# "Electronics Everywhere": Helping Build the Engineers of Tomorrow

With your support, we want to provide an opportunity for children to develop their interest in Electronics and engineering, through the school curriculum.

We are investing in schools by providing "**Electronics Everywhere**" resources to schools across the UK. These resources are electronics projects, aligned with the popular A-Levels (Computing and Physics).

> *"'Electronics Everywhere' matters to me both personally and professionally as part of my key ambition to ignite interest and excitement amongst students and their teachers at schools across the UK. I am proud to support it and to promote the potential of the UK Electronics sector to a new generation."*

Prof Bashir al-Hashimi CBE FREng FIEEE FIET FBCS
Former Dean, Faculty of Engineering and Physical Science at University of Southampton, and UKESF Trustee

**Why "Electronics Everywhere"?**

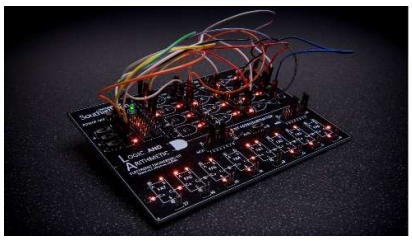
Technology is at the heart of our world; it is the future. Recent technological advances in communication, transportation, healthcare and entertainment have already transformed our society and made people's lives better. However, our societies face numerous challenges, for instance health, energy and security. Technology offers hope and expectation; there is much more to come (AI, virtual reality, robots, drones, driverless vehicles, smart cities, telemedicine, cyber and machine learning). Electronics is a vital part of all these technologies.

The UK has a long heritage of technological innovation and has a world-class Electronics sector. However, there is now a shortage of Electronics Engineers (especially graduates), which means that there are too few engineers and designers to develop the next generation of products and help produce creative the technological solutions needed by society. We want to encourage more young people to consider engineering as a career and to be aware of the opportunities available in the Electronics sector for the benefit of the UK and wider society.

**"Electronics Everywhere" Projects**

These projects show young people how engaging Electronics can be, and the exciting career opportunities that are available within the sector. Around 37,000 pupils study A-Level Physics each year. Although Electronics is part of the curriculum, there are few hands-on teaching resources available to schools. Computing is an increasingly popular A-Level subject (13,829 pupils in 2021, up 38% since 2017).

The approach that we have taken for this project, in collaboration with the University of Southampton, is to provide practical resources (pictured) for teachers to deliver the Electronics parts of the curricula. These are both designed and manufactured in the UK. We have chosen functions, such as "music mixing", that are interesting and allow teachers to link to other parts of the curriculum (e.g. wave theory). We have included experiments that provide a very visual accompaniment to theory (Planks' Constant and Truth Tables).



The bare PCB exposes all components; creating a link between electronics and applications in many consumer products, and allowing students to extend their curiosity, showing that electronics is not a mystery black box. Importantly, the project also provides CPD for teachers to increase their knowledge about Electronics and so inspire more young people to take up a career in the sector.

**"Having the devices on a PCB allows the learner to focus on changing parameters, taking values and getting a real understanding. No time is lost to fiddling with wires… This board is brilliant – I love it and know it is a fantastic piece of kit."**
*Head of Physics, Graveney School*

Each school supported by this project:

- Receives a classroom set consisting of circuit board kits. These resources are fully packaged and are re-usable.
- Has a teacher complete a comprehensive CPD training session, to familiarise themselves with all aspects of the teaching resource.
- Gains access to online teaching resources, lesson plans, guides and additional information.
- Is covered by a comprehensive support package including a replacement/repair service.


**Achievements to Date**

The "Electronics Everywhere" project has already been successful. Academics from the University of Southampton's prestigious school of Electronics and Computer Science designed and developed the boards, which have been professionally manufactured. **550 schools** have been reached since 2017 (with a total of around **5,000 kits**). Supporting resources, including videos, have been produced, and a teacher from each school has received online training from the University of Southampton. The feedback has been extremely positive, with **95% of pupils reacting positively** to the boards and feeling more enthusiastic about Electronics as a result. 80% of teachers rated the kits excellent or good as a teaching aid, with feedback including:

**"These provided a fun, hands-on, engaging activity that brought the topic to life for my students."** *WMG Academy for Young Engineers Coventry*

**"The students were engaged as they have never experienced of this type of Electronics before. The results they get are fantastic."** *Physics Teacher, Barton Peveril Sixth Form College*

**"These are wonderful – my students loved the challenges and it really helped them to understand logic gates and adders."** *Head of Digital Learning, The Gryphon School*

ROYAL ACADEMY OF ENGINEERING

In December 2018, the "Electronics Everywhere" project received formal endorsement and support from the Royal Academy of Engineering. We continue to work together to promote "Electronics Everywhere" via their Connecting STEM Teachers programme and using their Teacher Coordinators to improve the learning resources.

**Impact**

This is a high impact project. We are investing in and supporting teachers and schools, at a local level right across the UK. The project provides re-usable classroom resources and trains teachers in their use. This allows teachers to deliver the A-Level curriculum for Computing and Physics in an engaging and interesting way and so improves the learning experience for their pupils.

**Benefits**

The principal benefits that your company will derive from the programme are:

1. Inspire students taking A-level Physics to consider studying Electronics afterwards, and to take up careers in the sector.
2. By supporting a local school, enhance community links and raise the company profile.
3. Boost the sponsoring companies' Corporate Social Responsibility agendas.
4. Maximise potential PR and marketing opportunities for the supporter companies within local schools.
5. Enable the supporter companies to offset charitable giving against corporation tax.

**Donation Requested**

For each **£1,200** donated, the UK Electronics Skills Foundation will arrange for **two** secondary schools/colleges to be supported. We will provide each school with a classroom set of the circuit board kits,[1] access to supporting resources, and one teacher from the schools will receive the CPD training session.

A company can nominate one specific school/college, often local, that they would like to support through their donation. The second one supported by the donation will be chosen by the UKESF (these will be state-sector schools, in our target 'harder to reach' areas).

**How to Donate**

Please get in touch via info@ukesf.org to express your interest.

Stewart Edmondson
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Chief Executive
UK Electronics Skills Foundation

**About the UK Electronics Skills Foundation**

The UKESF is an educational charity, launched in 2010. It operates collaboratively with major companies, leading universities and other organisations to tackle the skills shortage in the Electronics sector. The UKESF's mission is to encourage more young people to study Electronics. As well as working with schools, the UKESF helps undergraduates and prepares them for the workplace.

Registered charity number: SC043940

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[1] Each set contains 10 kits for either for Physics or Computing.