Design & make

Engineering can seem like a daunting topic, but it's simply about spotting problems and creating solutions

LAURA CROSS

Teaching design and technology – the place where engineering sits in the primary curriculum – always filled me with terror. On my teacher training, I remember being told to complete a slipper-making project with my Y6 class. I had no idea how to make a pair of slippers, let alone how to teach a class about them.

Yet now, even with my lack of slipper-making knowledge, I visit schools to teach workshops around STEM and, specifically, engineering. I haven't suddenly retrained as an engineer, or a cobbler, so how did I get comfortable with teaching children about these concepts?

In 2015, I moved to California to work at an edtech company. While I was there I got to work closely with engineers and my own interest in the field grew. I started to understand what engineering is really about, and it ain't just slippers.

So, what is engineering and why does it matter? It's the application of science and technology to solve real-world problems. With the growth of new technology, the job market is changing. Engineering represents 19% of total UK employment, and it's growing fast. The problem-solving skills that are so vital in engineering will be crucial to today's children in a world where low-skilled jobs are either automated or outsourced overseas.

It's a sad fact that despite all of its benefits, engineering is commonly overlooked in primary school, or just covered for a couple of days during science week. My own opinion is that it's not prioritised because engineering seems like a scary thing to teach. What do us teachers know about engineering? The thing is, it's not a fancy discipline requiring resources you don't have the budget for. It doesn't have to involve sitting in the ICT suite writing lines of code either. It's just designing and making stuff. At a primary level, it's as simple as encouraging children to recognise problems and formulate solutions, and then getting them to have a go at building stuff.

An important part of starting to bring engineering to your classroom is to lower your own expectations. What your pupils design and make isn't going to necessarily fill your display area, impress SLT or be 'oohed' at by parents. When children learn about engineering it's the process rather than the outcome that's important. They don't need aesthetically-pleasing final outcomes, but instead a process full of problem-solving, creativity and collaboration.

And it's exactly this pupil-led process that makes engineering so easy to bring into the classroom. Yes, you need to help pupils reflect on their successes and failures, but there's no direct teaching needed: children need to create, problem-solve and learn for themselves. Kids teaching themselves? Sounds a bit more interesting now, right? **TP**

Laura Cross is a former primary teacher and worked as head of curriculum at a Californian edtech company. She set up Inventors & Makers in 2019 and runs workshops and classes focusing on STEM, design and 21st century skills.

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5 EASY ENGINEERING CHALLENGES

Organise a simple engineering challenge every week. It only needs to take 20 minutes, but that weekly slot will really help to develop pupils' creativity, problem-solving and collaboration skills.

Straw towers
In teams of two or three, build the tallest tower you can from 40-50 straws and some tearable tape.

Cup towers
In teams of two or three build the tallest tower you can from 60 paper cups and craft sticks.

Improve an invention
Choose an existing invention (pencil, car, postal system, etc) and improve on it, drawing and labelling your design.

Design an invention
Think of a problem (generated individually, in groups or as a class) and design a brand new invention to solve it.

Build a boat
Use cling film, duct tape, paper cups and straws to design, build and test a floating boat that can support 25 pennies.