

Dear Prime Minister

CC: Secretary of State for Education, The Rt Hon Nadhim Zahawi MP

I am writing to you regarding the teaching of science, technology, engineering and maths (STEM) in UK primary schools and how government, academia and industry - can come together to ensure teachers are equipped and empowered to inspire children about the vital, but often missing, E – engineering.

Children eagerly learn about science and maths, but the connection to engineering - the link between these subjects, their purpose and application to the world in which we live - is not currently being made. **We need to ensure there are clearer learning outcomes for these subjects linked to engineering.**

As you have already identified, one of the most powerful things we, as a nation, can do to [Build Back Better](#) is to invest in science, engineering and technology. However, this investment cannot be restricted to a focus on outputs; **we must invest in our children, who will be our engineering innovators of the future.**

There is currently a shortfall of over 173,000 workers in the STEM sector: an average of 10 unfilled roles per business in the UK [1]. Our latest skills survey identifies that half (49%) of engineering and technology businesses are experiencing difficulties in the skills available to them when trying to recruit [2]. This is a skills challenge that we have tracked for the last 15 years – longer than the time it takes for a primary aged-child to complete their education. **Future skills need addressing now.**

This has a serious negative impact on our economy, which is estimated to suffer a loss of £1.5bn per year due to these engineering and technology skills shortages.

We believe the solution to this skills gap lies in education. By adding more focus on misunderstood disciplines like engineering where **we know there is a perception problem**, it will help young people from all backgrounds better understand how STEM can be applied, increase their career aspirations and develop other skills such as creativity and problem-solving.

We propose a collaboration between the Government, STEM education supporters, academia, and industry to provide teachers with the tools they need to showcase that science, design & technology and maths all have vital elements of engineering within them and proactively encourage the teaching of **engineering** in our primary schools. Our aim is to embed engineering into current primary learning without additional pressure on the curriculum, so children start to become familiar with the term and what it means from an earlier age. This is vital if we are to reinforce the link between the more academic subjects and their practical application through engineering in our everyday lives.

We feel this focus and support for schools is fundamental to help futureproof the next generation of engineers and would also **empower more young people to consider careers in STEM** that may not have previously been accessible to them. These benefits extend far beyond the classroom – from higher career earnings to better job

satisfaction, our research shows that those in STEM careers can achieve life goals such as financial independence much sooner than their peers.

Engineers are problem solvers, with a unique world perspective. Many of our national challenges such as climate change, improving healthcare for all and digital transformation, all have engineering at the heart. We have a real opportunity to **help our children, engineer our future.**

Our proposal:

- We want to work with our many partners across government, education, professional institutions, and industry to fix this problem.
- We ask that the Government join us as we host a series of roundtables in the coming months with stakeholders to understand how engineering can be better embedded into the primary school curriculum without additional pressure being placed on teaching staff.
- We are calling on the Government to advocate for this change by committing to providing practical support in our ambition to pilot the outcome of these discussions in a small number of schools in the 2022-2023 academic year.
- For the Government to support further rollout, if it's deemed a success, in future years, with the aim that engineering learning outcomes are established in the primary syllabus for science and maths.

This isn't *a way*; this is **the only way** to ensure we are nurturing our children's curiosity about the rapidly advancing world around them from the earliest age. Yes, science and maths play a fundamental role, but we must teach them that the application of these subjects is called **engineering**.

Yours sincerely



Professor Danielle George MBE

Immediate Past President, The IET and #EngineeringKidsFutures ambassador

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[1] IET '*Addressing the STEM skills shortage challenge*' report, 11 June 2021

[2] '*IET Skills Survey 2021*'. Research conducted by YouGov. Fieldwork dates: 6th August - 2nd September 2021