

ENGINEERING OUR FUTURE NOW!



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Following on from MP Andrew Miller's article 'Engineering the Future' which concerned itself with the relationship between engineering policy and government. I was prompted to add to the debate that if we truly are going to Engineer the Future then it is about time we started to look carefully how we invest in our greatest natural resource – primary schools – yes primary schools. Primary teachers are a dedicated bunch they teach class sizes larger than at any other level of education, their expertise extends over 9 subject areas, they work with the same class every day of the academic year – the differences between our primary and secondary schools structure is evident – yet we expect children to move between them without turning a hair. How then are primary schools the focus – given the impact of Primary Engineer we can see that the root of the engineering debate should begin in our primary schools.

Perhaps it would do well here to identify a number of issues surrounding the teaching and the inspiring of pupils into engineering. After all if 11 and 12 year olds have a fair idea of what they want to be when they grow up and have held that idea for a number of years – they must have formulated them in primary schools. In the primary curriculum there is no such subject as engineering, secondly the closest, possibly design and technology is in many instances

not taught with the confidence that would do it justice – why would that be? Perhaps, just perhaps, for decades a teacher during their training unless very lucky will only receive half a day, perhaps as much as two on the skills required to teach it to 30 children at a time. Perhaps that goes some way to explaining the paltry coverage of the subject, the erosion of advisors leaves the subject floundering, and yet it's potential to draw together the essential STEM elements and emphasise the E is missed, yet acknowledged by many teachers, educationalists and parents. STEM as an acronym which is stronger than the sum of its parts but in many instances the implementation can leave out the 'E'.

Do we have a light at the end of the tunnel – well you may well be surprised to hear that there is an organisation called Primary Engineer that is supported by the Royal Academy of Engineering, Engineering UK and LRET that has hit the nail on the head. It is also a programme that I have watched grow not only in terms of its breadth and quality of delivery but also in the numbers of schools engaging with it and, vitally, its impact. Primary Engineer works with secondary (subject specialist teachers) who they train to deliver targeted design and technology with practical maths and science to primary teachers. This linkage of teachers gives the opportunity to develop much needed subject





networks, whilst at the same time offering secondary teachers an insight into the 'primary experience'. These subject networks develop true links across the curriculum. Understanding the experiences of primary pupils they will soon be teaching – goodness, that would allow them to build on what primary children have been learning – surely this is what we should be doing, and work towards fighting against the recognised dip in enthusiasm seen so often on poor 11 and 12 year old faces.

The programme looks to be used in the classroom, not as a club to the already converted but to inspire latent learners and the disengaged alongside the curious, using materials that are embedded in the national curriculum. The projects are designed and named to engender an engineering ethos for example for 5 to 7 year olds Primary Engineer Apprentice

Levels 1 and 2 and for 8–10 year olds Primary Engineer Levels 1 and 2. Not only are the key words engineer and apprentice now part of the primary pupil and teacher vocabulary but also the manner that science and maths are applied to the problem solving required for design technology activities. This has resulted in children not creating subjects silos – the 'I can't do maths' is not heard, frequently the children don't recognise the separate elements as they are so naturally embedded in the projects they undertake. A phrase Primary Engineer coined came from a teacher who was approached by a disgruntled pupil saying that she, the teacher, was no longer liked! When asked why, the pupil said it was because she had been teaching them maths and science without them knowing it – STEM by Stealth – a perfect compliment for any teacher and

a perfect description by which to describe primary engineering education.

Every year Primary Engineer invites children to participate in a number of regional events leading to a National Final sponsored by THALES and showcased at the Big Bang Fair. The IMechE have been huge supporters of these events providing judges who are frequently taken aback at 9 year olds competently describing mechanical advantage and the iterations their design has undertaken. Parents have been hugely supportive of these activities delighted to see that something for once that is hard rather than frivolous can be fun and exciting. This slowly develops the essential personal satisfaction ethic we must have if the generation after next are to become the confident, inspired and curious learners engineering requires and all other careers would benefit from.

Since being in the position of National Specialism Coordinator: Engineering Colleges working for the Specialist Schools and Academies Trust and then Director of Engineering at Jarrow School, South Tyneside, I have watched primary teachers and pupils grow in confidence supported by a programme that exists on a shoestring compared with budgets that are being

squeezed and quangos dismantled. Their programme covers core skills in design technology with applied maths and science, and recently in order to inspire further they launched the Primary, Secondary and Advanced Leaders Award for STEM asking pupils to apply to become leaders for STEM activities in the school, help others and, vitally, ask pupils to interview professionals in STEM careers to ask the questions that not only interest and intrigue them but will open the doors on horizons they and their teachers didn't know existed – if this coordinated impact in Primary schools doesn't inspire the next after next generation of engineers I don't know what will – perhaps the only thing to hold it back is lack of recognition from those organisations and companies these engineers will work for and a government to whose future it is inextricably linked.

How many of the generation after next will have fond memories of Primary Engineer? Witnessing the enthusiasm on the faces of the primary pupils, and at events their parents, quite a few I would say. Perhaps it is time someone had a quiet word with Primary Engineer, given how we need to be engineering our future now.

An invitation to attend events and gather a greater understanding of the impact on pupils, teachers and parents is extended by myself and from Susan Scurlock, Chief Executive of Primary Engineer

www.primaryengineer.com and www.leadersaward.com



Primary Engineer

