any responses to this article or further questions through his email bowenm43@hwbcmru.net

EXTENDING THE LESSON

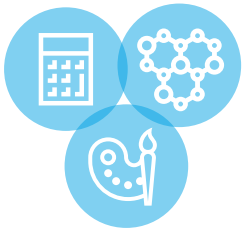


- Given enough time (and ingredients!) you could challenge the children to take a second pass at their formulation, based on the feedback from other groups, to improve the impact of the toothpaste recipe. This would be an authentic way of modelling the scientific process of responding to and building upon the outcomes of experiments.
- You could also use the outcomes of the investigation as the context for some purposeful writing. Perhaps pupils could write to a toothpaste company, sharing the results of the investigation, or devise a persuasive marketing campaign for their own brand of toothpaste.
- This investigation could also launch a broader unit of learning focused on personal hygiene and caring for oneself.

USEFUL QUESTIONS

- Why do you think certain ingredients (like baking soda) are important in toothpaste?
- Which toothpaste recipe was the most effective? Why do you think so? What is your proof?
- How could the recipes be improved?
- Why is peppermint a common toothpaste flavour, and do you think other flavours would work?
- How important is the colour of toothpaste? Does it affect how likely people are to use it?

Maths, science, art



WHAT THEY'LL LEARN

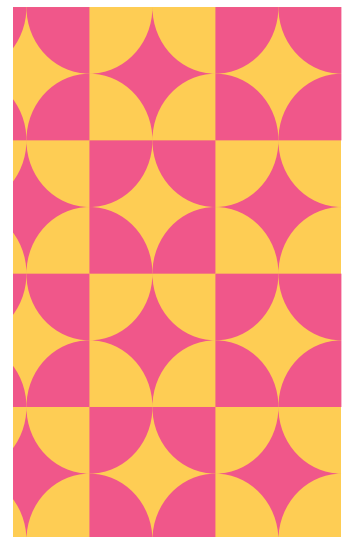
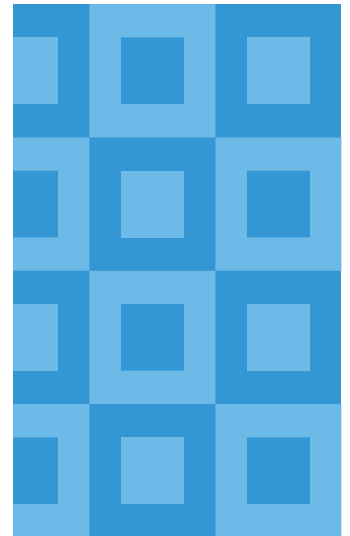
- To recognise repeated patterns around them
- To create and continue repeated patterns using a variety of materials
- To explore repeated patterns in art and maths
- To recognise symmetry in snowflakes and other shapes

Stripes and spots and swirls, oh my!



Challenge children to discover mathematical patterns in the world and to create their own, with **Judith Harries**

The world is full of amazing patterns, and opening children's eyes to them can be an exciting and hands-on way to develop mathematical reasoning and problem-solving skills. You can also use this opportunity to get out of the classroom and take your pupils outside to look at patterns in nature – on trees, shells, and flowers – or in their urban surroundings, such as tessellating bricks, tiles, and pavement slabs. Any real-life examples you can show them will help to solidify the concept of a pattern as a sequence that repeats itself, whether that's with colours, shapes, or numbers.



START HERE

Begin by creating a repeating pattern with the children themselves. Sit in a circle and explain that they are going to make a pattern using different body



shapes. Go around and number the pupils in groups from one to three. Ask them to stand up and invite all the number ones to hold up one arm, number twos to hold up both arms, and number threes to hold up two arms and one leg. Alternatively, number ones can stand up, twos sit down, and threes curl up in a ball. Repeat the exercise using different visual clues, such as holding up number cards, Numicon or maths link cubes. Can the children think of other ways to create a repeated pattern around the circle?

MAIN LESSON

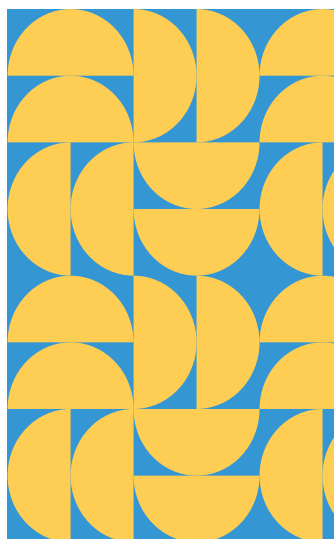
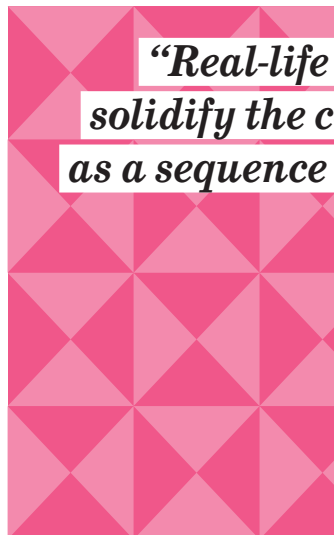
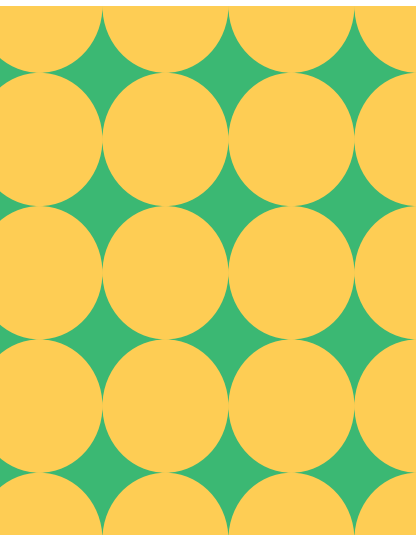
1 | CREATING PATTERNS

First, decide what equipment to use to create your patterns. You can use found materials such as stones, feathers, leaves, shells, and conkers, or maths equipment including 2D and 3D shapes, cubes, beads, buttons, and counting and sorting resources.

Next, invite the children to work with a partner and take turns creating a repeating pattern using the chosen resources for their partner to continue. Remind them of the rules of repetition you all used in the starter activity, and how this is a key element of creating patterns. Let pupils take

photos of their patterns and show them to the class on the whiteboard. Can children describe what they see? What was repeated – the colour, shape, position or size of the objects? Can they define the rule of the pattern (what is being repeated, and when)? Introduce terms such as *alternating*, *order*, and *sequence*. Ask pupils to say what would come next in each pattern.

To round out this section, play a game of 'Whatever next?'. Challenge the children to draw the patterns they've just created onto thin strips of paper. They can then pass these around the class for their fellow pupils to draw what they think comes next in each repeated pattern.



“Real-life examples will help solidify the concept of a pattern as a sequence that repeats itself”

classroom. Can children help you decide how to organise them for the greatest effect?

3 | SNOWFLAKE SYMMETRY

At this time of year, snowflakes offer great natural patterns for children to observe, even if it doesn't snow. Check out some close-up photos, including some under a microscope, on Google images (other search engines are available!). Talk about the patterns that pupils can see, such as the six-pointed star, the six lines of symmetry in the shape, and the incredible diversity, as no two snowflakes are the same. Add in some science teaching by talking about how snowflakes are made, and their place in the water cycle.

Finally, explain to your class that they are going to build their own symmetrical snowflakes using different-sized glass beads and buttons. Make a stencil by drawing around a plate or bowl onto a piece of white paper and dividing it into six segments (or download a stencil at tinyurl.com/tp-sfstencil). Invite the children to fill each segment with an identical number of coloured beads in the same order or pattern so that they create their own symmetrical snowflake. Alternatively, pupils can draw repeated patterns into each segment. Hang these up as an art display, or keep them to refer to when learning more about snow in other subjects.

Judith Harries is an experienced early years and primary school teacher, specialising in music, art and drama. She also creates cross-curricular educational content.

EXTENDING THE LESSON



- Make mini dried-fruit kebabs for a winter snack using a repeated pattern. Use dried apricots, cereal hoops, large raisins and mini marshmallows threaded onto cocktail sticks.
- Introduce fractions by cutting each pattern square into four quarters, then challenging children to find all their matching parts and stick them back together. Alternatively, they can work with three other children to create a mini patchwork square with four different patterns.
- Cut your own snowflakes by giving each child a white paper circle (you can use the stencil from the main lesson for this, too). If not using the stencil, help pupils fold the circle in half, and in half again, then open out and fold one side of the half-circle over to create six segments. Help children to cut shapes out of the folded sides and the curved edge, and then open out into a six-pointed snowflake to display in the classroom.
- Make six-sided snowflake shapes using three pipe cleaners and invite the children to thread beads onto each point using a repeating colour pattern.

2 | PLAY A GAME OF PAIRS

Provide each child with a 10cm square of white paper or card and ask them to cover one side with a repeated pattern using coloured felt pens (or whatever art supplies you'd like). Talk about how they could create different patterns using colours; lines such as zigzags, curvy waves, dots, dashes and stars; or sequences of shapes. You can tie this in with the art curriculum by looking at some famous patterns, such as examples from William Morris or Andy Warhol.

Now you can make the decorated squares into a pairs game by asking pupils to fold each square in half

and carefully use scissors to cut each pattern into two pieces. They can cut the paper into two squares or two triangles, as long as there is half of the pattern on each piece of the paper. Mix up the halves, turn them face over and challenge children to find the matching pairs. This can be done with talk partners or in small groups. Try a grander version of the game by asking all pupils to take one half of a square each into the hall. Spread out into spaces, invite children to wave their pieces in the air and see who is the quickest to find their matching pair. When the activity is over, you can rejoin the halves and make them into a patchwork pattern display for the

USEFUL QUESTIONS

- Can you spot a repeated pattern in the classroom?
- Where are there some spotty or stripy patterns?
- Can you explain why something is a repeating pattern?
- Can you identify a symmetrical shape?

RE



WHAT THEY'LL LEARN

- Worship is important to many Hindus as a way of connecting with Brahman
- Some Hindus worship using a home shrine appealing to all five senses
- We can find out about different types of Hindu worship using our senses

Hindu shrines and using our five senses

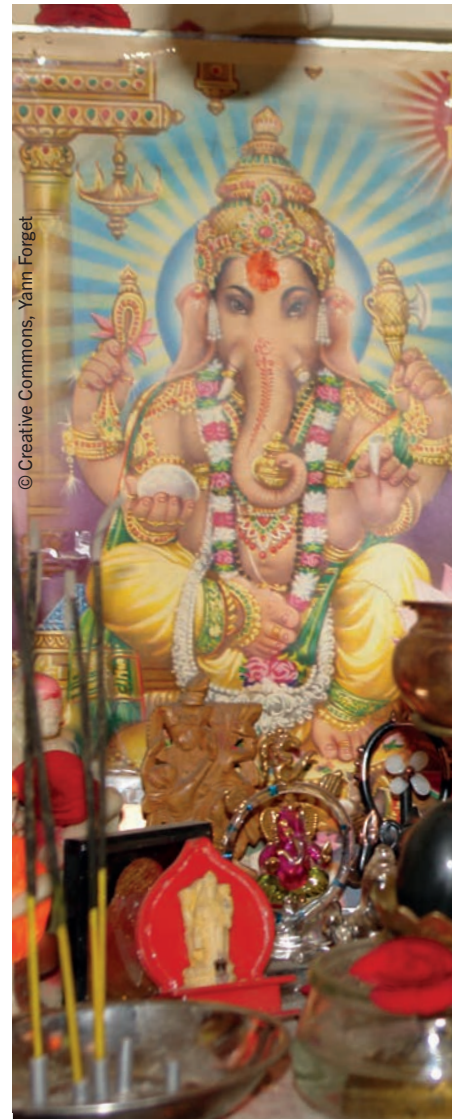


Develop pupils' philosophy skills using sight, sound, taste touch and smell to explore worship, with **Katie Gooch**

[@goochkt](#)

unitedcurriculum.org.uk/primary

Excitingly, RE is a multi-disciplinary subject, drawing on skills from many academic fields of study. Theology, philosophy and human and social sciences are often suggested as key disciplinary starting points. However, many teachers find introducing these particular skills challenging. In this lesson, we encourage pupils to use their physical senses to explore examples of Hindu expressions of the divine through a home shrine. Our senses are important, as they help us make sense of the world around us – a task philosophers are always thinking about.



© Creative Commons, Yarn Forget

START HERE

Begin by burning incense in the classroom (if your health and safety policy allows; if not, you can just hand out unlit incense sticks). Invite pupils to close their eyes

and focus on the scent. Ask them if they like the smell. Does it remind them of anything? What might the scent be useful for? Continuing to experience the scent, share images of the Trimurti (trinity of supreme divinity – see BBC Bitesize content at tinyurl.com/tp-BBCTrimurti). Discuss pupils' prior knowledge of the symbolism of the Trimurti and what their special objects reveal about the deity. E.g. 'Brahma's prayer beads show he can concentrate his mind'.



MAIN LESSON

1 | INTRODUCE WORSHIP

If there are Hindu pupils in your class, you can invite them to share their experience (this should always be optional for them). Otherwise, explain that, for many Hindus, murtis (sacred images or statues used to represent the deities) are useful to look at and focus the mind during worship. The deities reveal different things about what Brahman is like and people choose varying deities to focus on.

Introduce the idea of the home shrine though an exemplar Hindu character. For example, 'Jasmine says: "In my family, we have a shrine in our home. One of

the deities important to us is Ganesh. The murti on our shrine helps us think about what Ganesh is like. His elephant head shows wisdom.'" Share a picture of a home shrine. Ask pupils what they can see. Do they have any questions about the shrine?

Watch this BBC clip (tinyurl.com/tp-BBCpuja) and ask pupils how the home shrine is set up and used. Remind the children that this is just one example – shrines may be different in other homes.

2 | RECREATE A HOME SHRINE

With the pupils' help, set up a home shrine in the classroom based on what you saw in the clip. You may want to include different items than were shown in the



“Hindu worship at home often includes a daily puja ceremony”

represents life and a spoon means it can be given to worshippers

- Incense, to purify and appeal to the sense of smell (*smell*)
- Aum symbol, to represent the ultimate reality (and many other meanings)
- Tilak (or Kumkum) powder, traditionally put on the forehead to open up the mind for worship (*touch*)

Pupils could draw and label items from the home shrine according to which of the senses they appeal. More active ways to embed this knowledge include: memory games in which an item is removed from the classroom shrine and pupils recall what is missing; ‘accidentally’ tidying the shrine away and asking pupils to set it up again; sorting the physical objects by the sense they appeal to; recreating items on the shrine using pupils’ hands, bodies or voices.

footage, and reinforce that every shrine is different and special to the people who use it.

Next, bring back your exemplar Hindu character to help explain interactions with the shrine: ‘Jasmine says, “Using all five of my senses in worship helps me to focus using my whole body.”’ Ask pupils to look carefully at the shrine and think about how the different special items appeal to their senses. Discuss the items’ purpose together and demonstrate how each of the senses is involved. Give pupils the opportunity to explore this through their own senses.

Hindu worship at home often includes a daily puja ceremony. The important items are often kept on a puja tray on the home shrine. Each of the items has symbolic

meanings to help the worshipper express their beliefs. Be aware that the symbolism may be different for different people. The symbolism suggested below is **one interpretation**, simplified for KS1 pupils.

The puja ceremony might include:

- A murti – one (or several) images representing the deity (*sight*)
- Fruit or food - these are offerings for the deity, showing respect and gratitude (*taste*)

Puja tray including:

- Bell, to wake up the deity (*hearing*)
- Arti or Diya lamp - the light of a candle is offered to the deities to remove darkness through worship
- Water and spoon - water

EXTENDING THE LESSON

- Invite Hindu visitors into school to share their personal experiences and how their senses are important in their worship. You can look for speakers through RE Hubs at tinyurl.com/tp-REHubsSpeakers
- Ask pupils to plan and write instructions for a teacher on how to set up a home shrine in the classroom. This should include objects they think might be important to a Hindu and how they appeal to all the senses.
- Find out about different examples of worship in the mandir (temple). How are the senses important here? Include local, national and global examples. This short video might be a good starting point: tinyurl.com/tp-CharlieBlueHinduMandir
- If sharing with KS2, encourage pupils to begin to think critically, like a philosopher, about whether our senses are always reliable. What is the difference in Christian belief between a magic trick and a miracle, for example?

USEFUL QUESTIONS

- What did you experience when interacting with the home shrine?
- How did it make you feel?
- How can our senses help us to explore and understand something new?

3 | EXPLORE DIVERSITY

A great way of reviewing new knowledge in religion and worldview lessons is to explore it from a different perspective; this also challenges misconceptions that all Hindus are the same. Teachers could share images of different home shrines, or watch this video clip (tinyurl.com/tp-HomeShrine) of Hindu children explaining their particular home shrine. What do pupils notice is different? What is similar? Why? How do these children use their senses in worship?

Katie Gooch taught as a primary RE subject specialist for 12 years and is now the primary curriculum lead for religion and worldviews at United Learning.

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AT A GLANCE

- An award-winning music subscription platform
- Offers over 1,000 songs written by award-winning writers
- Provides thousands of ideas, activities, and teaching tips
- Includes a flexible and dynamic music curriculum
- Allows teachers to send songs home so children can sing out of school
- Offers a range of ready-to-go assemblies that promote wellbeing and school community
- Offers bespoke music-hub partnerships



REVIEWED BY: JOHN DABELL

Some music resources sing, dance, play and pray. They can educate, entertain, engage and inspire. They are also playful, uplifting, and optimistic. But there aren't many that can do all of that.

Out of the Ark music can, though, and a tour through their new subscription service – Sparkyard – will show you why they won the Outstanding Music Education Resource award at the 2023 Music and Drama Education Awards. It is expansive, visually attractive and very user-friendly.

Sparkyard is quite the platform and includes gold bars by the pallet load. Not only do you get all of their songs and resources, you get plenty of fabulous extras designed to help you promote a musical culture throughout the school week, including assembly plans and a flexible and unique music curriculum helping to address the needs of the National Plan for Music Education.

Many non-specialist teachers can shy away from the music curriculum, especially when it comes to singing, but Sparkyard can really help upgrade their skills and confidence. Out of the Ark is positive that anyone can teach and use these resources, especially using its Words on Screen technology. For the specialist, this vault is a real playground of potential.

So, what do you get? It might be easier to ask what don't you get! Sparkyard has gone the whole nine yards with its offer.

There are assemblies galore packed with song choices, resources and ready-to-go assembly plans for the whole school year organised under a range of 'Values' options, topics/themes, seasons and age. There are also assembly playlists and songs with signing videos. There is also a separate section of collective worship resources with something for every occasion.

Looking for cross-curricular inspiration? Look no further. There are songs and resources to support the whole-school curriculum and bringing learning to

life. Simply select the subject, the curriculum concept and the topic/theme along with the age group and away you go. This section contains maths, English and science songs, curriculum resources, playlists and songbooks. Here you will also find a ready-made music curriculum for Reception to Year 6; a truly innovative, skills-based offering that is fully flexible and easy to deliver.

Sparkyard also contains resources for school routines and signals with songs to influence mood, focus attention, indicate a change of activity and make classroom life a whole lot easier.

Beyond these, you will also find singing for fun resources, songs and teaching materials for choirs and concerts, and songs to help you build and strengthen community, and promote self-confidence, resilience and teamwork.

I love the Song Calendar section with options to mark special days and events throughout the school year. There's also a surprise treat box of randomly selected tunes. Making your own collections and playlists is easy, and you can share your favourite songs and resources with colleagues.

One thing Out of the Ark has always managed to do extremely well is nail the 'look' of its online resources. They are visually very appealing and so are a real pleasure to use. This is an expertly constructed platform that effortlessly invites your interaction and is ideal for primary users.

One of the fun features of Sparkyard is that you can use the platform to send songs home to your children, which is especially useful when it comes to rehearsing for a show or an assembly. Creating and using a share link is straightforward, and this will be handy for some music homework too. What is particularly relevant is that all songs are recorded using children's voices, which is essential for modelling good quality singing. If you want a school full of singing classrooms, Sparkyard will make it happen.

teach PRIMARY

VERDICT

- ✓ Soulful, heart-warming and invigorating
- ✓ Promotes the use of high-quality singing in daily classroom practice
- ✓ Inspiring resources, very accessible materials and clear curriculum frameworks
- ✓ Packed with instantly accessible songbooks, nativities and musicals
- ✓ A visionary approach to primary music education
- ✓ Boosts wellbeing, motivation and a willingness to learn
- ✓ Supports pupil confidence, phonics skills and performance in maths

UPGRADE IF...

You are looking for dynamic and accessible tried-and-tested resources to give teachers the confidence and subject knowledge to teach music well, and to embed singing as a golden thread throughout school.

This is a highly affordable resource with variable pricing. See tinyurl.com/tp-Sparkyard for details.

MATHS →

Sumdog Maths

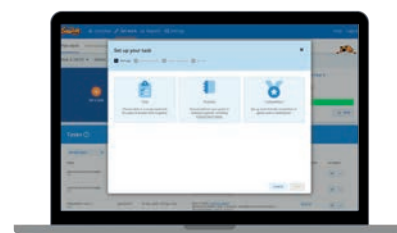


An engaging, game-based maths practice platform that motivates pupils while generating valuable insights for teachers

AT A GLANCE

- Aligned with the national curriculum and White Rose Maths
- Adaptable to the needs and abilities of all pupils
- Allows teachers to set targeted maths practice tasks in minutes
- Automatically generates data for monitoring progress and identifying learning gaps
- Known to increase maths fluency

REVIEWED BY: TP REVIEWER



Even when you love what you're doing, whether it's sport, music or reading, practice can be a bit of a grind. For those who lack confidence or motivation, that mental obstacle can seem almost insurmountable. Yet, as we all know, new skills have to be diligently practised for the knowledge to become embedded.

The trick, then, is to make it as fun or engaging as possible. When it comes to maths or aspects of literacy, that can be easier said than done. However, given the endless hours many of us seem happy to dedicate to largely unproductive tasks, such as playing computer games, it is no wonder that interactive approaches to practising core subjects have flooded the market during the internet age. Finding one that meets your school's needs, though, can be a challenge.

For many, the answer has been Sumdog. Since its humble beginnings over 10 years ago, Sumdog has been dedicated to developing and refining an inclusive, absorbing platform where pupils of all abilities and backgrounds can practise their taught skills. The aim was to create a safe, inclusive space where everyone feels represented and no longer believes that there are some areas of the primary maths curriculum in which they cannot enjoy success.

So, how does the reality match up to the ambition? First and foremost, it does objectively have a positive impact on maths fluency,

according to research. And, as many a teacher will affirm, children often know what to do – the challenge is for them to do it accurately and efficiently enough, i.e. with sufficient fluency to perform well in the tests.

The tasks can be fairly easily tailored to the age and ability levels of the pupils. Also, the questions are designed for use with the national curriculum and White Rose Maths, so they will be aligned with your classroom teaching. Furthermore, the automatic marking and data analysis functions mean that you, as a teacher, can easily monitor progress and spot gaps in understanding.

From the pupil's point of view, it is genuinely entertaining. Turning learning into a game is a time-honoured technique for improving outcomes. And which child these days doesn't enjoy computer games, given the chance to play? In case you need reassurance, however, Sumdog does include mechanisms to prevent users from rushing the tasks in order to focus on the gameplay.

Used sensibly, Sumdog is clearly an effective tool for incentivising and rewarding maths practice, whilst giving teachers valuable intelligence as to how their pupils are doing. Considering how it also removes the headache of setting and marking constructive maths homework, you might find your colleagues sitting up and begging to give it a go.

teach PRIMARY

VERDICT

- ✓ Fun and engaging
- ✓ Promotes fluency
- ✓ Inclusive and customisable
- ✓ Convenient for teachers
- ✓ Generates valuable insights

UPGRADE IF...

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STEAM ➔

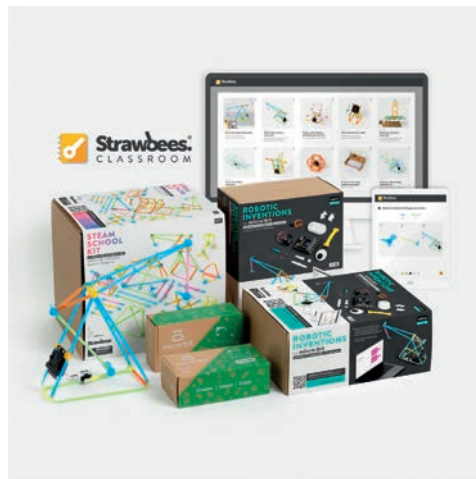
Strawbees®

Strawbees

A versatile, construction-based teaching resource to promote hands-on learning across the curriculum

AT A GLANCE

- Ingeniously designed plastic straws and connectors with optional robotics elements
- Supports subjects far beyond just DT and coding
- Offers pupils both the tools to solve specific problems and the freedom to invent
- Supported by a comprehensive online resource for teachers
- Includes lesson plans and professional development webinars



REVIEWED BY: TP REVIEWER

There is an increasing appreciation of the importance of STEAM (science, technology, engineering, arts and mathematics) teaching in schools. This is not just for the benefit of the pupils but also for the future success of the country as a whole. The challenge comes in making it simple and straightforward for teachers to implement, whilst ensuring that it is both engaging for the children and successful in delivering measurable outcomes.

We already know that hands-on activities work particularly well, not least for those pupils who, shall we say, have a more tactile approach to the world. No doubt, you already have a bank of learning projects up your sleeve.

But what if you're beginning to feel that your spaghetti and plasticine construction challenges are becoming a little dry, or feeling a little constrained? In any case, why should such a hands-on approach be limited to subjects like design technology? If you're looking to take creative learning in your classroom to a new level, Strawbees could be just what you're looking for.

To say Strawbees is a construction kit would be to simplify it to an almost insulting degree. Nevertheless, at its heart it is a collection of straws and connectors that offers enormous scope to design and build. Specialised robotics parts are also available to empower more ambitious projects.

The beauty of Strawbees is its versatility. Simply by offering a variety of colour-coded

straws and connectors, it provides the scope to build almost anything of almost any size. They are lightweight and easy to manipulate, yet are also robust, so you would feel confident that you could use them again and again. The connectors are rather ingenious in their flexibility, allowing you to make any number of joins that turn ideas into models that actually work. When you add in the robotics element using the micro:bit pack, it adds a whole new level of programmable functionality. It might take a little while to get your head around the technological whistles and bells but, then again, you're probably better at that sort of thing than I am.

Strawbees gives children extensive freedom to invent their own structures rather than simply following a pre-set design, which also stimulates problem-solving. Organise your pupils into groups and you're into collaborative working, with all the benefits for communication development that entails.

That said, we have a curriculum to teach. Thankfully, Strawbees has created a very handy online resource for teachers called Strawbees Classroom. Here, you will have access to a wide range of support materials, from basic help to inspirational webinars showing you how to make the most of Strawbees in your teaching. What's more, there is a large collection of ready-made, curriculum-aligned lesson plans covering a surprisingly wide range of subjects for pupils across KS1 and KS2. The applications are practically limitless.

teach PRIMARY

VERDICT

- ✓ Extremely versatile
- ✓ Fairly simple to use
- ✓ Promotes problem solving
- ✓ Endlessly re-usable
- ✓ Reduces teacher workload
- ✓ Covers a wide range of subjects across KS1 and KS2
- ✓ Offers children freedom to invent
- ✓ Expandable with micro:bit pack
- ✓ Aligned to national curriculum

UPGRADE IF...

...you want to introduce a hands-on, creative approach to problem-solving that supports learning right across the curriculum.

From £25. See strawbees.com for details.

Q & A

We take the famous Proust questionnaire and pose eight of its questions to a fellow educator. Take a peek into the deepest depths of a teacher's soul...

1 What is your idea of perfect happiness in your job?

When a child experiences the “Oh, I get it now!” moment. Sometimes a child or group of children can find a concept or strategy really challenging, and you have to rethink how you're teaching, and come at it from a different angle or with new resources, before everything finally falls into place. Those moments of revelation, especially, make this an incredibly rewarding job. Children feeling proud of their achievements also puts a huge smile on my face. After completing our last extended piece of writing, many of my pupils asked me if I would photocopy their work so they could share it with their parents. I loved that.

2 What is your greatest fear at work?

Being asked to cover in EYFS for longer than a few hours! I have taught Year 6 for the last 12 years and have only ever taught permanently in Key Stage 2. A long stint in EYFS is a scary thought...

3 What is your current state of mind?

Optimistic. I taught at the same school for over 20 years and whilst I still enjoyed teaching, I wondered whether I needed a change in career to really enthuse and challenge me. Instead, just over a year ago, I moved to a new teaching post. The school was in quite a unique position as nearly all of the SLT, teaching and office staff were new. I absolutely love it! It was just the challenge I

needed, and I feel really optimistic about where the school is heading.

4 What do you consider the most overrated teacher virtue?

Being fair. Sometimes we can become too focused on being fair to all our pupils; ensuring we give exactly the same amount of time, praise, and feedback to everyone. It's just something that is impossible to keep track of or accomplish.

5 On what occasion do you lie to your class?

I try my best to be animated and enthusiastic no matter what subject or objective I am teaching, but I am not being completely truthful when I tell my class I'm excited about the new spelling rule we're learning!

6 Which words or phrases do you most overuse with your class?

Our school values are Respectful, Resilient, Reflective and Responsible. I definitely overuse these words as we refer to them all the time, but I think it's important, especially at

the moment, as these attributes are still fairly new to the pupils. If I use an alternative (“I love the way you really persevered with that challenging task”) the children often correct me (“Don't you mean resilient?”).

7 What do you consider your greatest teaching achievement?

To be honest, I don't think teachers have one greatest achievement. Instead, hopefully, we have numerous small wins, such as when a pupil who has struggled with an aspect of their learning becomes confident and independent. The most important achievement is probably when I help a pupil change their mindset and they start to believe they can and will achieve whatever they set out to achieve.

8 What is your most treasured teaching possession?

Holes by Louis Sachar. I absolutely love reading this book to Year 6 pupils, and have never known a class who haven't become hooked. I think that it can entice even the most reluctant of readers. My own son, who is now 17, was never an avid reader, but when he read *Holes* at primary school, he was convinced that something was wrong when he wanted to continue with the story after his daily 15 minutes of reading homework was up!

“I'm not being completely truthful when I tell my class I'm excited about the new spelling rule”



NAME: Juliet Carey
JOB ROLE: Year 6 teacher

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