

## **How do we inspire the next generation to take an interest in STEM (Science, Technology, Engineering, Maths)?**

STEM is a diverse field of subjects which most people cannot engage with. Some find it “too hard”; others brand the skills learnt in lessons “irrelevant”, asking how they will help in the future. This is usually said with little knowledge of how these “irrelevancies” have helped modern society. The disengagement of young people in this field needs to be addressed.

Science has an image problem. Stereotypically, your average scientist is a mad professor, characterised by wild hair, crazed eyes and a lab coat, drawing mathematical equations on massive chalkboards. The subject itself is viewed as dry and dusty, only suitable for those who have a “geekish” tendency, as opposed to “the arts” which are often portrayed as chic and glamorous. Anyone can see that attempts to challenge these stereotypes will be an uphill struggle. However, one way of engaging with young people could be to encourage positive STEM role models to help remove the unfair stigma associated with science in the UK.

Interest in STEM requires the introduction of science at an early age. Today’s children have grown up with technology; this could be exploited. For example, children learn simple Spanish through the television show “Dora the Explorer”. Why not have shows revolving around the world of science? At such young ages, children are at a stage where they do not care about society’s unspoken rules – if they like science, they will choose to embrace it. Just as easily, by incorporating scientific principles into simple apps and computer games, it will be possible for children to learn whilst having fun.

Change has to occur in primary school science education. It is well known that primary school teachers are not specialists. As their syllabus is less scripted than at higher levels of education, a teacher’s own fear and reluctance of maths and science may result in less time spent on those subjects. The less time that is spent on STEM, the less familiar children are with it and before you know it, the teacher’s fears of the field have been passed on to them. However, principles can be taught through hands-on experiments, allowing students to experience the practical nature of STEM. Experiments allow children to get involved in a quest for answers. As their knowledge grows, so will their curiosity. There are various simple practicals that can be carried out in classrooms yet are a worthwhile use of teacher time. Regional science fairs can also supplement the main science education as every child is able to interact with the stalls, increasing their interest. However, unless schools are informed of suitable trips, this cannot happen.

At secondary school, science can be taken to the next level. At Key Stage Three, science should be more practical, taught by specialist teachers who can inspire and engage with all students. If pupils only learn from books, they will be unable to link how the theoretical side of science is applied to the real world. They will become bored. As pupils reach GCSE years, maths and science is often regarded as a chore. Teachers purely want to finish the syllabus in time for June exams; they lack the time for demanding practicals. If three years was spent on the GCSE course, it would enable teachers to give more time towards experiments. STEM-related clubs will also encourage students to utilise their knowledge with DT and Engineering clubs also allowing pupils to learn new skills.

There is a problem with career advice: it starts when you are too old. People remain unaware of the vast array of exciting jobs available with STEM A-Levels and degrees; if pupils learnt about these opportunities, it might encourage further study. University outreach departments, recent alumni

and local industries should become more involved with nearby schools, allowing people with STEM-based subjects to speak on their careers. Once again, this requires enthusiasm from school science departments.

There are many courses available, such as Headstart and university-led summer schools, which are highly valuable as they enable children to experience subjects at university level. These schemes are a fantastic way of encouraging the further study of STEM. . . if you are lucky enough to be given a place. These courses mainly rely on the diligence of schools to inform suitable candidates and tend to be oversubscribed. There is a need to further advertise these placements and for more places to be made available. Nuffield Research Placements also require more places; there are more than enough eager pupils to fill any extra places generated. Many students will apply to these schemes yet be unsuccessful, possibly discouraging them from the study of STEM at a higher level or from applying to similar courses in the future.

In the end, change cannot just come from the government. It has to come from society as a whole. If we can remove the negative stereotypes attached to STEM, more people – regardless of background – will feel encouraged to study it. STEM should be enjoyed by everyone. It is diverse and relevant, and with national cooperation and coordination we *will* get engagement.