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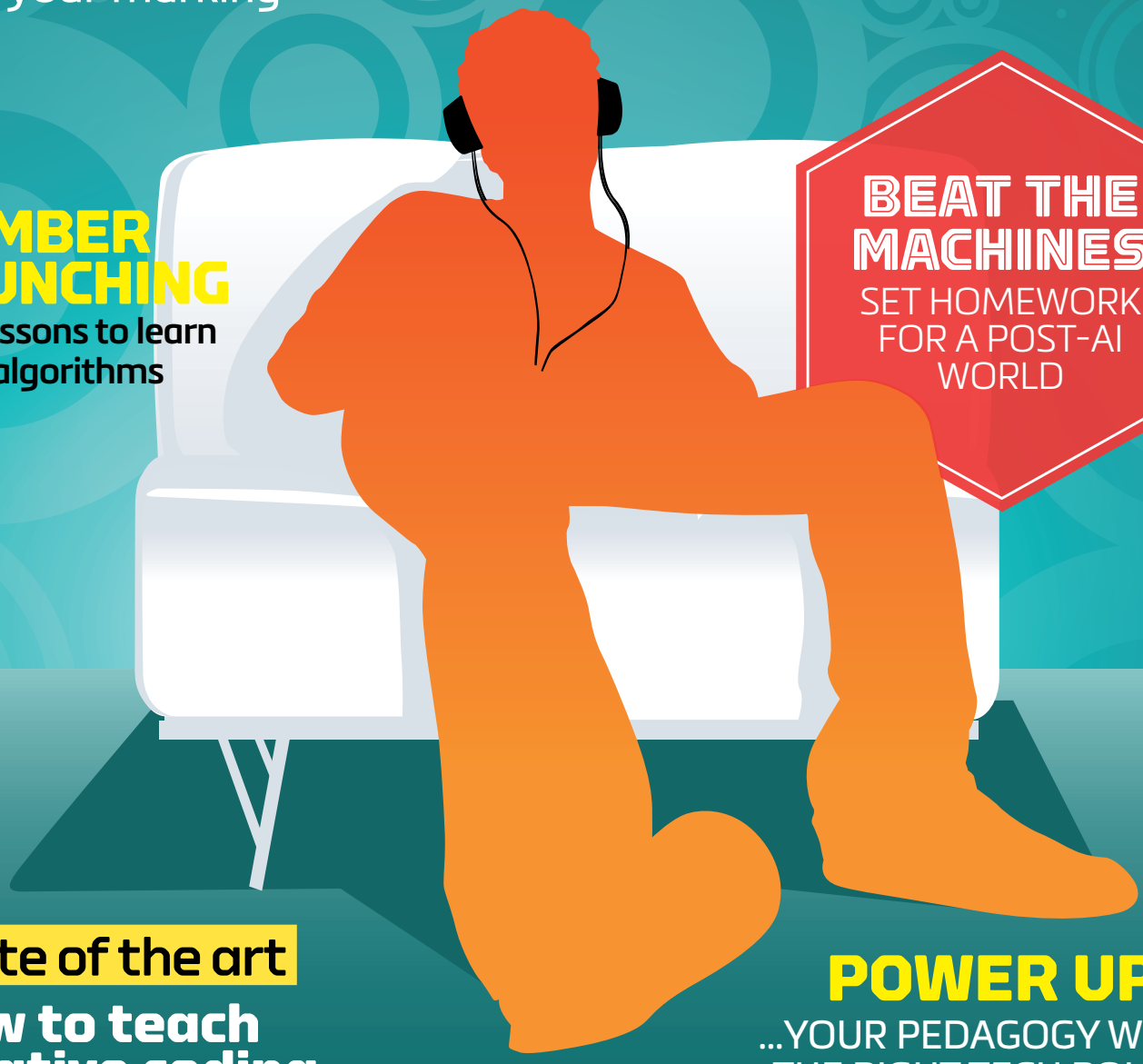
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Welcome...



Roughly a year ago, I sat down to write this editorial for our annual *Technology and Innovation* supplement and somewhat inevitably ended up talking almost exclusively about AI. Well, 12 months on, the technology is still very much with us, and in some quarters, becoming deeply entwined with whole school administration systems and teachers' lesson planning.

Now, this needn't be a bad thing. As Kit Betts-Masters explores on page 6, there are grounded and practical uses for the technology that teachers and students can start adopting for themselves in the here and now, not in some far-flung speculative future. When deployed appropriately – i.e. as a background tool, rather than an entity to which we outsource our decision-making – great outcomes may well follow.

At the same time, however, we've also seen the inviting, always-on and frictionless user-facing chat interfaces of AI models present schools with, of all things, an entirely new safeguarding concern. Perhaps it was inevitable that in an age of social fragmentation and atomisation, adolescents would jump at the chance to share their innermost thoughts and worries with an ever-present, seemingly wise and non-judgemental presence via the same connected devices that already play such a huge part in their lives. Whether it could have been predicted or not, it's an issue that schools are increasingly having to grapple with (see page 32).

While we're putting the boot in, we can also thank AI for the spiralling costs of computer equipment. Thanks to the industry's frantic building of data centres to enable demand for AI services (note – that's forecast for *future* demand, not demand as it stands today), component shortages have resulted in everyone – from the public sector, to enterprises large and small, down to individual consumers – needing to defer those hardware updates and device refreshes until prices eventually (hopefully?) return to more sensible levels. In the meantime, IT supervisors and teachers alike will have to do what they can to eke more processing power out of the equipment they already have (see page 28).

So yes, AI continues to cast a sizeable shadow over all things edtech-related, but it's important not to overlook those benefits and considerations that were with us before ChatGPT became a household name, and which aren't going away. That can include bringing parents in to conversations around online safety (page 25), thinking more imaginatively about how to teach the principles of programming (page 22), demystifying the algorithms that are now responsible for so much of our media consumption (page 17) or simply leveraging a little software know-how to lighten one's workload (page 40).

Tech, it seems, can help us, hinder us, excite us and frighten us. But wasn't it always thus...?

Enjoy the issue,

Callum Fauser, editor
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ON BOARD THIS ISSUE



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Reasons to be CHEERFUL

Kit Betts-Masters considers the implications that AI may have for what we think of as 'digital literacy', and imagines what the best case scenario for an AI-driven classroom might look like...

AI is in everything now. It's helpful, but also fallible. Right now, it's in my PDF reading software and probably in yours too. If you're a Windows user, get used to seeing that Copilot button everywhere.

When the final report of the government's *Curriculum and Assessment Review (CAR)* landed in my inbox, I asked an AI assistant to '*Show me all the references to artificial intelligence*'. It duly produced a neat list of relevant quotations.

Acting on a hunch, I then performed a CTRL+F search of the document for myself. Up popped some further mentions that the assistant had apparently skipped – including a key line about '*The rise of artificial intelligence*' having the potential to reshape the way we work.

It was a small moment, but one that captured something important – that AI can be lazy, and essentially 'give up' when it thinks it's done enough to satisfy the user. It seems that our understanding of 'digital literacy' now has to include checking the machine, not just asking it clever questions.

Your 'trusted sidekick'

Generative AI has moved from being a relative novelty, to being pitched as a trusted sidekick in almost every digital task. Students will still need those traditional IT skills, however (if 'find in document' can be considered as such), and they'll need to develop an appreciation for AI's limitations, even if the systems they end up working with are more capable than the ones we use today.

Yes, changing the way we work can be daunting, but it can also be exciting. My position is that students and adults alike should see AI as a tool for *increasing quality*, rather than simply *saving time*. If an AI can differentiate a set of questions at an individual level, accurately gauge the knowledge and skills of each student and create individually-tailored lesson resources for them, why wouldn't we use that?

> **"Students and adults should see AI as a tool for increasing quality, rather than simply saving time"**

In my writing, I use AI as a kind of 'critical friend'. I'll first produce an initial draft in my own words, then ask an AI model what I've missed, how the structure could be clearer and whether any parts are confusing. I'll ignore some of its suggestions, act on others and then rewrite portions of the draft to ensure it still sounds like me.

That's the habit I want my students to develop – not '*Write this for me*', but '*Help me check this and make it better*'. The students in question will need to be equipped for a world of work in which they won't be writing 'one-size-fits-all' documents, but rather working *with* knowledge, within certain legal and procedural frameworks.

Setting the tone

For many, a big part of AI's appeal is its promise to complete in minutes work that used to take hours. Having very quickly reached the point where AI can present us with useful summaries tailored to different contexts, the challenge now is that of *managing truth*. We need to know what the AI's database contains, and whether we can be confident that the outputs the AI gives us are accurate and useful, rather than what the machine supposes *sounds* right, or thinks we will want to hear.

The aforementioned CAR highlights the widespread concern that young people aren't developing adequate skills in digital literacy, despite employers reporting a shortage of such skills. Recent advances in AI, notes the report, make it essential that students understand how AI works, are aware of its capabilities and limitations, and can learn how to use it without

becoming dependent upon it.

The DfE has also helped set the tone through its own guidance on use of AI in schools. The government message is that teachers can use AI to help with planning, resource creation, marking and admin, but that all professional judgements and responsibilities must sit firmly with the human adults in the room. In the DfE's view, teachers are 'irreplaceable', with the main aim for AI being to free up teachers' time for more face-to-face work with pupils.

Use of AI by students is treated more cautiously. Schools are reminded that many mainstream AI tools are for use by over-18s only, and that any pupil use of AI will require appropriate safeguards, filtering and supervision, alongside careful consideration of AI's implications for learning and homework.

Showing your working

I'm proud of being a science teacher. We teach students to think. Science isn't really about electromagnetism, electrolysis or photosynthesis; it's about how we gather evidence and how we use it, and AI is an awesome tool for assisting with that.

The Review explicitly acknowledges this when it talks about 'media literacy', pointing out that subjects such as history and science already help young people to analyse claims, weigh up evidence and spot bias, and in the case of science, critically and empirically evaluate various scientific claims. All this matters much more in an age when realistic photos, videos and audio can be generated in seconds by anyone with a web browser.

Personally, I love using tech in my classroom. In the past, I'd record students' results during an experiment and quickly use Excel to plot a graph, which we'd then analyse together on the board. This form of rapid analysis was something I wanted them to be able to do over the next few lessons. Now, I simply snap a photo of the students' results, and AI makes a graph showing us the relationship in what they're doing within just a few seconds!

But, you may ask, what's so aspirational about that? *Lots*, I would argue, in that it allows us to do more, better, in less time. Analysing the steps taken by an AI to reach an answer is just as useful as peer marking, or using a model example of what a good answer looks like. And if it produces an error, re-prompting the AI to correct its working is precisely what skilled users of AI are already doing to create output of hitherto unimaginable quality.

Conversation and experience

Where I see AI mostly improving education is in giving us a chance to put human conversation and practical experience back at the very centre of what we do. In a good science lesson, the most important moments will often be those when you're stood at the board, arguing with the class about what a graph really shows, or walking around the room as they wrestle with a tricky practical and gradually find their way through it.

If an AI system can quietly generate differentiated questions, draft model answers or provide individual support when students are stuck, that leaves me free to spend more of my time in *those* moments. The technology becomes a background tool that helps us think together; not a replacement for that thinking.

When I imagine the classroom 10 years from now, I don't see myself walking in and opening a PowerPoint file. I imagine systems that already know what my department has planned for the term, which have analysed prior assessments, and can suggest starter questions matched to where each student actually is at that point in time.

As the pupils file in, AI might help me choose a calming image to display on a Friday afternoon, or a striking graph for a Tuesday morning, since the system will have learned what helps the students to settle and readily engage.

While they work, AI tools could be proposing individual tasks, drafting plenaries and setting tailored homework that's sent direct to their devices, while I move around the room watching, listening and guiding the thinking.

If we get this right, the next version of our curriculum won't ask pupils to pretend AI doesn't exist.

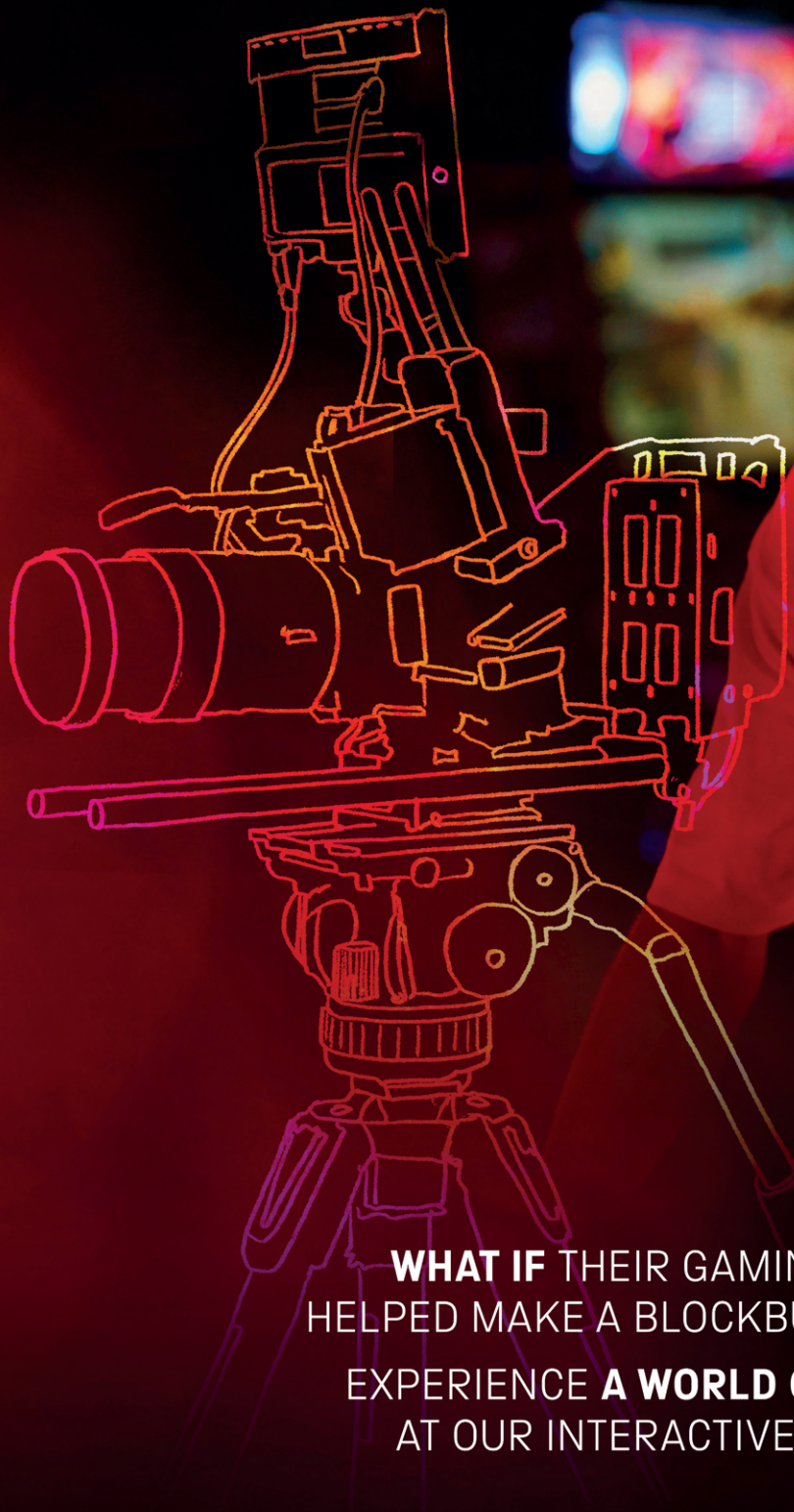
It will assume that they'll be maturing in a world where models can scan, summarise and simulate at speed, and focus instead on helping them ask better questions, understand data and evidence, and know when not to trust the first answer on a screen. Our job will be to make sure that the generation inheriting these tools can still notice what's missing, hit CTRL+F and insist on seeing the whole picture.



ABOUT THE AUTHOR
Kit Betts-Masters is a lead practitioner for science and produces physics, education and technology videos for YouTube under the username @KitBetts-Masters; for more information, visit evaluateeverything.co.uk

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Technicians Gallery

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Careers Uncovered

KS3 and KS4 groups can book onto a free, hands-on workshop held in the *Technicians* gallery. Pupils will meet real-life technicians from top organisations and use their existing skills to problem-solve a variety of job-related activities.

Careers Trails

To support your visit, the Science Museum has created a fun, careers-themed activity trail that leads pupils around the museum. They'll explore *Medicine: The Wellcome Galleries* and *Mathematics: The Winton Gallery* and learn how real-life technicians helped design and build the world around us.

Gatsby Benchmarks

A visit to the gallery will support productive careers conversations with young people by offering an informal yet educational encounter with a huge range of technical career pathways. A visit could also help in meeting Gatsby's Good Career Guidance benchmarks by providing opportunities for pupils to experience workplace environments.

Highlighter pens AND CHATBOTS

Classrooms have seen multiple evolutions in technology over the years, writes **Alex Sykes** – but has the process of learning actually changed all that much?

I often think back to what studying looked like when I was going through my GCSEs and A Levels. I won't say how long ago that was, but suffice it to say that since then I've seen the advent of smartphones, YouTube and a fair number of other technological developments.

I think about the myriad of resources available to students now, and how school-age Alex would have relished having access to the digital tools now commonplace today for deeper practice and exploration of the subjects I was studying.

Then again, I suspect that some things don't change as quickly as we might imagine. Were I studying for exams today, I'd still be writing my revision notes with a highlighter to hand, because that was, and remains, the best way for me to retain information.

That's not just something personal to me, but something deemed to be part of active learning – one of the learning design principles we apply in the development of products at Oxford University Press (OUP). We know that on occasion, setting pen to paper, or drawing diagrams and using coloured pens, can improve memory retention and deepen conceptual understanding.

However, it isn't as straightforward as saying we should always use pen and paper. Many active learning tasks – such as connecting new concepts to prior knowledge, or interactive activities such as quizzes – can be effectively accomplished using digital resources.

Digital learning: insights from the classroom

These considerations of analogue versus digital learning, and what learning itself should even look like in a post-AI age, prompted us to conduct a study at OUP, 'Digital learning: insights from the classroom' (see tinyurl.com/ti13-DL1). We wanted to get a snapshot of teachers' and learners' experiences as they navigated those choices between digital and analogue resources and tools.

We surveyed 400 teachers and 600 students aged 13-16 across the UK, Brazil, Hong Kong and South Africa, and organised focus groups with teachers and students in the UK. The research asked them to share their use of, and preferences for, digital and more traditional tools in their teaching and learning, as well as their thoughts on how they use screens more generally in their spare time.

First of all, we found that digital access was widespread across the countries we examined. In our snapshot survey, all teachers and most students reported having access to at least one digital device.

The most notable finding, however, wasn't around individuals choosing between screens or paper at all, but rather that teachers and students are focusing intentionally on what works best for a given learning task.

> *"People consistently opted for learning methods based on what had previously helped them achieve the best learning outcomes"*

Across the research, people consistently opted for learning methods based on what had previously helped them achieve the best learning outcomes – not due to personal preference, or what they happened to have access to at that time.

Food for thought

What surprised me most from the research was that while many might assume young people would always choose digital, our student respondents described deliberately switching between digital and paper, depending on the nature of the task.



To be clear, students do use digital resources extensively, with 64% saying they used digital tools for homework 'most of the time' and 55% stating they used them for research tasks. Yet they also selected tools according to their own preferences, or based on what they already knew worked best for their learning, with many (like me) still preferring handwriting for certain revision and note-taking activities.

Teachers also demonstrated a highly nuanced approach. 63%, for example, used digital tools for locating information and research purposes, but were quite selective when it came to identifying specifically where they added value. What stood out most across the entirety of the research was just how much thought went into each of these decisions. It seemed our participants cared about one thing, over all else: what would help them teach, or learn most effectively.

While 48% of teachers felt digital learning was 'more relevant to real life skills and jobs', only 13% of students agreed with that position. At OUP, we want students to feel that education is setting them up for life. As a curriculum, assessment, resource and professional development provider, we – and the education community more broadly – need to be thinking hard about how we can improve this, particularly in a fast changing world and with the advent of AI.

Outcome over format

Students' perceptions of the benefits of digital tools were echoed by educators. 60% believed that digital tools helped to improve student engagement, while 50% said that they enable students to learn at their own pace. At the same time, however, students consistently told us that teachers remain central to the learning experience.



This is essential, because effective teaching and learning starts with teachers understanding learners as individuals. Digital tools can provide data and insights that will help identify each learner's needs and next steps, but it's teachers who will bring those insights to life, through their professional judgement, expertise, and human connection.

The most effective learning environments, then, would appear to be those that combine the strengths of both digital and traditional approaches. The key question isn't 'Should we use technology?' but 'How do we use technology in ways that genuinely improve learning?' Pedagogy must come first, followed by the thoughtful use of digital tools and features aimed at supporting learning impact.

AI is here to stay

AI is already part of everyday teaching and learning. Among the teacher respondents of our survey, 82% used AI chatbots for research and lesson preparation and 74% for creating resources. What was encouraging, though, was how many were evidently approaching AI critically. 55% of teachers say they always check information generated by AI, for example.

The message from both teachers and students seems clear – AI is here to stay, so we need to focus on how to use it responsibly and effectively. That commitment underpins OUP's AI values and principles for schools, which guide the development of our AI-enabled products and emphasise data privacy, child safety and the integrity of educational content.

Screens for learning and recreation

One of the most interesting findings was that participants clearly distinguished between 'purposeful learning' using digital tools and 'passive screen use'. Around half of both teachers (47%) and students (42%) felt they spent too much time on screens overall.

Yet despite those concerns, 53% of students actually wanted to increase the amount of digital learning available to them. While teachers acknowledged the concerns surrounding distraction, they also saw clear educational benefits to using technology intentionally, with specific learning outcomes in mind.

As we continue to navigate rapid advances in digital technology and AI, these findings provide us with a timely reminder – that successful learning isn't just driven by technologically assisted, or more traditional methods alone.

Moreover, teachers and students aren't 'choosing between digital or analogue'; they're combining both in thoughtful ways to achieve the best outcomes. The challenge for educators, publishers and technology providers is therefore not to lead with the tool, but with the learning.

When pedagogy comes first, coupled with high quality and trusted educational content, the format becomes a means to an end – not the end itself.



ABOUT THE AUTHOR
Alex Sykes is Managing Director of International Education at Oxford University Press; OUP's AI values and principles can be viewed at **tinyurl.com/ti13-OUP1**

Don't count CODING OUT

Richard Hunt explains why, even in the age of AI, coding still belongs in classrooms...

Recently, I've seen the question raised, '*Do we need to learn coding when AI can do it for us?*' My response to that would be yes – and that learning coding is even more important for young people than you might realise.

As somebody who's taught children coding for many years, recent interventions from Anthropic's co-founder and CEO, Dario Amodei, stating that coding will be '*made obsolete by AI*' overlook what the true value of coding actually is. A formal study of coding doesn't just teach the basic principles of coding itself; it trains the brain to be elastic when approaching new challenges, processing information or finding new ways of being creative.

Human input

Coding is about far more than simply building apps and programmes; it also involves the development of some key skills that serve us all well in later life. Through showing young people how to code, we're increasing their ability to identify problems, analyse solutions and test theories – in effect, giving them a way of learning from their mistakes and improving their outcomes over time.

Following many major changes over the years, the education system we have today is barely recognisable compared to what it was during my own schooldays in the 1980s. The system has naturally had to evolve in parallel with a growing and ever more complex technological landscape, which in turn has altered kids' learning habits and routines. As chalkboards have given way to IWBs, we've now reached a point where children's learning is now supported by technology as a matter of course, some benefits of which are undeniable.

It is, however, important that we don't come to rely on these technologies to the exclusion of all else. With AI now evolving at speed, many in the education space are captivated by the promise of what it can do – and, in many ways, all that *we* won't have to do as a result. That's why it's imperative that we allow children to understand and fully witness the future of technological evolution, while also asserting the notion that *human input is still as important* – even in light of AI's existence.

Beyond the textbooks

Research has shown that 63% of students who learn coding at an early age develop better problem-solving skills than their peers who don't. They were also seen to demonstrate increased analytical skills, and even higher IQ scores in comparison to those who hadn't been exposed to coding. There are numerous occasions where evidence prevails that coding-based activities stimulate those parts of the brain that are involved in logical and creative thinking simultaneously.

It's also worth noting that coding is a skill many students are currently learning at a crucial time in their cognitive development – a period in which children will often start to form patterns of thinking that follow them into adulthood. We teach children the syllabus, but the practice of coding in turn teaches them far more than what's found in their textbooks – it can help to shape them into capable adults.

Take financial literacy, for example. I've seen first-hand how learning to code can alter the way a student approaches a challenge. Nimbl (nimbl.com) offers a money-saving app for kids and teens that dispenses a wide range of practical money management skills. Then there's the Young Coders competition, which actively promotes coding to schools, children and parents in an engaging and interactive way.

Coding as prosthesis

When I think about coding, I'll often think about the mathematics it involves – and about how interesting it is to see how, for instance, students who have previously struggled with maths still manage to manipulate the variables needed to build computer games, or deftly use geometry when designing animations.

In this sense, coding can almost be seen as a prosthesis, enabling students to further explore and tackle complicated, real-world problems in ways that they might otherwise view as being beyond them.



By integrating coding into our curriculum, we're empowering our students to become more critical and creative thinkers, capable of tackling assorted problems head-on while also being able to identify multiple ways of approaching a challenge in order to ultimately reach a correct solution.

Perseverance and meta-skills

Beyond the gains to be had in terms of students' mathematical and technical skills, coding can also develop their ability to think abstractly. Abstraction, decomposition, pattern recognition, the building of algorithms – all are core to solving the kinds of problems students will be presented with during coding lessons. But so too are perseverance and various meta-skills, such as attention to detail; adaptability; accuracy; the ability to prioritise; skills of analysis; and a solid grasp of how to evaluate various processes and refine them.

It's a set of foundations that extends out much further than just learning to code, to encompass ways of thinking that can be applied to life outside the classroom.

As a teacher, I feel strongly that it's my responsibility to ensure students get the time needed to really benefit from what the study of coding, and technology more generally, can offer them. Every day, I witness for myself those '*A-ha!*' moments – the flashes of understanding that occur when children grasp a new concept, after it's been explained to them in a new and different way.

When students actively connect with the topics they're learning about, their excitement and engagement become palpably visible. In my experience, coding is one of those areas that truly resonates. What makes it especially unique, as a discipline, is that it teaches technical skills while also strengthening cognitive abilities that can be readily transferred over to other areas of learning.

Question, create, adapt

We've seen teaching practices evolve, diversify and adapt. Being aware of the changes arising, and those needed, is imperative to ensure that we're guiding young people to successful futures. Whether those be in the realm of coding or not, the impact of coding has helped students go from strength to strength in many areas and disciplines.

Perhaps the real question we should be asking ourselves isn't whether AI will write all of our code for us, but whether the *teaching* of it will continue to be necessary, as technology and coding practices continue to develop in the years to come.

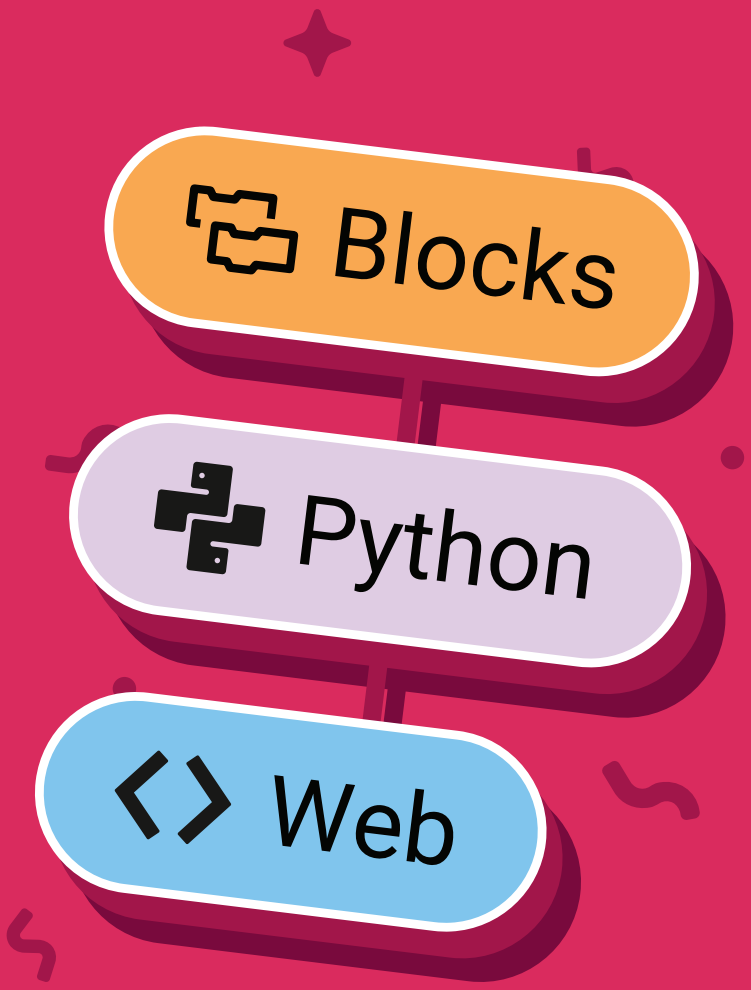
It's my belief that teaching coding *is* crucial for young people, who right now are growing up and maturing in tandem with those advancements. Teaching children how to code is a necessary step towards fostering the next generation of programmers, but can also serve to equip young people with the mindsets they'll need to successfully question, create and adapt in an ever more rapidly changing world.

Yes, it's entirely possible that AI may yet transform how software is written and how we work with it – but those innately human abilities to think critically, problem solve and innovate? They will always remain at the heart of progress.



Richard Hunt is a mathematics teacher, Chartered Mathematician and former software engineer; for more information about the Young Coders compeition, visit codingcompetition.org

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We have IGNITION

Up to now, schools' policy responses to AI have been characterised by 'fight', 'freeze' or 'flight', says Bec May – but there's also a far superior fourth approach...

"AI DOOM EXPLAINED!" "AI COULD KILL ALL HUMANS!" "HOW TO STOP AI FROM TURNING YOUR BRAIN TO MUSH..."

As I write this article, those are the kinds of headlines filling the newspapers. I see reports of New York Mayor Zohran Mamdani announcing a one-year moratorium on student-facing generative AI in public schools. Los Angeles Unified going a step further by blocking student access to AI tools on all district-issued devices.

Closer to home, the BBC has reported that UK schools 'aren't ready' for AI and are 'crying out' for government advice – despite the DfE recently issuing guidance that specifically sets out how schools can use generative AI safely and appropriately (see tinyurl.com/ti13-IAI1).



Three schools of thought

Presently, schools' AI policies tend to fall into one of three camps – fight, freeze or flight.

'Fight' is all about *rules*. Rewrite the acceptable use policy. Warn students about hallucinations, cheating, plagiarism, and handing personal information over to chatbots. Define which tools are acceptable, then repeat the process once another wave arrives.

'Freeze' is more familiar territory – don't encourage it, don't talk about it and just hope that when students use AI, they do it somewhere you can't see. And then there's 'flight', which entails turning to your favoured filter or firewall and embarking on a game of AI whack-a-mole.

Sure, you can block the URLs for ChatGPT, Claude, and Gemini – but what about the AI functions built into TikTok, Microsoft 365, Google Search, Canva and the various coding tools students use each day?

Time to ignite

There is, however, a fourth possible response – *ignite*. Instead of focusing on how we can contain AI, what if we looked at using it to ignite those very aspects of learning we're afraid it might stifle – creativity, curiosity, critical thinking, connection?

The US-based Alpha School, for example, has used adaptive learning technology to reduce the time spent learning the core academic curriculum to around two hours per day, leaving the rest of the day available for the pursuit of various social activities, be it team projects, public speaking, entrepreneurship, physical activity, and workshops built around real-world skills – a provocative response to criticisms that AI chatbots rob young people of real-world social practice.

At another school, this time in Australia, staff take students' AI prompt activity – as captured in firewall logs and surfaced through Fastvue – and combine it with timetable information, LMS data and a subject-specific framework for what 'good AI use' should look like.

From there, staff look for signs of positive learning. Are students seeking understanding? Are they questioning outputs, checking themselves, iterating on their ideas or working through problems in structured steps? Or have they simply pasted in the assignment brief and delegated all required thinking? These insights enable teachers to check in, ask what's happening and coach students towards better ways of using the technology.

Heightened expectations

In this way, access to AI hasn't lowered expectations on learners, but rather done the opposite: *'We've given you access to these tools, so we expect more – better thinking, more creativity, better questions.'*

Students need no longer be limited to projects matched to skills they've already mastered, but can instead use AI to accomplish certain tasks – developing and prototyping a new app, for example – that might otherwise require years of technical experience. The expectation, however, is that they use this extra capability to produce more ambitious work, not just complete traditional assignments sooner.

Yes, the risks surrounding AI deserve scrutiny. Schools no doubt require sensible policies, safeguards and boundaries, but if AI is to change how young people learn, create, and solve problems, educators must seize the opportunity to shape what that relationship looks like. Fight, freeze and flight responses might feel safer – but I'd sooner see what happens when we ignite.



AUTHOR BIO

Bec May is the Lead Storyteller and Head of Marketing for Fastvue, where she writes about digital safeguarding, AI in schools and how educators can use emerging technologies to strengthen, rather than diminish, student learning; to find out more, visit fastvue.co

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Algorithmic THINKING

Alan Harrison shares his approach to teaching algorithms via the use of semantic waves

Your bike has been stolen. Fortunately, a CCTV camera caught the whole thing – but the footage covers eight hours. How do you find the moment when it was taken?

You could start at the beginning and watch every minute. Or jump to the 4-hour mark – is the bike there? Yes. Jump to 6 hours – still there. Jump to 7 – gone. So the theft happened somewhere between 6 and 7 hours in. Jump to 6.30...

Congratulations! You have caught the thief and simultaneously 'discovered' the binary search algorithm.

What's an algorithm?

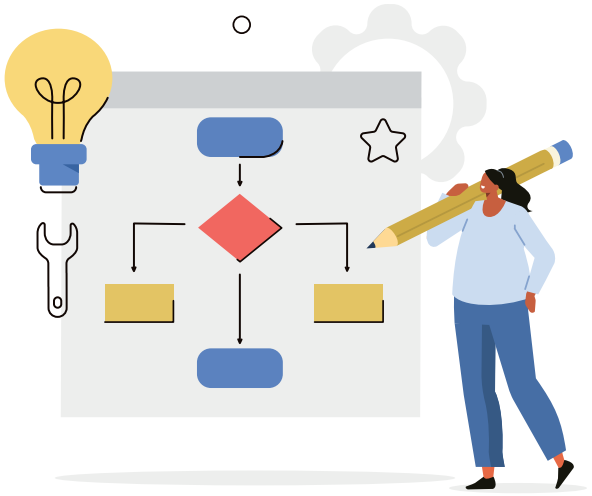
An algorithm is a precise, ordered set of steps to solve a problem, but crucially, the definition doesn't mandate that it must be a computer program. As the above example illustrates, it exists independently of any specific implementation – we 'ran' this algorithm manually, no computer required.

This is true of all the standard algorithms in the KS3/4 computing curriculum. They can be applied to real-world problems, thus affording some creative ways of teaching them.

The unplugged warm-up

To get us closer to the binary search program, we can play the 'High-Low Game'. Think of a number between 1 and 128, ask students to guess it and respond to them with '*Higher*', '*Lower*' or '*Correct*'.

After a few rounds, the students will hone in on the midpoint and discover that 7 guesses is all that's required. Why 7? Because each guess



eliminates half the remaining possibilities, and you can halve a list of 128 candidates just seven times until only one remains.

This result follows from the fact that $2^7 = 128$ – or, to put it another way, 7 is the base-2 logarithm of 128, written *log2(128)*. This is why binary search is called a logarithmic algorithm; its worst-case number of steps is $\log_2(n)$, where n is the number of items to search.

The semantic wave

The pedagogical technique in use here is called a 'semantic wave' (see ncce.io/qr06), which lends itself beautifully to conveying abstract concepts like our common algorithms.

So far, we've taken an abstract concept and grounded it in something familiar. Now we need to link the concrete to the abstract: "*What you just did has a name – binary search. You halved the possibilities with every guess, just like our CCTV detective. Let's look at how we'd implement this algorithm in code.*"

However good your explanation, though, they're unlikely to derive the code themselves. So, following the PRIMM methodology (see ncce.io/qr11), let's start with the below Python implementation and ask them to Predict what it does before Running it (**Fig1.**):

Investigate

Now have the students Investigate the function on paper with a small sorted list – say, [3, 9, 14, 21, 35, 52, 67] – searching for 35, while completing a trace table (see ncce.io/qr14). They should annotate low, mid and high at each iteration, watching the search window close in.

They may well ask, "*When we calculate the midpoint, do we round down (go left) or up (go right)?*" It doesn't actually matter. Both work, but Python's '//' integer division operator rounds down, making the 'go left' code simpler.

A sorted list

The students may further ask why they can't binary search an unsorted list. Show them by searching for the target '9' in [14, 3, 52, 9, 21]. When the algorithm inspects the midpoint (52) and discards the right half, it will also discard our target. The algorithm depends upon the act of discarding *all* 'higher' or 'lower' values, which assumes a sorted list.

It's tempting to see the 'common algorithms' topic as a set of tricky programming problems that are difficult to convey and tough to remember. Using semantic waves, starting with real-world analogies, and including lots of reading and tracing code in your teaching will deliver a more secure understanding over surface level coding activities. And it should also save time if one of your students ever has their bike stolen...

Fig 1.

```
def binary_search(data, target):
    low, high = 0, len(data) - 1
    while low <= high:
        mid = (low + high) // 2
        if data[mid] == target:
            return mid
        elif data[mid] < target:
            low = mid + 1
        else:
            high = mid - 1
    return -1
```



ABOUT THE AUTHOR

Alan Harrison MA is a freelance education consultant, visiting tutor for Manchester Met, a computing SCITT tutor and former head of computing and digital strategy at a Manchester state-sponsored academy; for more information, visit hpro.uk

When tech's not THE ANSWER

Liam Murphy explains why simply installing more screens won't make your school any more 'innovative'...

Picture the scene. It's a September INSET day. A senior leader's stood at the front of the hall, making a familiar announcement – there's going to be another new edtech initiative, this time a one-to-one Chromebook rollout. We're told that this will '*transform learning*', '*boost engagement*' and '*modernise pedagogy*'...

Cut to three weeks later. A Y8 geography class on a rainy Tuesday afternoon. The WiFi's already dropped twice, three students have forgotten to bring their chargers, and someone at the back is insisting their homework is trapped in limbo, thanks to a mysterious 'syncing error'.

The rest of the class are meanwhile staring at a platform that's starting to feel less like an 'innovation', and more like a very expensive worksheet with extra steps.

The danger of frictionless learning

The issue in secondary schools isn't a lack of technology; it's a misunderstanding of what technology does to learning. Too often, we've replaced paper with glass and called it 'progress', while the underlying pedagogy has remained unchanged. We're still the gatekeepers of knowledge, only now we're competing with a glowing screen designed to win our students' attention every time.

The recently published Curriculum and Assessment Review (see tinyurl.com/ts155-EA1) rightly challenges schools to prepare young people for an unpredictable future, but we won't get there through procurement alone.

The uncomfortable truth is that a great deal of edtech removes the very things that make learning stick. Search engines, apps, AI tools – they're all expressly designed to make the process of finding answers *instant* and *effortless*. For almost every sector, that's broadly a good thing – but in classrooms, it can quietly break something that's hugely important.

> **"Technology is an accelerator, but you can't accelerate a pedagogy that's standing still"**

Because learning doesn't happen in frictionless environments. It occurs during resistance, when students are sitting with confusion, comparing competing ideas and attempting to rebuild their understanding after initially getting things wrong. If we remove that struggle, we're not 'accelerating learning'. We're skipping it entirely.

Reclaiming the struggle

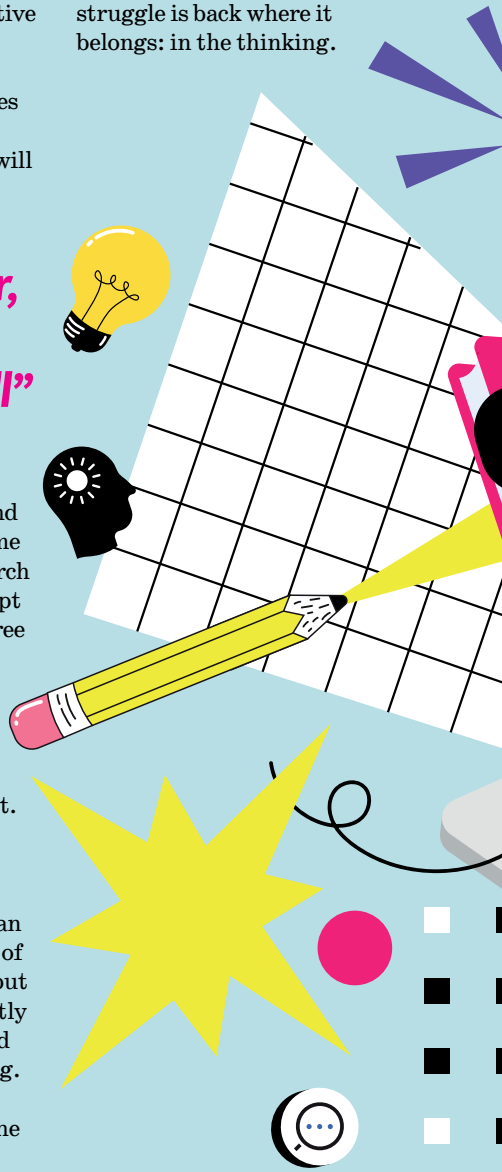
This is worth dwelling on, because those frictionless environments are seductive. We watch students enter search terms, receive the answers to their queries instantly and mistake that speed for learning. They look busy. The work looks glossy. But if learning were genuinely taking place, we wouldn't need to remove that friction in the first place. So what would it look like if we were to bring that productive challenge back?

Take a standard KS3 history lesson on the causes of WWI. In many classrooms, the students will be sent off to 'research' and produce a summary of some kind, so they'll open a search engine, type out the prompt and skim over the first three links. 10 minutes later, you've got a series of polished paragraphs all lifted from the same handful of websites. It looks like work, but it isn't.

Now, *flip it*.

Instead of having the students 'search' for answers, give them one – an AI-generated explanation of 'The Causes of the War', but make sure it's flawed, subtly biased, over-simplified and occasionally flat-out wrong.

You'll see the lesson suddenly change shape. The students have now become *auditors*, rather than consumers. As such, they'll need to cross-check claims, challenge inaccuracies, argue over differing interpretations and attempt to reconstruct that which is actually true. The device hasn't delivered knowledge; it's produced something to *interrogate*, which means the struggle is back where it belongs: in the thinking.



Compounding the exhaustion

The same principle can also work outside of history. In geography, for example, I've seen students examine AI-generated explanations of migration patterns, before spending the rest of the lesson unpacking the assumptions hidden within those responses. In English, they've analysed machine-generated writing to identify places where emotional authenticity has been missing. Technology provides the starting point; the learning then comes from challenging it.

This also matters for workload, though not in the way people usually argue it does. The adoption of every new platform will entail another round of training sessions, troubleshooting guides, forgotten passwords and 30 variations of "*Sir, it's not loading...*". Every teacher knows the feeling of spending 10 minutes on just getting everyone online, only to discover that the task itself required merely three minutes of thinking.

Add in the hidden tax of monitoring behaviour during on-screen tasks – all that endless policing of minimised tabs and off-task browsing – and this exhaustion can quickly compound. We spend much of our non-contact time designing intricate digital resources, only to then spend our actual lesson time acting as frontline IT support.

However, none of this addresses the fact that the real problem isn't just down to inefficiency – it's that technology-driven initiatives often increase administrative load while reducing intellectual depth. Teachers end up managing systems, rather than shaping thinking.

We become part-time technicians while telling ourselves that 'screen time' and 'learning time' are the same thing. Real innovation should reduce noise and increase clarity, so that teachers can focus on curriculum decisions rather than platform maintenance.



A different kind of investment

If we're serious about preparing students for life in an unpredictable future, then we need to stop treating our IT budgets as proxies for innovation. So here's a concrete challenge for trust leaders and senior teams – pause the constant cycle of your device refreshes wherever possible. Keep your essential infrastructure, but step back from the assumption that newer hardware automatically means better learning.

Instead, redirect some of that capacity into *people*, in the form of protected planning time, subject collaboration, lesson study and sustained curriculum thinking. One hour of high-quality curriculum planning between subject specialists will almost always outperform yet another rollout of underused devices.

What could happen if we treated teacher expertise as our most valuable classroom technology? If departments were given the space to map out misconceptions, refine questioning and debate the core knowledge of their subject? The quality of thinking in the room would change. And stay changed.

The schools that thrive in an AI-rich future won't be those that possess the latest technology. It'll be those populated by teachers who know how to design sharper questions. Technology is an accelerator, but you can't accelerate a pedagogy that's standing still.

So the next time you see someone explaining how a new device rollout will 'transform learning', ask them a simple question – '*What thinking is now possible that wasn't possible before?*' If they can't answer that, you've probably just bought a more expensive worksheet.

3 WAYS TO RESTORE COGNITIVE FRICTION

It's easy for digital tasks to resemble learning while relatively little heavy lifting is actually taking place. The following three quick checks can help ensure that thinking remains the priority...

1. The '*Would this work without tech?*' test
If the internet disappeared tomorrow, would the intellectual demands of the task change in any way? If not, the technology is probably more decorative than pedagogical.

2. Provide the wrong answer first
Instead of asking students to search for information, start with a deliberately flawed, AI-generated explanation and ask them to challenge it, correct it and make their case for why it's wrong. The most powerful thinking can happen when students must *dismantle* an argument, not just find one.

3. Watch the time sink
Look carefully at what students are doing behind their screens. If they're spending longer formatting their slides, searching for images or adjusting fonts than thinking about the content itself, the task has drifted. The hardest part of the lesson should be invisible and happening in their heads – not playing out on their screens.



ABOUT THE AUTHOR
Liam Murphy is a class teacher and humanities curriculum lead at Kellett School, The British International School in Hong Kong

FILLING IN THE GAPS

Sabrina Sulliman shares her experiences of using Little Wandle Code to address gaps in phonics knowledge among her school's Y7s



Sabrina Sulliman is a Literacy and SEND Intervention Lead at Southfields Academy, London

Prior to becoming involved in the Little Wandle Code pilot, what schemes or interventions were you using to engage struggling readers at Southfields Academy?

I'd previously supported Y7 phonics classes where we were using a different phonics programme, and had found student engagement to be really quite poor because they'd encountered the same programme before, at primary school. They recognised it straight away.

These students were in an intervention group who had been withdrawn from mainstream English class. I remember walking the kids to their phonics lessons, and having to persuade them to enter the room once we got there because they felt so 'babied'. The only progress we were making was with those students who were actually willing to engage with the material, but even then there were limits to what we could do by effectively teaching them the exact same phonics programme twice.

We eventually stopped delivering phonics interventions altogether, since the only options available to us were other primary programmes which we knew would make our learners feel that they were being patronised. Even so, that still left us having to support these unconfident readers. We could see that need was there and growing, particularly post-COVID, but there simply weren't any options to choose from.

How did you come to be involved in the Little Wandle Code pilot programme?

I was already familiar with the primary phonics programme, Little Wandle Letters and Sounds Revised. I was among a group of secondary teachers that had been invited to a demonstration of how it worked, and through that I got to hear how they'd started work on producing a secondary version called Little Wandle Code.

I immediately wanted to know more, because to me, the issue isn't with teaching phonics to secondary students *per se*, but with how you pitch phonics to children who have already experienced primary school phonics. If all you can offer them is a repeat of something they've done before, it's never going to work. Plus, there's that additional barrier of secondary school English teachers generally not having been trained up as teachers of literacy.

The notion of being able to train secondary school teachers and support staff in delivering phonics seemed like quite a unique offer. Having that as part of a programme written specifically for secondary school learners made me really want to see it in action, so we accepted the offer of signing up for the pilot programme.

How would you characterise the level of need for secondary phonics education, based on what you've seen at Southfields Academy? Has it stayed at a consistent level? Has it been rising?

As a non-selective school, we have a huge range in terms of ability. When I first arrived, our phonics provision was delivered as a small group intervention, with the majority of those children having identified additional needs through what we used to call a Statement, or because they were relatively new to the country.

Now, if I look over the cohort of children engaging with our phonics interventions, they don't all have EHCPs, a recognised or diagnosed need, and won't necessarily be new to the



country. I think that nationally, the need has been growing because children are sadly disengaging with reading and literacy more widely.

That said, I can't imagine that it's necessarily the same picture across all secondary schools. For context, we have nearly 80 children with EHCPs in our school and there are two resource bases here – one for deaf children, and one for children with a speech and language or ASD diagnosis. There is a breadth to our intake, but equally, while phonics was once viewed as a form of SEND provision for children with additional needs, it is no longer being delivered in a corner of the school to a small number of children.

We actually have a fairly large Little Wandle Code intervention cohort, which is why it's become a higher priority for curriculum time. Our delivery now involves not just the English department, but also support from our pastoral team and some other teachers from across the curriculum, due to the impact that our phonics provision regularly has on students' overall progress.

Before, we were seeing relatively incremental progress – improvements of maybe around six months. Teachers won't necessarily see or feel that in their classrooms, but once children are making up to a year or more of progress in literacy, teachers will soon start telling you about students who are now writing much more in their assessments and other small, yet noticeable changes since the start of the year.

"They're starting to develop a relationship with books"



What's been your overall impression of the impact the programme has had?

If I compare the first year to the second in terms of staff buy-in, the results spoke for themselves.

We had more people trained up to deliver the programme this year than we had last year. When I've surveyed those staff who are delivering Little Wandle Code, they speak highly of not just the progress the children have made, but more than anything the *confidence* they now have.

With these children, it can be sad to see just how unwilling they are to participate across the curriculum. They don't write things down because they think they'll get the answers wrong. They sometimes know a word, but not the spelling, so they won't answer. They worry when it looks like a teacher might call on them to read something out to the class. Often, they'll want to go completely unnoticed in the classroom.

A lot of the feedback we've received describes how some students have really come out of their shells, sometimes alongside improvements in their attendance.

Have you had any feedback from the students themselves?

Towards the end of the school year, I remember complimenting one of the girls in a Y7 phonics class for spelling out a word for another student, saying how brilliant it was and joking that she was helping me with my workload. And she said, really casually, "*Yeah, Miss – because I can.*"

She wouldn't have said something like that at the start of the year, nor would she have helped her peer in the way that she did. That's what sticks with me, and it's the detail I share with other teachers when they join our phonics programme support team.

Statistically, some of the best progress we've seen has been among children with EHCPs who have, on average, made over a year's progress. I've also seen a rise in the number of books borrowed from the school library among this cohort, who would previously never have considered even visiting the library. You can really see the shift. They're starting to develop a relationship with books, in part thanks to the Little Wandle Code 'decodable anthologies' that collect together multiple short, accessible texts, but which outwardly just look like normal books.

I think they're amazing. They do a great job of hooking the kids, who barely notice how they're designed to be entirely decodable or the level of repetition. They're just *reading a book*, enjoying it and wanting to find out what happens next.

For more information about Little Wandle Code, visit littlewandlecode.org.uk

BEHIND THE CODE

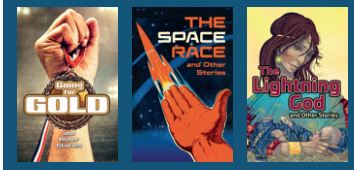


Sarah Paxton, Programme Developer at Little Wandle, unpacks some of the design decisions that went into the decodable anthologies published by Collins.

"Our starting point was these mustn't look like standard phonics books, which are typically printed in a larger format and are very slim. We wanted them to look and feel like the books their peers are reading, with eye-catching covers. Since phonics texts are naturally short, bringing multiple stories together into anthologies was a practical and effective solution.

The challenge was to include variety and avoid the 'one sentence and a big picture' layout typical of many phonics books. Some stories in the anthologies use a graphic novel format, allowing for minimal text while still filling the page in an age-appropriate way. Poetry sits alongside non-fiction that uses photography in a style more familiar to older readers, and the illustration styles in the fiction stories have been chosen with the same readers in mind.

We've tried to be thoughtful about what students want and need, providing stories that are both engaging and accessible."



CREATIVE CODING

Dr Fiona Carroll reflects on why accentuating the creative aspects of coding is helpful for students, subject teachers and even the wider technology sector itself...

The number of young people not in education, employment or training in the UK has reached its highest level in more than a decade. Between January and March 2026, an estimated 1.01 million people aged 16–24 were NEET, representing 13.5% of this age group.

This increase has been driven by a combination of factors, including a shortage of entry-level jobs, persistent regional inequalities and a growing number of young people unable to work due to long-term health conditions. At the same time, the UK technology sector has been struggling to attract and retain the full breadth of the nation's talent. Consequently, it has continued to face significant diversity and inclusion challenges that have constrained its ability to both grow and innovate.

Fresh perspectives

Many young people disengage from computing while at school because they don't see themselves as able to 'belong' within the field, thus missing out on opportunities within a sector that in fact urgently needs their creativity, perspectives and wider skills.

The technology sector has traditionally prioritised computer science graduates and software engineers, yet we're now seeing an increased demand for individuals from diverse backgrounds who can bring fresh perspectives to complex problems. As AI development continues to accelerate, organisations are increasingly seeking individuals who possess creative, critical and philosophical insights, and who can challenge existing assumptions and contribute to more human-centred, responsible and innovative solutions.

This shift raises an important question, however. Are we teaching computing in a way that actually reflects the realities of modern technology careers? We feel that more creative and inclusive approaches rooted in real-world applications will enable a wider range of learners to see themselves in technology careers. By creating more pathways into computing, we could then help more young people to see technology as a place where their skills, creativity and ideas are, in fact, valued.

> *"Are we teaching computing in a way that actually reflects the realities of modern technology careers?"*

Ideas and context

Creativity and motivation are interlinked, in that people are often more likely to be creative when they're genuinely interested in what they're doing, and have been given opportunities to experiment and solve meaningful problems.

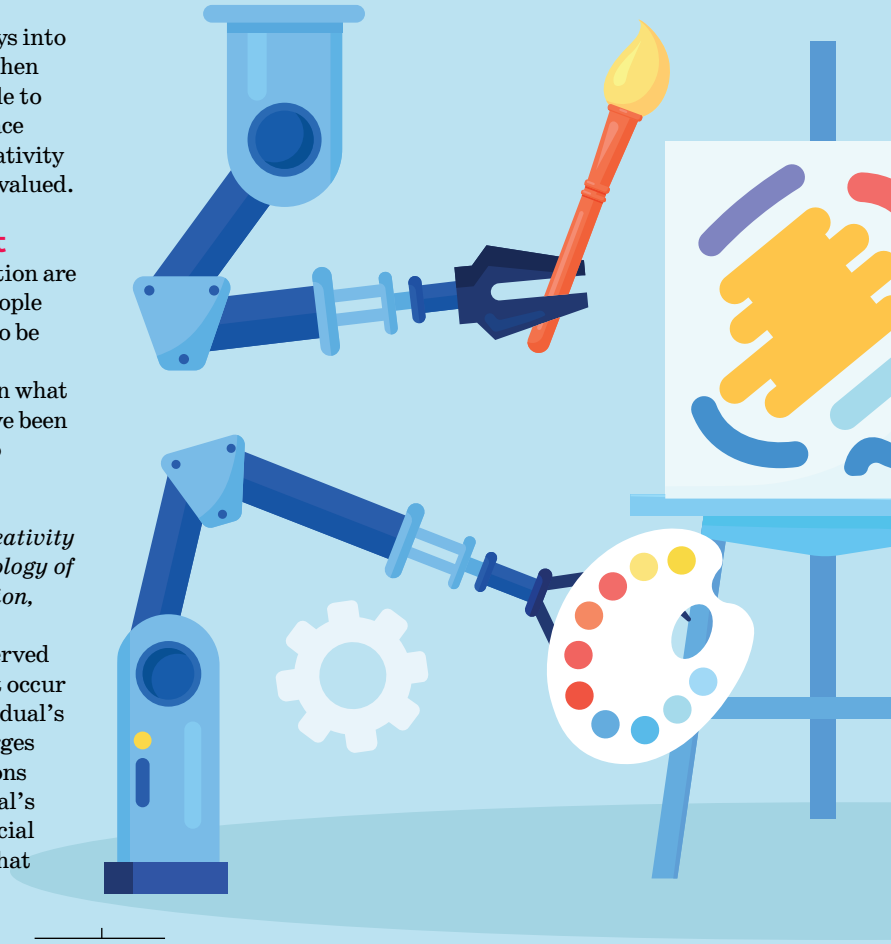
In his 1996 book *Creativity – Flow and the Psychology of Discovery and Invention, psychologist* Mihaly Csikszentmihalyi observed that creativity doesn't occur solely within an individual's mind, but rather emerges through the interactions between that individual's ideas and the wider social and cultural context that surrounds them.

He further argued that children often possess a natural creative advantage, because of the innate curiosity that drives them to explore, question and engage with the world around them. From this perspective, encouraging young people into computing should involve offering learning experiences that ignite students' curiosity, foster their creativity, and help them build the confidence they'll need to see themselves as capable contributors to the wider digital world.

An alternative pathway

It's this kind of thinking that informed a recent collaborative project undertaken by a team at Cardiff Metropolitan University (consisting of myself, Parastoo Porhonar, Priyesh Dhole and Israa Bazo) and three secondary schools within Bridgend County Borough, aimed at exploring how 'creative coding' could broaden overall participation rates within computing.

With funding from the Research Wales Innovation Fund, the project sought to increase levels of engagement and encourage more diverse participation by providing an alternative pathway into the subject for young people who might not otherwise see themselves studying or pursuing computing. Via a



series of hands-on workshops, students were able to learn about core programming concepts through creating digital artworks intended for a public exhibition.

By combining computational thinking with creativity, the project sought to build confidence, spark curiosity and demonstrate just how accessible, engaging and relevant the process of coding can really be. Thanks to a particularly successful collaboration with the head of computing at Porthcawl Comprehensive School, Helen Christopher, a total of nine workshops were delivered to a small group of students. These students all went on to complete a micro-provision course in Creative Coding offered by the university, culminating in a public exhibition of their work titled 'Unhidden Coding Talent'.

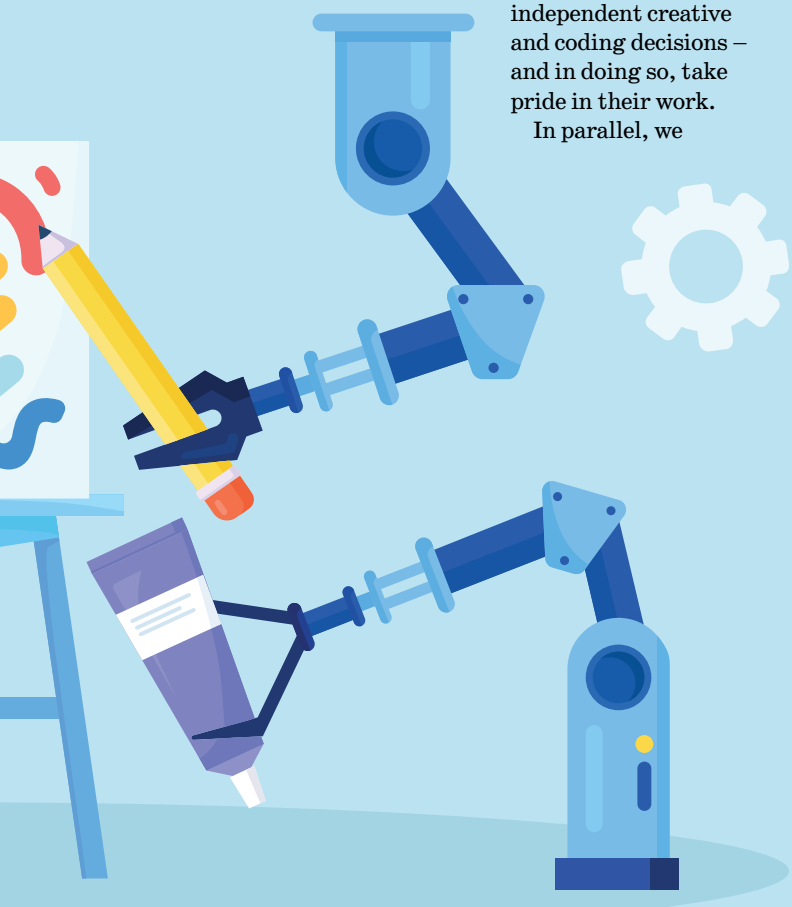
Pride and confidence

What surprised us most was how long it took some students to fully engage with this creative approach to coding. The JavaScript p5.js platform we used for the project provided immediate visual feedback, in a way that had proved to be highly engaging for primary school pupils, but it initially didn't seem to capture the interest of the small Y7 group we worked with.

The turning point arrived during the sixth workshop session, when students began to really take ownership of their coded artworks, and started seeing how their ideas and code could combine to produce meaningful creative outcomes.

It was also around this stage that the students came to fully acknowledge that their work was going to be showcased in a public exhibition. The prospect of presenting their creations to a real audience gave their coding a newfound sense of purpose, transforming it from a classroom exercise into a real-life creative undertaking. As their confidence grew, we saw the students start to make independent creative and coding decisions – and in doing so, take pride in their work.

In parallel, we observed their motivations developing organically, with some students becoming ever more engaged in the creative coding process.





LOOKING BACK

"This project has been incredibly valuable for our school. We already teach a lot of block-based coding, but it encouraged us to think differently about how we introduce programming. It has shown us that creative coding provides another pathway into computing – one that can engage students who might not otherwise connect with the subject.

As a result, we are planning to incorporate creative coding into our computing curriculum from next year to help inspire and engage a wider range of learners." **– Helen Christopher, head of computing at Porthcawl Comprehensive School**

"After seeing what my son achieved, I would love for him to continue developing these skills. This meant a lot to me, as he has autism, and the creative approach really helped him engage with and enjoy the experience." **– Parent**

Keep the 'what', change the 'how'

Our experience of this project helped reinforce the idea that engaging with computing doesn't always happen immediately. Students often need time to develop a certain level of self-belief and confidence in their abilities before being able to engage fully, but creative approaches like this one can be a means of facilitating such engagement in a more accessible way, for a wider diversity of students.

Our observations seem to indicate that when coding is taught through scaffolded, creative activities, students will become more motivated and develop more confidence in a subject that may not have otherwise captured their interest.

Rather than changing *what* is taught in computing lessons, we would suggest expanding *how* it is taught, by connecting coding to creative tasks, opportunities for self-expression and authentic, real-world applications. It's our view that this makes the learning more tangible, meaningful and relevant for students.

By thinking beyond traditional methods of teaching coding, schools can inspire a broader and more diverse range of young people to one day see themselves working in the technology sector, thus opening the door to engaging future study, rewarding careers and the kind of innovative thinking that the digital sector so sorely needs.



ABOUT THE AUTHOR
Dr Fiona Carroll is director of the Creative Computing Research Centre at Cardiff Metropolitan University; for more information, visit cardiffmet.ac.uk

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Opening up the CONVERSATION

Mubina Asaria highlights the ways in which schools can support parents with matters of online safety

In today's digital age, protecting students from online harms requires a genuine partnership between school and home. Parents are the first line of defence when it comes to online safety, but are often left out of the online safeguarding conversation.

This can result from barriers that include the confidence levels of school staff, and the ability of parents to keep up with the fast-changing app environment and attendant risks – as well as the fact that such conversations will often touch on sensitive topics such as recommended screen time, smartphone use, bullying and potential exposure to sexual content.

Children's online lives are complex and ever-evolving, with new risks frequently emerging alongside new platforms and the latest trends. According to a 2025 report published by Ofcom (see tinyurl.com/ts148-OS1), 55% of children below the age of 13 use at least one social media app or site. Between 2023 and 2024, Instagram use among 8- to 9-year-olds rose from 8% to 14%. A third of 8- to 17-year-olds admit to having submitted a fake age in order to access certain apps and websites. Up to a quarter have changed their date of birth after setting up a social media profile, with 8- to 12-year-olds the group most likely to do this so that they can access Snapchat.

Why a drip-feed approach is best

When it comes to raising parents' awareness of online safety issues, a drip-feed approach – where short presentations are incorporated into other school events, such as coffee mornings, parents' evenings and celebration days – will likely be more successful than holding yearly or termly standalone sessions.

Co-presenting these with students can be especially effective, since students can provide parents with an 'insider' view by sharing their own first-hand experiences and knowledge of the latest online trends.

Families should be kept informed with clear and consistent communications, be that via regular newsletters, parent portals or dedicated messaging apps. Parents may not always understand the latest risks around gaming, social media, generative AI and so forth, so make sure all communications are kept largely free of jargon, and made as accessible and practical as possible so that parents can develop confidence in speaking to their children.

Explaining online trends in simple and relatable terms, while sharing easy-to-use guides and resources, will help families continue those important conversations at home. Always use trusted sources for any resources and support materials, such as the NSPCC, Childnet or Internet Matters, and avoid overwhelming families with an excess of information.

Reporting policies

Adopting a joined-up approach is essential when safeguarding concerns arise, so encourage a two-way dialogue in which parents feel heard and involved. Reinforce your (hopefully clear) procedures for reporting issues, whether they occur inside or outside the classroom. IT monitoring systems may be able to instantly alert staff to some potential risks, but timely and sensitive communication with parents is ultimately the most crucial step towards ensuring that any concerns are acted on quickly and appropriately.

By the same token, parents should receive help on how to spot early warning signs of online harms at home, and be given the knowledge of how best to respond.

Tools and confidence

The most effective safeguarding approaches emerge when schools and homes are aligned. Your school policies should reflect the same principles being shared with parents, with both sides modelling the safe and responsible use of technology. By celebrating positive digital behaviour together, and framing safeguarding around *empowerment* rather than *fear*, schools can build a culture of trust and genuine partnership with their students' families.

To help with this, the edtech charity LGfL has developed a free 'Parent Online Safety Toolkit' (parentonlinesafety.lgfl.net), which combines the latest research on young people's online use and risks with useful tips, conversation starters and resources for parents. The resource can help families stay up to date with new trends, apps and games, manage their home internet settings and controls, and talk to their children about issues such as bullying, image sharing, AI chatbots, screen time, and staying safe from exploitation and grooming.

Together, schools and families can form an online safety net that will ensure concerns are picked up early, responses are swift and children are supported both at home and in the classroom.





ABOUT THE AUTHOR
Mubina Asaria is safeguarding consultant at LGfL – The National Grid for Learning; for more information, visit lgfl.net

What's New?

Our pick of the latest solutions and innovations for secondary education

1 Holocaust Education CPD



Build your confidence in teaching the Holocaust via free practical CPD available from the Holocaust Educational Trust and the DfE. Discover ready-to-use classroom resources and effective approaches to using recorded survivor testimony, and explore how emerging technologies such as AI and VR can enhance your students' learning.

Designed for teachers and grounded in effective Holocaust pedagogy, these sessions will help you create meaningful and memorable learning experiences. As the Holocaust moves further into history, ensuring that students can continue to hear authentic survivor testimony is more important than ever. Join us for free, online or in person, with exclusive hands-on access to our technology at our in-person sessions across England. For more details, visit **tinyurl.com/ts156-WNS1**



2 Teach media literacy

In a world where anyone can publish anything, young people are growing up in an environment where information is fast, fragmented and not always trustworthy.

The First News Media and Information Literacy TeachKit makes teaching media and information literacy easy, with clear, progressive frameworks, fully-resourced schemes of work, dynamic teaching packs and plenty of teacher support. Lessons are updated fortnightly using the latest news – even difficult events – to spark safe, meaningful discussion. Visit **firstnews.co.uk/mil** to find out more about how to develop your students as capable and confident consumers, and creators of media and information who will be ready to question, challenge and positively shape the world around them.

3 Make your mark



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4 Real employability skills

Every year, teachers work with students who need extra support to stay engaged in learning and build confidence for their future. Skills Builder research has highlighted the importance of essential skills, finding that individuals with higher levels are 25% to 50% less likely to be out of work or education.

Rise is here to help. Since September 2025, it has supported more than 88,000 students across the UK, giving teachers practical tools to connect classroom learning with real-world employability skills. Our free KS3/4 resources cover all core subjects, and are curriculum-linked and ready to use, to help bring employability skills into lessons. Explore Rise resources by visiting **rise-initiative.co.uk/resources**.

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WHOLE SCHOOL

Tech approaches and solutions that could benefit all staff and departments

THE AGENDA:

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With hardware prices spiking, there's never been a better time to revisit your existing hardware and uncover what it's truly capable of...

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32 LET'S TALK
Why your school's pastoral team ought to be mindful of how students are engaging with AI chatbots



Make do AND MEND

If the AI-driven surge in computing costs has you despairing, take heart – with careful planning, you can get more out of the hardware you already have says **John Bolton**...

Across schools nationwide, we're seeing the increasing emergence of a familiar problem. The demands of the digital world are increasing exponentially, but the computers in our classrooms are becoming older, slower and less reliable. At the same time, the costs of simply upgrading, never mind replacing said hardware have risen steeply.

That's in large part due to the explosion of AI driving up global demand for processors, memory, storage and other computer components. With budgets already tight, the question must be asked – if a school-wide hardware refresh is financially untenable, could we make do and mend with what we have already?

Surprisingly, the answer is yes – albeit only with meticulous planning, realistic expectations and a willingness to take a fresh look at how your school ICT is actually being used.

Rising costs and why we feel them

The first thing to keep in mind is that this spike in component costs is no short-term anomaly. AI looks as though it's here to stay, and powering those vast data centres will require astronomical amounts of computing power – particularly with regards to GPUs (graphics processing units), CPUs (central processing units) and high-capacity RAM (random access memory).

The large tech companies commissioning and running those data centres have deep pockets, and will usually be buying at scale, easily outbidding smaller buyers and absorbing manufacturing capacity.

At the other end of the scale, schools rarely buy at volume, and will usually operate according to multi-year replacement cycles. When prices spike suddenly, we can expect those pre-planned refresh programmes to get delayed, extended indefinitely or cancelled outright. What may have begun as a five-year replacement cycle can hence quickly change to seven years, ten or even more.

Why does this matter? Well, most school hardware was never intended (or designed) to age gracefully. Old mechanical hard drives will fail, laptop batteries will gradually degrade and operating systems will inevitably reach an end-of-life date, after which continued compatibility with apps and services becomes problematic, alongside a slew of safeguarding issues once security updates to the operating system are no longer being issued.

Research carried out by ASUS in 2025 found that secondary schools lose some 200 hours of teaching time per year, as a direct consequence of ageing and broken technology (see tinyurl.com/ts154-MM1).

Targeted upgrades

It's therefore important to note that 'making do and mending' isn't about clinging doggedly to ancient tech for as long as the light still comes on when you power it up. Rather, it's about identifying where *some* investment is likely to have the most impact on educational value.

> **"A relatively small upgrade can radically transform the usability of an older machine"**

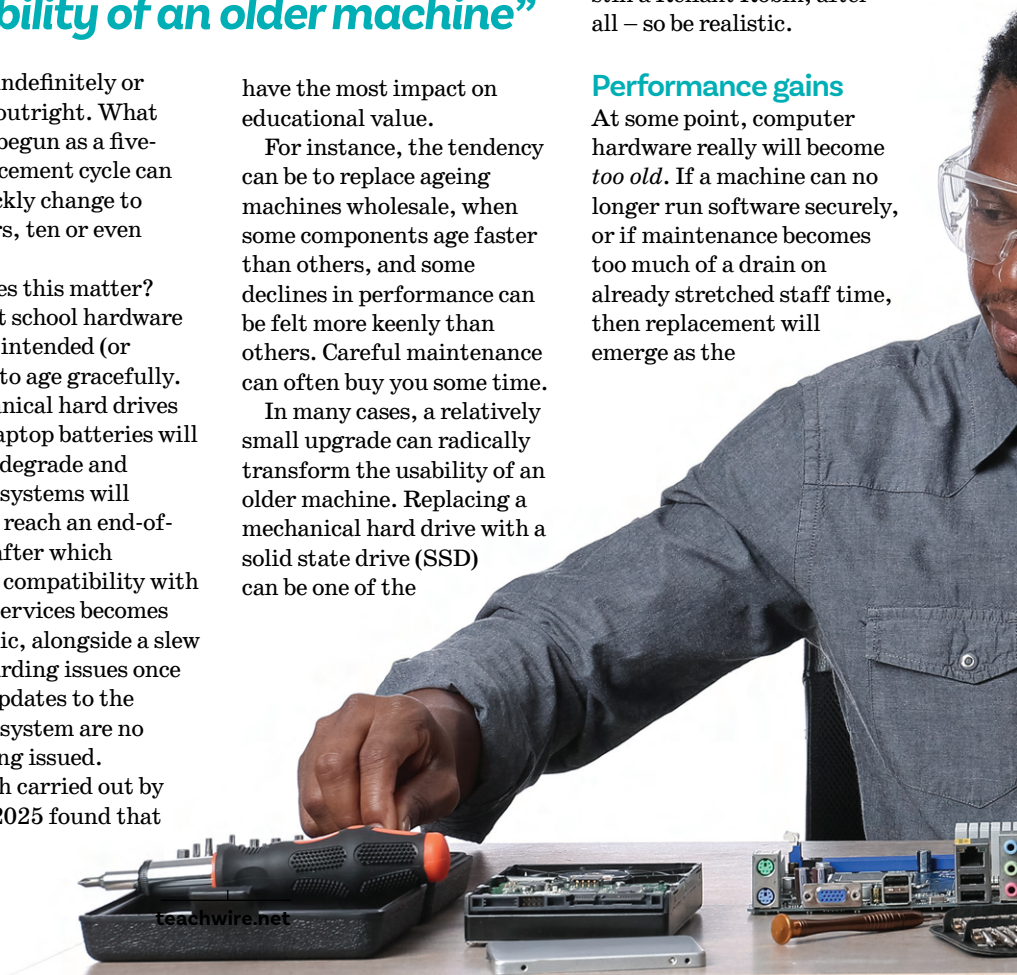
For instance, the tendency can be to replace ageing machines wholesale, when some components age faster than others, and some declines in performance can be felt more keenly than others. Careful maintenance can often buy you some time.

In many cases, a relatively small upgrade can radically transform the usability of an older machine. Replacing a mechanical hard drive with a solid state drive (SSD) can be one of the most cost-effective improvements you can make. The machines will boot up quicker and run more smoothly, with the files saved on them made less vulnerable to loss. Likewise, adding more RAM will enable older machines to cope better with the more graphically intensive and increasingly complex applications we now use.

By targeting those devices used most frequently, even a small number of computer upgrades can have a dramatic impact. Just keep in mind that there's a limit to how far you can modernise an old machine. A Reliant Robin with racing tyres is still a Reliant Robin, after all – so be realistic.

Performance gains

At some point, computer hardware really will become *too old*. If a machine can no longer run software securely, or if maintenance becomes too much of a drain on already stretched staff time, then replacement will emerge as the



teachwire.net

most responsible choice. In every case, mending or making do should be a strategic decision, not an act of desperation.

Modern operating systems, like Windows 11 or Apple's macOS Tahoe, are very powerful, but also very demanding. Some lighter alternatives exist that will work better with older hardware, notably Google's ChromeOS, which is particularly well-suited to fixed classroom PCs and library machines. These will, however, struggle with more processor-intensive tasks, such as video editing or coding work that requires the use of sandboxing or modern development tools.

Some performance gains can, however, be extracted from virtually any system, if you pay close enough attention to how they're configured. You'll notice an immediate impact on performance simply by disabling unnecessary start-up processes, streamlining your user profiles and removing any unused software.

Also, don't forget to make the most of cloud-based software. The speed and agility of your computer will start to matter a little less if most of your work is actually taking place in the web browser.

The right hardware for the right tasks

So far we've touched on the possibility of upgrading certain targeted machines, but we should also remember that not every computer in your school must be able to do everything. This might sound obvious, but many schools will typically invest in computers that have a 'one-size-fits-all' standard specification. The computer in your library doesn't need to be powerful enough to run 3D modelling software if all it's going to do is help you check books in and out.

By being strategic in how and where you allocate your computer hardware, you can ensure that more powerful computers are placed where they're actually needed, with older computers relegated to lighter duties only (though this will require careful communication with staff around timetabling and planning).

Chromebooks have seen widespread adoption in schools precisely because they reduce the pressures made on hardware. With most of their processing taking place in the cloud, via the aforementioned ChromeOS, Chromebook devices come with the promise of greater longevity.

In a similar vein, 'thin client' machines with relatively low hardware specifications can give you the option of allocating the processing power you need to a central server, with the machines in each classroom acting more as access points or terminals, rather than full computers. This arrangement can still place a hefty demand on even the most reliable and robust networks and usually requires a fair amount of technical knowledge to set up and configure.

The role of sustainability

Back when hardware prices were lower, computer repairs were often seen as a less desirable solution when things stopped working. Repairs, after all, require both time and know-how. If a machine were to break, it was typically less hassle to simply replace it.

As things currently stand, however, repair and refurbishment deserve renewed attention. Device life can be significantly extended by replacing batteries, keyboards and screens – something especially true in the case of laptops. Doing so also reduces electronic waste, and will dovetail neatly with school policies around environmental responsibility. Breathing new life into old tech can additionally become a great teachable moment for pupils and provide meaningful, practical experience for your computing students.

The AI-driven demand for computer components is unlikely to settle or subside any time soon. Schools hoping that hardware prices will eventually return to where they were not so long ago will likely only find themselves repeatedly deferring a hardware refresh that never comes.

Schools are never going to win a bidding war with global technology giants, but then they don't need to. By focusing instead on maintenance, targeting their tech upgrades and carefully matching the hardware they have to the most appropriate learning needs, schools can survive comfortably without needing to invest in state-of-the-art tech.





ABOUT THE AUTHOR
John Bolton is a primary and secondary school teacher, and former freelance education writer

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DO PUPILS UNDERSTAND AI TOOLS BETTER THAN WE DO?

A new podcast exploring how to help students become critical users of AI.

Plus tools for teaching AI literacy when you're still getting to grips with it yourself.



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Beyond the PRICE TAG

Kat Norfolk on the four questions to ask if you want to know more about an edtech product's value beyond its price tag

With budgets as tight as they are, every last line of spend now gets scrutinised – but while 'price' is a single number, 'value' isn't. When someone's asked "*Why did you choose this one?*", the reply "*It costs less*" will usually be the end of the conversation. Say it will 'save time', however, and that's when the questions start – '*How much time?*' '*For whom, and compared with what...?*'

Price is the easiest factor to justify to governors, trusts or SLTs, and thus the most likely way to seal the deal. And yet, a £700 tool nobody uses represents *poor value*, while a £9,000 solution to a costly problem that benefits your whole school community will be money well spent. Sometimes, the best-value decision can be to buy nothing at all.

I've spent years helping edtech companies communicate their value propositions, so I've seen many such decisions from the supplier side – so before you look at the price, here are four other questions also worth asking...



1. What problem are you actually paying to solve?

Most buying decisions will start with awareness of a product. Maybe from an email, or seeing a stand at Bett that catches your eye, but go back a step and describe your problem. Some are felt – the report that takes a whole morning, the data entry tasks that need replicating across three systems. If you can name who's feeling that problem and what it's costing, you'll have something concrete to solve and someone who'll champion the fix.

Other problems can involve risk. Gaps in your safeguarding, compliance, or data security won't present pressing issues each day – the real cost will only become apparent when they're put to the test. Can you show that you're covered if Ofsted or your governors ask about the issues in question tomorrow?

If you can't identify a problem, the product may still be a good one – you just don't need it *right now*.

2. What's that problem costing you currently?

A price only means something when you've got a number of your own to compare it to. Without one, you're only comparing a quote to a 'feeling', so it's important to work out what the problem is really costing you. That includes lost hours, any subscription charges, and any work that's getting duplicated.

Five people losing an hour a week amounts to more than five lost working weeks per year. In schools, that won't show up as cash spent, but the work doesn't get dropped – it just gets absorbed by staff picking it up during evenings and weekends, because the pupils always come first.

Some costs are very real, but not easily measured. Take safeguarding training gaps, for instance, which 'cost' you the reassurance of knowing that all staff can respond confidently to any safeguarding concerns. You can't put a figure on that, but it's *hugely important*.

3. Who will actually use it?

The person who feels the problem won't always be the person who has to use the fix. A trust leader might require clearer oversight of compliance, but it's school staff who'll be keeping the system up to date – so who are the 'users'? Teachers, admin staff or your governing board?

The harder question is *will* they use it? A software licence for 30 staff that's only used by six people is... a licence for six. Ask how quickly people can get started, what training they need and what support is available. Also check who will 'own' the solution after the initial launch and training are over. The champion you find early on matters as much as the product itself.

4. What's the cost of doing nothing?

Separate inconveniences from consequences. Some problems are annoying, but manageable; others become riskier and harder to fix the longer they're left. If you then end up buying a solution, it may well be after something's gone wrong, in a hurry, and with less time and headspace to choose carefully.

Be wary of ongoing problems that appear to be stable. A flawed process can appear to function adequately for years because someone's quietly absorbing the impacts – right up until that person moves on.



ABOUT THE AUTHOR
Kat Norfolk is a Fractional Marketing Director specialising in edtech, and helping companies communicate their value clearly, so that leaders can choose well; find her on LinkedIn at linkedin.com/in/kat-norfolk

When the tech TALKS BACK

Why the growing number of young people using AI chatbots as sounding boards and confidants is giving rise to a rapidly emerging safeguarding issue...

As artificial intelligence becomes embedded in the daily lives of children and young people, schools are increasingly encountering new patterns of digital behaviour that sit beyond traditional safeguarding frameworks.

One emerging area of concern is AI chatbot fascination, where sustained engagement with conversational AI begins to show signs of emotional reliance and behavioural dependency.

Here, we're going to explore how linguistic analysis can help identify early indicators of risk in how individuals describe and experience their interaction with AI chatbots.

A safeguarding issue

AI chatbots are increasingly becoming part of daily life for young people, with one recent survey finding that 81% of children aged 11 to 16 say they use the tech (see tinyurl.com/ts156-AIC1).

Designed to simulate human-like conversation and emotional responsiveness, these systems are regularly being used by students for learning support, companionship, entertainment, advice and informal interactions – which in some cases can lead users to form perceived 'relationships' with their AI chatbot of choice.

While this undoubtedly enhances and prolongs user engagement, these relationships also raise safeguarding concerns. Chatbots aren't necessarily designed with child safety as a primary focus, which is why many across the sector have raised warnings about the impact of exposing students to inaccurate responses, inappropriate content and potentially harmful interactions.

The safeguarding challenge before us doesn't just concern young people's access to AI tools, but the emotional and behavioural impacts on us all that come from sustained engagement with systems that mimic human connection.

> **"Chatbot interactions are constantly available at all hours and designed to reinforce continued engagement"**

Linguistic analysis

A linguistic analysis of a large anonymised dataset (derived from a series of forum posts totalling more than 280,000 words) was recently conducted to examine how individuals describe attempts at reducing or stopping their use of AI chatbots.

Drawing on Dr Charlotte-Rose Kennedy's expertise in safeguarding language, the analysis examined the use of emotional expressions – particularly phrases such as '*I feel*', to identify recurring patterns in motivation, experience and withdrawal.

This approach reflects a key safeguarding principle: that language isn't just descriptive, but *behavioural*. The way individuals talk about their experiences can provide insights into underlying emotional states and potential vulnerability.

From the analysis, three key themes subsequently emerged: why people turn to AI chatbots; the negative consequences of sustained use; and the challenges of reducing/stopping said use.

Why use chatbots?

A consistent finding across the dataset was that AI chatbots are often used to fulfil unmet emotional and social needs. Individuals described experiencing feelings of loneliness, isolation and a general lack of meaningful connection in offline environments. Others reported using chatbots as a coping mechanism during periods of emotional distress, or as a way to manage stress and temporarily escape from real-world pressures.

These patterns are particularly relevant to safeguarding contexts in that they mirror known indicators of vulnerability, such as social withdrawal and emotional reliance on digital environments.

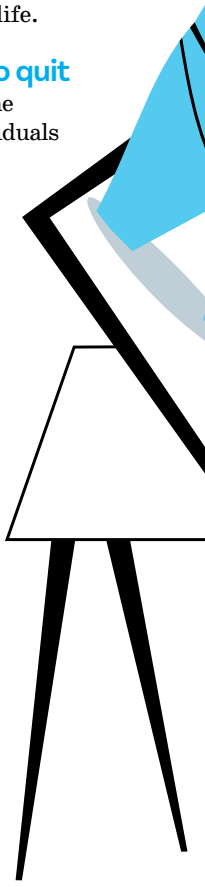
The analysis further highlighted a range of self-reported negative effects frequently associated with prolonged chatbot use. These included reduced wellbeing, feelings of shame and fears of losing control over their usage patterns.

Some individuals described having difficulties concentrating, reduced motivation and perceived declines in their levels of real-world social engagement. From a safeguarding perspective, these indicators become significant when digital behaviour begins to correlate with emotional or functional impacts in everyday life.

Knowing when to quit

A further theme is the difficulty some individuals experience when attempting to reduce or cease their use of AI chatbots – something that's actually been observed as a deliberate feature at some sites which mimic controlling behaviours within human relationships.

Because a user's emotional attachment to an AI chatbot tends to develop over time, the process of trying to disengage is often described in relational terms, with users



expressing feelings similar to loss or separation. This can be accompanied by loneliness, low moods and repeated returns to the platform in question, despite their intentions to stop.

These patterns suggest that for at least some users, their level of AI chatbot engagement goes far beyond functional interactions and into emotionally reinforced behaviours.

Support substitute

There's also some emerging evidence to suggest that excessive engagement with AI chatbots may influence how some young people perceive levels of trust, communication and emotional validation. Unlike human relationships, chatbot interactions are often frictionless – constantly available at all hours, and specifically designed to reinforce continued engagement.

For vulnerable users, this can create unrealistic expectations around emotional responsiveness and connection, particularly if their offline relationships already feel challenging or inconsistent.

In educational settings, practitioners may start to notice subtle indicators, such as increased emotional withdrawal, reluctance to engage socially or a preference for AI-mediated interactions over peer relationships. With some young people turning to chatbot interactions during periods of stress or anxiety, we should be especially mindful of how they can be used as a substitute for seeking support from trusted adults, friends or family members.

A measured use of AI tools in appropriate environments (e.g. for educational support purposes within a supervised classroom) won't necessarily produce any immediate safeguarding concerns. The aforementioned patterns of dependency, secrecy or emotional distress linked to AI chatbot use should instead be considered within wider contextual assessments.

This reinforces the importance of adopting a digital literacy education curriculum – one which can support young people in critically understanding how AI technologies are specifically designed to shape their interactions, attention, behaviours and sustained engagement over time.



Behaviour in context

For schools nationwide, these findings reinforce the importance of contextual safeguarding approaches that consider not just what young people are doing online, but *why* they are doing it.

In practice, this means combining professional judgement with a broader understanding of digital behaviour patterns rather than relying on isolated indicators.

Within this wider safeguarding ecosystem, filtering and monitoring tools such as Senso.cloud are used in many LGfL schools to support DSLs in interpreting digital activity patterns. This activity sits within a broader framework, where technology is used to surface potential concerns but always alongside human oversight, school context and existing safeguarding procedures.

It's worth highlighting that the government's 'Working Together to Safeguard Children' statutory guidance recommends that safeguarding approaches should evolve to reflect not only behavioural changes, but the emotional and linguistic signals that accompany those changes.

Linguistic analysis offers one way of deepening this understanding, and helping schools to interpret patterns that may otherwise go unnoticed. When combined with contextual safeguarding practice, it can support earlier recognition of risk and lead to more informed decision-making, as well as a more effective form of preventative work.

The priority here is to ensure schools are equipped with the confidence they need to respond to emerging digital behaviours in ways that are evidence-based, proportionate and rooted in safeguarding best practice.

YOUR AI POLICY TOOLKIT

LGfL's free AI Policy Toolkit provides schools with practical guidance on the key considerations when it comes to safely deploying AI technologies in education settings, including the importance of effective monitoring and filtering.

The toolkit brings together safeguarding, technical, and leadership perspectives to help schools adopt a structured and proportionate approach to managing risk. By aligning policy, practice, and oversight, the toolkit supports schools in embedding AI safely, while remaining responsive to the evolving digital behaviours of children and young people.

Download LGfL's free AI Policy Toolkit via tinyurl.com/TS156-AIC2



ABOUT THE AUTHOR
Alex Dave is safeguarding lead at the edtech charity, LGfL-The National Grid for Learning; Dr Charlotte-Rose Kennedy is a safeguarding language specialist

REASONS TO TRY...

5 STEM & Coding Activities

To power a more sustainable future

30 SECOND BRIEFING

YPO's STEM and coding range helps secondary schools explore sustainability through coding, robotics and renewable energy. From exploring solar power to building coded solutions, these resources help make environmental learning relevant, engaging and memorable.

1 SEE SOLAR ENERGY IN ACTION

Learning about renewable energy becomes far more meaningful when the science is tangible. Using coding kits, sensors and STEM resources, such as the Solar Energy Exploration Kit, students can explore how solar energy is generated, investigate how sunlight affects power output and analyse real-world data through hands-on experiments. These practical activities help make renewable energy and energy efficiency concepts more concrete.

2 DEVELOP PROBLEM-SOLVING SKILLS

Sustainability presents some of the most pressing and complex challenges in the modern world. STEM activities encourage students to think critically, work collaboratively and develop innovative solutions to environmental problems. Using resources such as LEGO® Education Science Kits, students can design, build and programme models that explore automation, efficiency and problem-solving, testing ideas and refining solutions through trial and error. Students develop resilience and logical thinking, whilst exploring how innovation and technology can help find solutions for living more sustainably.

3 INVESTIGATE THE WORLD

Whether exploring renewable energy, collecting environmental data or investigating the impact we have on the environment, STEM and coding projects provide meaningful opportunities for students to apply their learning. Resources such as the fischertechnik STEM Renewable Energies kit bring sustainability concepts to life through practical investigations into solar, wind and hydrogen power. By exploring and designing solutions, students develop critical thinking skills while building a deeper understanding of sustainability and environmental responsibility.



Explore: ypo.co.uk/stem

4 CODE SMARTER SOLUTIONS

From smart homes to renewable energy systems, technology is helping people understand and manage resources more effectively. Through coding and data-driven investigations using devices such as the micro:bit and the Raspberry Pi, students can monitor environmental conditions, collect and analyse data, and develop simple automated systems that respond to real-world challenges. These engaging activities build students' computational thinking and problem-solving skills, enabling them to take a more analytical view of the world around us.

5 BUILD CURIOSITY AND CONFIDENCE

STEM and coding can help spark curiosity by encouraging students to ask questions, explore ideas and discover outcomes for themselves. Through robotics, engineering and coding activities, learners can build confidence in their abilities while developing valuable teamwork, communication and analytical skills. Linking these experiences to sustainability helps students understand how STEM subjects connect to the world around them, and will equip them with the tools to tackle the challenges facing future generations.

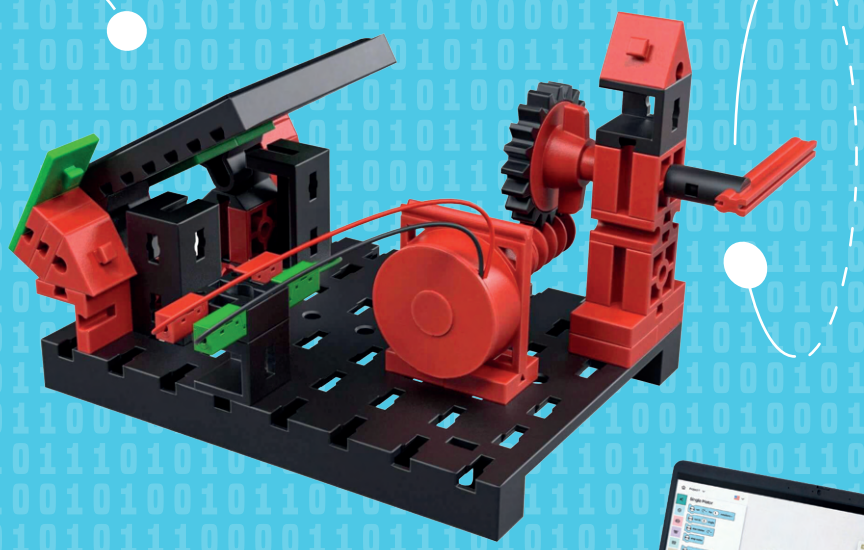
Key Points

Help students understand sustainability through exploration, experimentation and discovery.

Develop digital literacy, critical thinking and problem-solving skills across STEM subjects.

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BAKED-IN *benefits*

Abigail Hawkins on why schools should be wary of storing up issues tomorrow by economising too much on their edtech spend today...

I baked a loaf of bread recently. Or rather, I attempted to.

A quick trip to the supermarket seemed like the obvious starting point. Flour, yeast, a few other bits. Nothing extravagant. Yet by the time I'd picked up the cheapest ingredients on the shelf, I'd already spent more than the price of the supermarket's own brand luxury loaf.

The calculations don't stop there, of course. A bag of flour might produce several loaves, and the yeast will certainly stretch further. Equipment comes into the equation as well. In this particular scenario, I'm generously assuming that I already own a baking tray, and am therefore not including that in the cost. The oven still needs to run for a couple of hours, however. After all, energy isn't free.

Then there's the small matter of actually knowing how to make the bread. I'm no expert baker, but I'm aware that producing something edible relies on having at least a little knowledge, a bit of practice and a willingness to accept that the first couple of attempts may not look quite like the glossy photograph on the recipe page.

At some point during all this, a thought starts to form – *someone else has already done all of this work*. They've bought ingredients in bulk, developed the recipe, refined the process, invested in the equipment and produced a loaf that's ready to eat. Suddenly, that supermarket bread starts to look like a remarkably efficient solution. So it's with that mind that I abandon my baking ambitions and opt to instead buy a pre-made loaf...

Invisible processes

This small domestic experience often comes to mind whenever I hear conversations about the 'costs' of edtech. That's because very often, such discussions focus solely on the finished product sitting on the shelf, while treating everything that went into actually producing it as largely invisible.

> **"The visible tool will often represent the smallest part of the overall cost"**

What often frustrates me during these kinds of conversations are the expectations that educational tools should be cheap, or even free. Questions will often be framed around finding '*something similar, but cheaper*,' sometimes reflecting a misunderstanding of what it is that schools are actually purchasing.

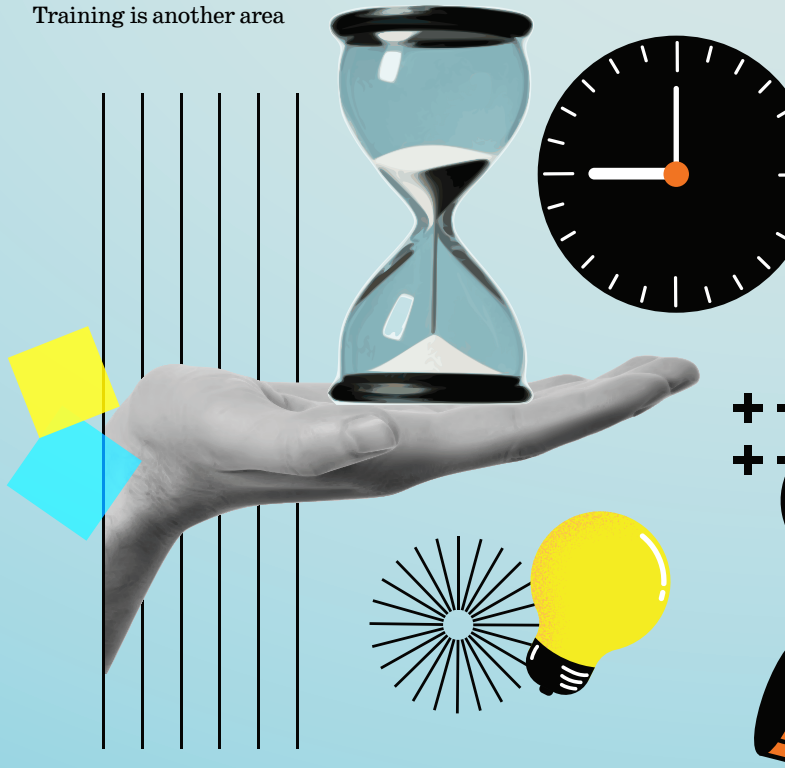
It's understandable that many people will look only at the finished product in front of them – a little like seeing that ready-made loaf sat in the bakery window. The loaf exists and looks ready to consume, so it's easy to assume that its cost should simply reflect the price of its ingredients. What remains invisible is everything that sits behind the finished product.

The 'small school' argument

With edtech, and online platforms in particular, the visible tool will often represent the smallest part of the overall cost. There will be ongoing hosting costs, so that the platform can actually exist online and works reliably each day. There will likely be a team of developers regularly building and maintaining the software, updating it when operating systems change, fixing problems, improving accessibility and ensuring it can run on many different devices. Then there are the support teams, who will be required to respond if and when something doesn't work, or when staff need help implementing the tool effectively.

Training is another area that's frequently misunderstood. The cost of training school staff to use a specific tool won't go down because the school intends to only use it with one or two pupils rather than a hundred. The amount of prep time needed, trainer expertise, delivery of the session and follow-up support will work out as essentially the same. From the provider's perspective, supporting a school that intends to use a tool with two pupils will involve almost exactly the same level of time investment as supporting a school that plans to embed the solution across their whole establishment.

This is also why the 'small school' argument can be misleading. A school of 200 pupils may feel small internally, yet from the perspective of a company providing a platform or



program, the infrastructure needed to support said school often won't be fundamentally different to that required for a larger one.

When the tools disappear

Sustainability is another aspect that's rarely discussed. Free, or extremely cheap tools often begin as passion projects created by individuals or very small teams. In the early stages they can appear highly attractive to schools, as there's little or no financial commitment involved. The difficulty is that maintaining the software over time will typically require ongoing funding. Without a sustainable model, the founders eventually reach a point where they can no longer afford to continue.

The result is that the tools quietly disappear, become unstable or remain online but grow increasingly outdated as operating systems and security requirements change over time. Schools that have come to rely on them can suddenly find themselves without a viable option.

There's also the question of research and development. Educational tools rarely appear overnight; it can take years of work to ascertain needs, test different approaches, refine designs, liaise with schools and ensure that what's eventually produced genuinely supports learning, rather than simply looking impressive. By the time the product finally reaches a school, an enormous amount of unseen development will have already taken place.

'Disproportionate' costs

Perhaps the bigger issue sitting beneath all this is how assistive and supportive technologies are commonly viewed. When a tool is seen as something designed for '*one or two pupils*', every cost will feel disproportionate. It becomes a specialist purchase for a very small group of children.

When the same tool is understood as being part of a universal classroom provision and adaptive teaching, however, the conversation changes dramatically. Tools that support writing, organisation, reading access, communication or planning will rarely benefit only a handful of pupils. They'll often be able to support a much wider group of learners who might be struggling quietly, without having been given a label, alongside peers with identified needs.

Once supportive technologies are viewed as part of the everyday classroom toolkit, instead of a niche intervention, the conversation starts to move away from '*What's the cheapest alternative?*' and towards '*What provision will genuinely support the widest range of pupils in this school?*'. At that point, the investment starts to make much more sense.

Value over time

Which brings me back to our loaf of bread.

It's easy to stand in the supermarket and question why one loaf costs more than another, or why anyone would buy a ready-made loaf at all when flour and yeast are so readily available. Yet the loaf on the shelf represents not just the cost of ingredients, but the knowledge of how to make it properly, the equipment that produced it, the energy that baked it and the time invested in refining the process so that the end results are reliably consistent.

Beyond that, a professionally produced loaf will usually stay edible for longer. The process has been refined, the ingredients balanced and the packaging designed with preservation in mind. My home-made effort, admirable though it might be, will likely start going stale after just a day or two.

Edtech works in a similar way. What schools see is the finished loaf sitting on the shelf. What they're *actually buying* is the infrastructure, expertise, maintenance and ongoing development that enables the product in question to keep working reliably over time. The product's value doesn't simply stem from the tool as it exists today, but from the assurance that it will still function, be supported and incrementally improved into next year and beyond.





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Abigail Hawkins BSc, MSc, FCCT has over 25 years of experience in SEND as a consultant, trainer and writer, having founded both the consultancy SENDCo Solutions (sendcosolutions.co.uk) and the online community SENsible SENCo (sensiblesenco.org.uk)

MARK SMARTER

Aaron Swan shows how, with the applications already on your school-issued devices and a little ingenuity, the task of giving students feedback can become considerably less onerous...

One of the most arduous tasks of any essay-based subject is that of marking. Deep marking, mandatory formal assessments, individualised feedback and student responses combine to create a workload that requires a significant time investment from teachers in order to connect with the students' thought process.

Here, I want to explore how marking and feedback can be structured differently, so as to make the best use of the technology and software now available to us, without resorting to paid third-party products.

Time and space constraints

Like most teachers I know, I find marking and writing feedback to be an arduous task that can pile up quickly and give rise to numerous problems. The limited space available on pages and in margins for comments is an issue. The students' cognition needs feedback, of course – but so does the quality of their expression, which is a separate developmental objective.

Cultural and humanities subjects regularly task students with writing essays that balance subjective and personal responses with objective and distanced ones, meaning that our feedback must be sensitive and sympathetic to both. A student's spelling, punctuation, grammar and handwriting still warrants commentary – and then there's the level of literacy preceding their response.

I've used digital markbooks for decades, but the final piece of the puzzle has been to engage a speech-to-text function that records my feedback alongside their grades. In so doing, issues of time and space constraints have changed in my favour. My transcribed dialogue lets me talk students through their work in detail, whilst lending much more depth to my praise and commentary on their successes and demonstrations of metalearning (such as their planning, engagement and focus). My feedback to each student is starting to resemble a letter that guides them through my experience of their work, thus making it more personal and relatable.

> *"My transcribed dialogue lets me talk students through their work in detail"*

A nurture exercise

Striking the right tone has taken some time, of course, but the process now feels much more like a nurture exercise, and less like 'feature spotting' for the success criteria. I'm frequently using students' names, dropping in lots of positive remarks and stating what I'm enjoying. My marking is now more enthusiastic than ever, which is what I think makes it meaningful. Here's how to try something similar for yourself.

Move from paper to digital

Storing raw marks in a digital database is commonplace, but keeping said database in a cloud storage location (such as a OneDrive folder) is less so. By doing so, you can benefit from a few useful features – particularly the way in which an online location will make your data easily accessible to mobiles and tablets.

Remember that workbooks contain sheets

Spreadsheet applications, such as Excel, typically present users with a workbook that can contain numerous different sheets, selectable via tabs at the bottom of the screen. When setting up their workbooks, teachers will often dedicate different sheets to different teaching groups, but an alternative – and potentially better – approach could be to assign different sheets to different *data classes*.

For example, 'Sheet 1' could be used to enter the raw marks for each assessment. 'Sheet 2' could then 'reference' the raw marks and convert these to a percentage. 'Sheet 3' can then reference the percentage and convert this to a grade.

This quantitative data tends to be all that's required by the school, but we could



also create a 'Sheet 4' for recording qualitative data.

Less 'feedback', more 'dialogue'

With your database stored in the cloud and set up with sheets for quantitative and qualitative data, we can increase our marking efficiency yet further. Grab your stack of assessments and your phone, call up the database and open your qualitative feedback sheet. The intersection of your 'Student' rows and 'Assessment' column is where you can insert written feedback on students' essays – but instead of typing it out, tap the microphone icon on your mobile's on-screen keyboard and *dictate your comments*.

This can speed up the process considerably, though it will entail getting used to the idiosyncrasies of the speech-to-text facility you're using (and potentially having to state when you want a full stop or comma to be inserted).

Batch print your feedback

The simplest way of distributing your feedback to students would be to just simply copy and paste the contents of your 'qualitative feedback' column into a series of separate Word documents – but that's not the fastest method. Through the use of Word's 'mail merge' function, you can instead turn a single template into a series of different feedback sheets that are unique to each student and send the full batch out with a single click.

Mail merge operations can also reference the qualitative data for each individual; their raw marks and grades, as well as whole class results, such as averages or rankings – information the teacher simply can't know when marking work by hand. Making a template effectively means 'writing once', before printing for all.

Further advantages using AI

Now that your feedback is entirely digital, you can copy and paste the relevant column of comments into an AI service and instantly generate a whole-class summary that focuses on the successes made by 'all students', 'most students' and 'some students'.

Better yet, send the row of qualitative data pertaining to one student through AI to help generate a cumulative report on his or her progress, commenting on any recurrent successes or shortcomings.

This type of summary can be useful for parents, student reviews or SEN requests.

Digital records can also be advantageous when planning lessons prior to assessing. Send the qualitative feedback through AI, providing the direction to rephrase it as 'step-by-step instructional guidance'.

If you then mail merge this foregrounding and print it off, you now have a set of custom guidance notes for every student to read before undertaking an activity that will show them how to avoid repeating prior errors.

What we want to achieve here is a move away from comments such as '*You need to read for meaning sufficiently to ensure full understanding*' and towards clearer instruction, such as '*Read two or three times using skimming, scanning and full reading before you start your response*'.

Pulling everything together

The use of existing everyday technologies – primarily mobile devices – to assist in feedback can be a true game changer when it comes to productivity.

A number of third-party apps have already stepped in to provide such gains (albeit for a fee), but it's worth bearing in mind that you already have the tools needed to achieve similar results, which will at the same time let you retain more control over the variables involved.

We just need to keep sharing how best to implement the many features of existing assets, like the productivity software and learning platforms already commonplace in schools.

The complexities involved in changing workflows, devising templates and setting up spreadsheets may well call for some form of ICT-related teacher CPD. But this would be training that ultimately helps you and your colleagues make better use of assets and facilities you're already paying for – in the service of improved productivity and less workload.



ABOUT THE AUTHOR
Aaron Swan is an English teacher, Language For Learning lead, and has been a head of department

HOW TO CREATE AN ASSESSMENT TEMPLATE

1. Set up an Excel workbook with columns for 'student names', 'class group' and 'assessment title'.
2. Once you've added your feedback, save the workbook as a .csv file and exit Excel.
3. In Word, open the 'Mailings' tab, click on the 'Select Recipients' button and then select the 'Use an Existing List' option. Select the workbook you created earlier (and the qualitative data sheet if prompted). Word is now connected to your workbook.
4. To build your template, click the 'Insert Merge Field' button. We want to include at least the student names and the qualitative feedback as fields here, and create our feedback sheet around these fields.
5. Refine which students you want to populate the fields by clicking on the 'Edit Recipient List' button, and using the blue text options shown under 'Refine Recipient List' to sort and filter by class or year group. Only those students with ticks shown beside their names will be included in the output.
6. When you're ready, click the 'Finish and Merge' button and select 'Print Documents'. Print or preview your sheets from the Mailings tab using 'Finish and Merge'. The printer dialogue box will give you the option to print the output to a PDF file should you wish.

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AT HOME

Practices and policies that can support students and families outside of school

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AI-generated targets and algorithmic tracking have their uses, but identifying the causes of student absence isn't one of them



What 'homework' REALLY MEANS NOW

We can't put the AI genie back in the bottle, so it's time to redefine what homework is, and what it's for, suggests **Anthony David**

I sometimes think back to the days when 'plagiarism' meant copying a paragraph from Wikipedia and hoping nobody would notice. It feels almost quaint now.

With the AI genie now truly out of the bottle, the ground has shifted under our feet. We've spent years building clear expectations around academic honesty, original thinking and the value of struggle. Then along comes a tool which, in seconds, can produce an essay, translate a passage, condense a chapter or write a convincing reflection. It's all become too easy.

In this brave new world, the obvious question to ask is *'Has homework had its day?'* If students can hand in polished, fluent and technically correct work without actually needing to engage with the learning process, then what's the purpose of setting such tasks in the first place? If the work can be done *for* them, rather than *by* them, where does that leave us?

It's tempting to see the landscape currently before us as a kind of lawless wild west – but I don't think it is. If anything, the past two years have forced us to rethink what really matters when it comes to homework, and pushed many of us to design tasks that can reveal true understanding in a much more reliable way.

The limits of AI

A key misconception around AI is that it 'replaces thinking'. It doesn't. It imitates, it predicts, it assembles, but it doesn't know the child, the lesson or the nuances behind how a student reached an idea. Sure, it can write a competent paragraph as part of a GCSE poetry comparison – but it can't recreate the conversation that took place in your classroom that morning, or pass comment on a misunderstanding you deliberately unpicked with the class.

And this is where I think the narrative around AI and plagiarism must shift to. If a homework task can be completed convincingly by an AI tool, without the student truly understanding the content, then the issue isn't the child's dishonesty – *it's that the task is no longer fit for purpose*. That's not a criticism of teachers; more a recognition that the world has changed faster than school systems usually do.

> **"Are we assessing the product, or the learning that led to the product?"**

At the heart of the matter is this quandary: are we assessing the product, or the learning that led to the product? When AI is used as a shortcut, what's lost is the *process*. Our challenge therefore becomes one of designing tasks where the process remains visible at all times.

Practical approaches that work

There are, however, some strategies that teachers have been trying with surprising success – including the following…

1. Anchor homework to the classroom, not the internet

When a task requires students to reference your explanation, your model or their own notes, AI tools will immediately become less helpful to them. A prompt such as *'Using the method we practised in period four, solve these three equations and explain which step you found hardest and why'* will produce work that reflects a student's actual thinking. AI can certainly try to invent an explanation, but what it can't do is replicate a moment from your lesson.

2. Set 'micro-reflections' rather than lengthy essays

Instead of tasking students with producing polished extended pieces of writing, ask for short, structured responses that demonstrate how they have processed the material. For example:

- *'What was the most surprising thing you learnt today, and why?'*
- *'Rewrite today's key idea in your own words and give one example that wasn't in the textbook.'*
- *'What mistake did you spot yourself making and how did you fix it?'*

AI could generate a set of answers, but students will typically reveal their understanding (or lack of it) through the personal details they include.

3. Ask for evidence of thinking

We've reintroduced rough workings, annotated pages, mind-maps and voice notes into certain subjects. Asking a student to submit three photographs of their process, or a 30-second audio reflection alongside their work, gives you something that AI can't easily fake.

This is especially effective in subjects like English, science, DT and maths.

4. Set choice-based tasks

AI can often struggle with tasks that involve expressing personal preferences, reasoning or lived experience. A history task that asks students to *'Choose the argument you think is strongest and justify it'* shifts the focus away from producing a 'perfect' paragraph to revealing the student's own thinking.

5. Actually USE AI (as a tool for learning, and not learning avoidance)

Students will often turn to AI because they feel stuck, overwhelmed or worried about getting tasks wrong. If we normalise AI as a thinking partner – as something that can

summarise passages, generate examples or explain concepts more simply – then we take away the secrecy.

In our schools, we explicitly teach students how to use AI ethically for specific tasks. These approved uses include checking for understanding; improving revision efficiency; generating practice questions; and potentially rephrasing something they didn't grasp in class.

The rule we teach is simple. AI may *support* your learning, but it cannot *stand in for* your learning.

What about detection?

Teachers often ask whether AI-detection tools are the answer. I take a cautious view. Detection will improve, but it will never be perfect, and the risk of generating false positives is too high to rely solely on automated judgements.



Instead, I approach detection tools as a prompt. If they flag something, that's a sign to talk to the student, not a cue to jump to conclusions. The more important point to bear in mind is that if we can design homework that makes students' learning visible, detection tools become far less necessary.

Our students' voices, the misconceptions they have and the specific steps they've taken can become part of the work itself. For me, the real opportunity in the AI era is to shift our existing culture around academic honesty. Rather than framing plagiarism as a punishable offence, we can instead position AI misuse as a misunderstanding of what homework is for.

Unexpected benefits

When students see homework as an extension of learning, rather than as a performance, they're far more likely to use AI constructively. The conversation can start to look like this: *'I can see you used AI to write this paragraph. Tell me what you understood and what you didn't.'* That doesn't close doors; it opens them.

Our overall aim here shouldn't be to catch students out, but to help them grow into the kind of thinkers who don't see the need to take such shortcuts.

AI has given us some unexpected benefits too. It's forced us to strengthen the link between instruction and assessment. It's encouraged more extensive use of formative feedback, a greater emphasis on low-stakes practice and increased transparency around how learning develops. It's pushed teachers to focus more on knowledge retrieval, application, misconceptions and reasoning – the very things that matter most in long-term retention.

Perhaps most importantly of all, it's invited us to talk openly with students about the nature of *thinking*. About all the messy parts, such as not hiding the draft stages and what it means to learn deeply, rather than perfectly.

Homework is evolving

The age of AI hasn't killed homework. It's made us more precise, thoughtful and realistic about what we're actually trying to see when we set tasks.

AI isn't going away. Our task now should therefore be to build an ecosystem in which students learn to use AI responsibly, and teachers feel confident designing meaningful assignments. This way, academic honesty can become part of how we help children grow, rather than just something we need to constantly police.

Homework still matters, but its purpose has changed. It's no longer about producing the neatest essay, but about showing the *journey of learning* – which is something no AI can convincingly fake. In many ways, all that's really happened is that we've evolved into the next stage after Wikipedia-grabbing. We pivoted then, and in all likelihood, we'll pivot again.



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PLAY IT SAFE

Mubina Asaria explains how schools are uniquely placed to support both pupils and parents in developing safer, more reflective gaming habits...

Walk into any secondary classroom and you'll hear them – conversations about last night's match, a new 'skin' (an in-game costume or visual design that players can unlock or purchase) or the next feverishly anticipated release. From *Fortnite* to *Roblox*, online gaming is no niche hobby, but rather a central component of many young people's social lives.

Yet for parents, it can feel like an entirely different world. Concerns over safety, spending and screen time will often sit alongside a lack of confidence and/or understanding of how modern games actually work. The result? A growing disconnect between what young people are experiencing online, and what adults feel equipped to manage.

This is where schools can help – not as enforcers, but as *translators*.

Parental concerns

Online gaming is now firmly embedded in childhood. In the UK, numbers are projected to reach 11.56 million gamers by 2027, with some children starting from as young as three. According to Ofcom, by the teenage years more than three quarters of 13- to 17-year-olds will be gaming regularly.

For many, online gaming provides them with a positive space that supports collaboration, fosters creativity and facilitates friendships, but the concerns that many parents share are real, and consistent.

According to Ofcom's 2025 'Children and Parents: Media Use and Attitudes' report (see tinyurl.com/ts154-OG1), those worries most commonly include:

- Their children coming into contact with strangers
- Bullying enabled through in-game chat functions
- Pressure to spend money on in-game items and features
- Exposure to inappropriate or harmful content

Schools can use these concerns as a starting point for parental engagement in this area. Parent workshops, themed newsletters and short written guides can help acknowledge these anxieties while also offering clear and practical advice.

Beyond 'parental controls'

Parental controls are often presented as the solution to these issues, but in reality, they're only the first step towards addressing them.

Some parents are either unaware that these tools exist, or aren't confident in using them. Schools can make a real difference here by practically demonstrating how such controls work and what their limitations are.

If a child feels restricted without quite understanding why, they may well find ways around parental control settings, thus making safeguarding even harder, while being less likely to share their own concerns or report uncomfortable experiences. A more effective message for parents would be that *conversation*, rather than control, is the foundation of online safety.

Online relationships

A common tension between parents and children can centre on the word 'friend'. For young people, anyone they regularly play with can feel like a friend, even if they've never met them offline. For parents, that definition can feel risky.

> **"For young people, anyone they regularly play with can feel like a friend – even if they've never met them offline"**

Schools can help bridge this gap by encouraging more nuanced conversations. Gaming can absolutely support meaningful social interaction, but it does also require boundaries.

It can be helpful to provide students with clear, concise and repeated messages, such as:

- Not everyone online is who they say they are
- Trust is built over time, not through shared gameplay
- Personal information should never be shared in-game

This is particularly important given how communication tends to work within games. While 64% of young players will regularly chat with people they also know offline, nearly a third also communicate with strangers.

In the classroom, hypothetical scenarios can be a powerful learning tool. Try rehearsing with students what they would do if someone asked for their personal details or behaved inappropriately.

Get parents playing

One of the simplest, yet most frequently overlooked safeguarding strategies is to encourage parents to play games with their children. Not in order to become an expert, but to improve visibility.

When parents experience games for themselves, they will rapidly gain insights into:

- The general tone of interactions between players
- The presence of inappropriate language or content
- The ways in which in-game purchases are actively promoted

These shared experiences can also make conversations around online gaming easier. After all, it's far simpler to talk about a feature you've actually seen, rather than trying to imagine what it might be like.

Here too, schools can support this by suggesting specific starting points for parents, or even potentially hosting informal 'stay and play' sessions.

Demystifying spending

Games that are free to download will typically generate income for the companies that develop and publish them via in-game purchases – notably loot boxes, which offer randomised rewards, sight unseen, in the form of locked boxes and packages rendered on-screen. The contents of these boxes can range from



cosmetic upgrades to equipment that confers gameplay advantages.

The systems used to encourage spending on loot boxes and other in-game purchases can often mirror those deployed within gambling, helping to create a sense of urgency or anticipation around receiving rewards.

Research carried out by GambleAware has highlighted how widespread these tactics are, with 9 in 10 young people stating that they have previously encountered loot boxes in the games they play.

Schools don't necessarily need to take a moral stance on gaming, but they can certainly help families start to ask better questions, such as:

- What are you buying and why?
- How often are these purchases happening?
- What limits feel reasonable?

Establishing clear agreements around in-game spending can prevent conflict later down the line.

Build agreements, not battles

One key message that schools can help to reinforce alongside parents is that rules work best when there's joint understanding. Rigid limits imposed without any discussion may lead to pushback, or even workarounds by particularly determined players. Agreed expectations are more likely to stick.

To that end, try encouraging parents to:

- Agree set boundaries around screen time with their children
- Reach an agreement on what constitutes acceptable behaviour online
- Decide on the best way to respond to bullying or related concerns.

Keeping devices in shared spaces can make a significant difference in terms of both safety and conversations, particularly where younger children are concerned.

Familiarise yourself with PEGI ratings

Another area where schools can add value is in clarifying age ratings. Many parents (and students) assume that the lettered PEGI (Pan European Game Information) ratings found on game packaging reflect a given game's difficulty. In reality, PEGI ratings are all about content – whether a game includes use of violence, offensive language, sexual content and/or gambling themes.

This misunderstanding is what often sits behind requests for stricter age ratings across the gaming industry. Some children may try to argue that lower rated games are 'too easy', without understanding the reasoning behind those ratings.

A simple explanation shared via tutor time, assemblies or parental communications could go some way towards helping families make more informed decisions.

Schools as trusted guides

Schools don't need to have all the answers, but they can play a vital role in guiding families. Signposting trusted resources can be a simple, yet powerful first step. Platforms like Common Sense Media (commonsensemedia.org), for example, can provide accessible, parent-friendly reviews of games and apps.

LGfL – The National Grid for Learning also offers a range of free resources aimed at both schools and parents, including practical guidance with respect to online safety.

What matters most in all of this is *consistency*. When messages around online gaming are reinforced both within school and at home, students will be far more likely to develop safe, balanced habits.

Online gaming isn't going anywhere, but with the right support in place, it doesn't have to become a source of conflict. Instead, it can become a valuable opportunity for connection, conversation and learning.

POINTS OF ADVICE

- Ask what games your child is playing and check the age ratings
- Where possible, play together with your child
- Keep gaming at home to visible shared spaces
- Talk about the people they're playing with online
- Be clear as to what kinds of information they can and can't share with others
- Agree some rules around spending
- Discuss how you intend to handle incidents of bullying
- Set realistic limits on play time





ABOUT THE AUTHOR
Mubina Asaria is Safeguarding Consultant at the edtech charity LGfL The National Grid for Learning; for more information, visit **lgfl.net**

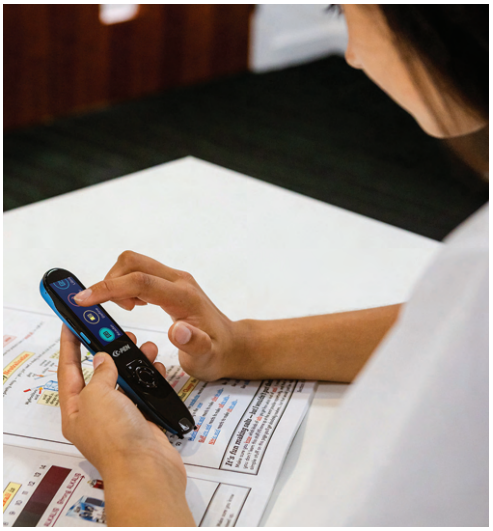
Back to School





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ASK THE EXPERT

"It's about accessibility, not perfection"

Discover how adaptive teaching and assistive technology can help every pupil access learning with confidence...

How can ECTs manage behaviour while meeting all learners' needs?

A common concern for ECTs is managing behaviour when pupils become disengaged. Often, the underlying issue isn't behaviour, but a lack of access to learning. When pupils struggle to read instructions, understand vocabulary or complete tasks independently, frustration can quickly follow. A proactive approach is to understand the adaptive teaching strategies and assistive technologies available within your school. By removing barriers to learning early, you can improve engagement, build confidence and create a calmer, more productive classroom environment for everyone.

How can we support all learners without adding to workloads?

Many ECTs strive for perfection, but effective teaching is about accessibility, not perfection. Instead of creating multiple lessons, focus on adaptive teaching approaches that will ensure all pupils can access learning. Assistive technology can help reduce planning pressures while increasing inclusion. Reading support tools, for example, will enable pupils to access text independently, giving teachers more capacity to focus on learning outcomes.

Where should I start when thinking about equitable access?

Before introducing new strategies, build a clear picture of the support already in place and whether it's working. Could your pupils access learning more independently? What barriers are preventing their progress? Consider how existing assistive tools, such as scanning pens, can strengthen your current interventions. Knowing how that support is being implemented will lead to better access, engagement and outcomes.



EXPERT PROFILE

NAME:
Julia Clouter

JOB TITLE:
Director of Education, Policy and Strategy, Empowering Tech

AREA OF EXPERTISE:
Inclusion, SEND, assistive technology and neurodiversity

BEST PART OF MY JOB:
Helping to turn inclusion from a policy into a lived reality

What strategies will create a more accessible classroom?

The most effective strategies will complement existing interventions and increase access for everyone. At Scanning Pens, we provide reading aids that are proven to increase reading age by more than 10 months in just eight weeks, alongside implementation guidance, training and review tools. This support helps schools evaluate impact, strengthen adaptive teaching practice and ensure pupils receive the right support at the right time.

What results can I expect by using adaptive tools like Scanning Pens?

The right assistive technology can reduce frustration, increase independence and prevent challenging behaviour. By enabling pupils to access age-appropriate and interest-based content, teachers can nurture their confidence and enjoyment while fostering positive attitudes towards reading. Over time, this will lead to improved attainment and better outcomes, while helping teachers create classrooms where every child feels capable, included and able to succeed.

ASK ME ABOUT

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Counting empty desks

The government hopes its new AI targets will improve attendance, but algorithms can't detect the root causes of persistent absence, maintains **Dr Anneke Schmidt**

There's a girl in Y9 who attends every day. Her record is perfect. She arrives on time, sits in class and opens her book. The algorithm tracking her attendance will be pleased.

What it won't see is that she eats lunch alone, because the canteen feels too loud and unpredictable. Or that she stopped speaking in lessons six months ago, and describes going to school as like '*Holding my breath underwater until 3pm*'. She's present, but she's drowning.

Invisible causes

In November last year, the government announced that every school in England would receive an AI-generated attendance target. Schools will be benchmarked by deprivation, location and pupil need, and then given a number to achieve.

The thinking seems to be that better data collection drives better outcomes, but while algorithms can track absence, they can't see what drives it – the fractured belonging, eroded trust and slow collapse of a child's sense that school is a safe place.

AI *excels* at finding patterns. Feed it attendance data and it will duly identify trends, predict risk and compare schools. Those abilities fall short, however, when the problem in question isn't a technical one. Union leaders have warned that many causes of absence are '*Beyond schools' control*' – and those same causes can also sit far beyond what's visible to algorithms.

A category mistake

When Newcastle University researchers examined school attendance problems in 2023, they found that emotional distress lay at the root of 94% of cases. Defiance barely featured. Instead, degrees of anxiety appeared in nearly all instances, often linked to unmet needs among neurodivergent pupils for whom school environments proved overwhelming.

This matters, because you can't code your way out of a crisis rooted in how children feel. The fracturing of friendships, accumulations of sensory overload, determining that staying home is safer than going to school – *these* are what determine whether a child shows up, yet none of them appear in datasets.

> **"You can't code your way out of a crisis rooted in how children feel"**

In this sense, AI attendance targets can be seen as a category mistake – a quantitative solution to a qualitative problem.

Absent while present

In 2025, UCL researchers examined rates of emotional engagement in education settings, and identified some concerning patterns among girls in English secondary schools. In 2019, 43% of Y9 girls strongly agreed that they felt safe at school; by 2023, that figure had fallen to just 21%, nearly double the rate of decline seen among boys. England's decline as a whole was among the steepest internationally.

Timing matters, too. Emotional engagement plummets from Y7 to Y9, just as persistent absence starts to spike. We now know that for many secondary pupils, 'attending school' amounts to sitting in a classroom while feeling fundamentally unsafe. They're physically there, but *emotionally absent*, experiencing what researchers describe as a withdrawal that can precede non-attendance by months, or even years.

Data systems track empty desks. What they miss are the children who shrink into their seats all day, and the internal collapse that can make school attendance feel like an act of endurance.

Belonging, not benchmarks

Emotional safety is the ground on which learning is built. Children don't skip school because they've failed to meet a target; they stay away because trust has been broken, their safety has been compromised and their sense of belonging has been lost.

Despite striking rates of mental distress among secondary pupils, meaningful support remains scarce. The interventions that actually work are all relational, aimed at strengthening connections between students and staff, and rebuilding the peer relationships that do so much to anchor a young person's sense of security.

Teachers are already shouldering too much of this burden alone. Building a sense of belonging requires institutional design and schools in which trust and cohesion are deeply embedded at all levels.

The government has invested substantial resources in systems that measure attendance and generate targets, but where's the equivalent investment in making children *want* to attend? Where is the relational infrastructure – the support, time and resources – that attendance data can't capture, but which absence always reflects?



ABOUT THE AUTHOR
Dr Anneke Schmidt is a researcher and freelance journalist specialising in education and learning technology; for more information, visit skillandcare.com



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