



We speak to Alison Borthwick, International Maths Adviser and Education Influencer, about school closures, maths resources, and why teachers are so amazing.

Q Hi Alison! We're thrilled that you've discovered Blutick. With so many mathematics learning tools out there, what was it about Blutick that first caught your eye?

A Firstly it was new (to me) and so this, with the simple but effective branding made me look twice. I was also intrigued by its association with The Perse, Cambridge (a school I have had contact with and respect hugely) and so from the beginning this offered instant credibility.

Secondly, I was interested to explore its claim around Artificial Intelligence. I have to admit, initially I was doubtful.

However, what I really like is the pedagogy it has chosen to adopt. There is a mass of content, (I think I read over 3 million questions!) which makes it harder to come across the same question or predict what it might be. Short videos and worked examples support students, who are then offered questions to try themselves. Even up to this point I was impressed. But then the Artificial Intelligence appears, in the form of line-by-line feedback. So if students make a mistake, they are not rewarded with a 'no' or 'incorrect' but a prompt that helps to scaffold their thinking and improve their mathematical knowledge and understanding. And all of this helps the computer to learn what works best and what doesn't to become even more effective at giving feedback!

I haven't even had time to discover the other features it offers to schools and teachers, in the form of marking, setting quizzes etc.

Q As someone who moves in many maths circles, how much do you see the same maths teaching challenges from one country to another?

A I often say that 'maths is maths' and so while challenges are often bespoke to cultural and contextual situations, when it comes to mathematics there are very few problems I am presented with that I haven't come across before. Often these relate to where specific maths content appears in a curriculum (because it will be there somewhere), the number of hours learners are timetabled for mathematics (this can vary considerably from one country to another) and of course, my favourite, 'the lack of resources' (the inference being that we can't teach certain areas due to a lack of equipment). ▶



While all of these challenges can seem very real and often debilitating, there are always solutions. These may not be ideal or our first choice, but nevertheless, we can always problem solve our way through them.

I like to think of every challenge as a new opportunity to either think differently or to 'work outside the box'.

Q As we talk, teachers all over the world are running classes remotely with schools closed due to the coronavirus pandemic. How do you think teachers are coping with the sudden shift to remote teaching?

A Teachers are amazing! Just as all of the other key workers have stepped up to the current challenges, teachers too have been unwavering in their commitment and dedication to keep learning alive for their students. While some teachers have been continuing to attend school to support learners of key workers, others have been providing activities and tasks, or even holding online live lessons!

In anticipation of the school closures in the UK I prepared some suggestions as to what teachers might like to think about for home-school tasks, including a range of indoor and outdoor tasks. It is important to remember that it is not about making the school curriculum 'fit' at home. Parents are not teachers and we should not expect this of them. Instead, it is about trying to think about the different learning opportunities available for students to access at home. What is it that they are interested in? How might we motivate them? What do they want to pursue right now?

In addition I have been talking to some of the teachers and schools I support in South East Asia. Most of these teachers are delivering lessons from their homes, via technologies such as Zoom or Google Hangouts. This sort of teaching requires different thinking. These teachers are now having to quickly, and with little CPD, get up to speed with technology to facilitate online learning. And yet I hear no complaints from them. Instead their focus and drive is to continually support their students, in the best way they possibly can. As I said, teachers are amazing!

But even as we chat, there is paradigm shift occurring in how education could be post Covid-19. Education is already being re-imagined. In a bizarre way the virus is re-shaping education and the old version of how learning happened has already changed. It would be a shame if we went back to the old ways! We now have an opportunity to think differently. Indeed, learning might begin to look quite different!

So, perhaps we need to reflect on the current model of remote learning and think how we might use what we are learning about ourselves as teachers now, and how we are needing to adapt, to shape the education of the future. How many students are going to want to go back into formal 'sitting at desks' education after this?!

I don't have any answers yet, but I do know that we must try and resist falling back into existing habits. Online platforms like Blutick really do open up the world of possibilities, for remote learning now and in the future. ►



Q What's been the most inspiring teaching moment you've seen so far in this pandemic?

A I think it has to be the way the whole education (and mathematics) community has come together. We now have the largest online teaching community working together. So many companies (Blutick included) have stepped up and offered their resources and software for free.

This is a generous and thoughtful act and shows the world the true nature of what education stands for (knowledge for all, on an equitable level). While for some organisations this is time-coded to the current pandemic (totally understandable), for others it has now become a precedent. The ability to think, reflect and change is one of the key traits of learning, and it is inspiring to witness this happening at such a high stakes level.

Q One of your recent books (*Reasons to Reason in Primary Maths and Science*, Sage, 2018) centres on the importance of reasoning and problem solving. Can you tell us why you chose to focus on this and do you see these skills within Blutick?

A For me, reasoning and problem solving are the currency of the future. While learners need to know a certain quantity of mathematical content, this will be less useful if they cannot think, reason and solve problems. This is particularly why I like the Blutick intelligent line-by-line feedback. While it is easy to offer students questions to answer, it is harder to prompt their thinking towards next steps. Blutick manages to use several different problem solving strategies. For example, the videos and worked examples offer visual clues, the platform encourages you to work systematically by entering each line of your thinking and working and the use of mistakes allows you to make modifications whilst building resilience and perseverance.

Of course, nothing can be a replacement for a teacher. But if teachers can draw on additional good quality material and resources to support their role, I think they would jump at the chance.

Q In your recent recommendation of Blutick, you mentioned the value of worked examples. Why are they so important?

A Worked examples are a really useful tool in mathematics teaching and learning. They are not intended to be perfect model answers, but rather offer a flavour of how you might approach a question. Worked examples present information in small steps which are carefully scaffolded to allow students to process the mathematics in a controlled way, therefore allowing working memory to handle only a few bits of information at once. All ages of learners can benefit from worked examples and for any area of mathematics. Used alongside other learning strategies, such as problem solving, worked examples play a huge part in providing instruction for learners.

I am particularly pleased that Blutick includes worked examples within its pedagogical framework. ▶



Q If you could give teachers one piece of advice right now, what would it be?

A Oooh that's a tough one to answer with only one piece of advice allowed!

I would encourage teachers to think differently about education and look at the current situation as an opportunity. I would challenge them to think about what they really want their students to be learning in their current 'real-world' absence; what could they be doing that they would not usually have time to do in the classroom? Could they be learning new skills about technology, social media or the gig economy – after all, this is going to be their future! Learners need agency (in other words, the capacity to act independently and to make their own free choices), and they need to want to invest in their learning. So, let's give them guidance on how to do this, rather than try and tick a box to get through the next bit of curriculum.

The best outcome is that learning looks different to how it was a few weeks ago, and our learners emerge with positive attitudes, and mountains of resilience and perseverance.

And of course, we have the luxury of a little more time on our hands, so why not try platforms such as Blutick – you have nothing to lose and everything to gain! ■

